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Author: DCC
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Please note the page number of the combined DUGIDS will be different to each individual DUGIDS Annex.

DCC Guidance Document

June 2023 SEC Release

- DUGIDS v5.2a

Change Summary

Version:	1.0
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Revision History

Revision Date	Summary of Changes	Version Number
11/04/2023	Initial Draft	0.1
12/04/2023	Minor updates following review	0.2
10/05/2023	Updated following release of final DUGIDS document	0.3
19/05/2023	Updated following review	0.5
19/05/2023	Further updates	0.6
19/05/2023	Issued	1.0

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1 Change Summary – DUGIDS v5.2a – June 2023 SEC Release

DUGIDS v5.2a – June 2023 SEC Release	
Document / Annex	Change Summary
General	<p>An updated “DCC User Gateway Interface Design Specification (DUGIDS)” document has been created and will be implemented as part of the June 2023 SEC Release.</p> <p>DUGIDS will be updated from the current version v5.1 to <u>a new v5.2a</u>.</p> <p>This uplifted DUGIDS version aligns with updates resulting from the following SEC Modifications:</p> <ul style="list-style-type: none"> ▪ MP125 - Correcting Device Information for the ESME Variant ▪ MP102B - Power Outage Alerts triggered by an OTA firmware upgrade - enduring solution ▪ MP220 - MMC Changes resulting from GBCS v4.1 Device Testing <p>Additionally, the document reflects the changes made for ECoS Programme regards the N26 alert.</p> <p>Note that in the June 2023 SEC Release, the ECoS programme goes live along with changes implemented in DUIS 5.1.</p> <p>This uplifted DUGIDS version aligns with the updates to the Technical Specifications that now include,</p> <ul style="list-style-type: none"> ▪ Great Britain Companion Specification (GBCS) - v4.2 ▪ Smart Metering Equipment Technical Specifications 2 (SMETS2) - November 2022 ▪ Communications Hub Technical Specification (CHTS) - v1.6
Main Document	<p>Additional section to 2.3 - <i>Modes of Operation</i>: 2.3.12 – <i>Power Outage Alerts</i> that explains how the Power Outage alerts following an OTA firmware update will function for SMETS2 ESME.</p> <p>Update to section 12.3 - <i>DCC Data Systems Response Codes</i> for Response Code E66, E67, E68, E69, E70, E71 reflecting the removal of notes describing ECoS functionality and notes on the Error Handling Strategy.</p>

	<p>Section 12.5 – <i>ECoS Alert Codes</i> for ECoS general updates</p> <p>Section 13 – <i>DCC Alerts</i> updates for N63, N65, removing the clarifying notes regards ECoS functionality</p> <p>Appendix 16 – <i>Changes for the ECoS Service</i>. Minor narrative changes.</p>
Service Request Definitions 1 - PMS	<p>Update to 1.1.1 - <i>Update Import Tariff (Primary Element) (1.1.1)</i> guidance notes regard to block thresholds and User obligations for both SMETS2+ and SMETS1.</p> <p>(Please refer to DCC Guidance Point 57 Block Threshold Population – Use of DUIS – v2.26)</p>
Service Request Definitions 2 – PS	<p>Update to 2.1 - <i>Update Prepay Configuration (2.1)</i> to clarify parameters in 1000th pence for SMETS2+ meters.</p> <p>Additional descriptions in 2.1.1 - <i>Service Request</i></p> <p>Updates to 2.1.1.3 - <i>UpdatePrepayConfigElectricity Data Items Definition</i> & 2.1.1.4 - <i>UpdatePrepayConfigGas Data Items Definition</i> to further clarify this behaviour.</p> <p>Section 2.1.1.26 - <i>Sample Request</i> gives an updated example with this number of significant digits</p> <p>(Please refer to DUIS Guidance Point 59 - Unit inconsistency for Max Credit Threshold and Maximum Meter Balance – Use of DUIS – v2.26)</p>
Service Request Definitions 4 – RS	<p>4.13 - <i>Read Prepayment Configuration (4.13)</i> section changes to reflect use of 5 significant digits for thresholds</p> <p>(Please refer to DUIS Guidance Point 59 - Unit inconsistency for Max Credit Threshold and Maximum Meter Balance – Use of DUIS – v2.26)</p>
Service Request Definitions 8 – DEMS	<p>Section 8.4 - <i>Update Inventory (8.4)</i> updates for MP125 to explain the allowable status of SMETS2+ ESME for an ESME Variant update and to clarify that SMETS1 changes remain only allowed for ESME in a 'Pending' status.</p> <p>Section 8.14 – <i>Communications Hub Status Update</i> validation notes to reflect CHF and GPF behaviour</p>
Service Request Definitions 11 – FS	<p>Section 11.1 <i>Update Firmware (11.1) Service Request Narrative (SMETS2 or later)</i> updates to reflect DCC system validation to check that OTA headers conform to GBCS Table 11.2.3 requirements for the construction of an OTA Upgrade Image.</p>

	<p><i>SMETS1 Service Request Narrative</i> clarification also added.</p> <p>Section 11.3 <i>Activate Firmware (11.3) Service Request Narrative (SMETS2 or later)</i> updates to explain Power Outage Alert suppression for SMETS2+ ESME for affected devices.</p> <p>Section 11.4 - <i>Update PPMID Firmware (11.4) Service Request Narrative (SMETS2 or later)</i> updates to reflect DCC system validation to check that OTA headers conform to GBCS Table 11.2.3 requirements for the construction of an OTA Upgrade Image.</p>
Service Request Definitions 15 - Device Alerts	<p>Section 15.3.1 - <i>Message codes for Device Alerts</i> to clarify use of Alert Codes 8F72, 8F1C for Message Code 012C - Firmware Distribution Receipt Alert (HCALCS).</p> <p>Section 15.3.3 - <i>Device Alerts With Additional Payload</i> updated to align with the above.</p> <p>Section 15.4.1.2 - <i>Specific Header Data Items</i> modified to clarify Electricity Alert (HCALCS)</p>
Service Request Definitions 16 - DCC Alerts	<p>Section 16.2.1 - <i>DCC Alert Message Response</i> updated to explain OTA Firmware AD1 alert suppression behaviour</p> <p>Section 16.2.1.2.7 - <i>ChangeOfSupplier</i> XML element changes for ECoSErrorCode added as well as Data Item definitions.</p> <p>Additional ECoS Error Codes for the N26 Alert have been added to a new table 15.1.</p> <p>Section 16.2.1.2.14 – <i>DualBandCHAlert</i>. Use case reference update.</p> <p>Section 16.2.1.3 - <i>Relationship between DCC Alert Codes and Response Codes</i> reflects the mapping of the N26 alert code to Response Codes.</p> <p>Sample DCC Alert Response formats have been updated to reflect these changes for Alert Code N26</p>
Error Handling Strategy (V5.2)	<p>Changes implemented for the June '23 SEC Release.</p> <p>Section 2.2 - <i>Error Handling Strategy procedures</i> has additions for procedures and response codes for E68, E69, E70, E71 and E66 & E67</p>

DCC User Gateway Interface Design Specification

Main Document

Author: DCC
Version: 5.2a
Date: June 2023

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1 Introduction

1.1 Document Purpose

The purpose of the DCC User Gateway Interface Design Specification documentation is to define the DCC User Interface at a technical level to enable DCC Service Users to integrate their IT infrastructure with the DCC Data Systems. This M2M interface enables suitably authorised DCC Service Users to call Service Requests to interact with Devices and services within the DCC, and to receive responses to those requests as well as Device and DCC Alerts.

1.2 Document Scope

This document is DUGIDS version 5.2 and describes the behaviour of the DCC User Interface when operating at version 5.2.

The DCC Data Systems will continue to support the DCC User Interface at version 3.x, 4.0 and 5.x, and the behaviour at these versions is also described in this version of DUGIDS. In some places behaviour which applies equally to multiple releases within a major release is abbreviated, e.g. behaviour for 3.0 and 3.1 is indicated by “3.x”. Versions 1.0 and 2.0 of the DCC User Interface are no longer supported by DCC (see section 9.5.4).

Where there are differences in behaviour between versions of DUIS then these are called out in the detailed descriptions of Service Requests.

The DCC User Gateway Interface Design Specification (DUGIDS) documentation consists of 4 separate document parts:

1. Main document – describing how the interface works. This document.
2. Annex to the main document (Annex) – describing the Service Request and Response definitions in detail.
3. DUIS XML Schema (DUIS XML Schema) – describing the main DUIS interface XML definition (instructions on how to view the DUIS XML Schema are included in Appendix 2).
4. MMC XML Schema – describing the MMC (Message Mapping Catalogue) XML definition (instructions on how to view the MMC XML Schema are included in Appendix 3).

This document set details the interface provided to the DCC Service User to access the Service Requests and Responses.

Please note that the DUGIDS document set is dependent on the contents of the latest published GBCS document. The GBCS defines the data item content of commands and responses from Devices in line with the protocol definitions. This DUGIDS document describes behaviour of SMETS2 devices with GBCS versions up to and including v4.2.

Note that references throughout this document set to GBCS v1.0 and GBCS v2.0 should be taken to also include GBCS v1.1 and GBCS v2.1 respectively.

1.3 Document Structure

This document is structured as follows:

Section 1 **Introduction**, this section

Section 2 **Overview of Interface**, describes how the interface operates

Section 3 **Command Variant**, describes the method by which Service Request responses may be returned to the DCC Service User

Section 4 **Request and Response IDs**, describes the format of the Service Request and Service Response Identifiers

Section 5 **Scheduling**, describes the Use Cases that involve Scheduling either at the Meter or within the DCC Data Systems

Section 6 **Sequencing**, describes how Service Requests may be orchestrated into a sequenced chain of commands

Section 7 **Access Control**, defines how Access Control is managed for the interface

Section 8 **Security**, describes the Service Requests security requirements

Section 9 **Request and Response Definitions**, defines the Service Requests and Service Responses (including Device and DCC Alerts) Common Data Items and, for each Service Request, it defines whether it is Critical and/or Sensitive and which Modes of Operation and User Roles are applicable

Section 10 **Web Services Implementation**, describes the technical implementation of the DCC User Interface

Section 11 **Error Handling**, describes the error handling and retry strategy for this interface

Section 12 **Response and Status Codes**, describes the response codes generated by this interface

Section 13 **DCC Alerts List**, lists the DCC Alerts

Section 14 **Connection Mechanisms**, describes the connection mechanisms to DCC User Gateway Network

Section 15 **Connections – Certificate and Key Management**, references the DCCKI SEC documentation set, including Interface Specifications, Code of Connection and Policy documents.

Section 16 **Anomaly Detection**, describes the anomaly detection service for Service Request and Response processing

Appendix 1 **Glossary**, lists a Glossary of terms used in this document set

Appendix 2 **DUIS XML Schema Definition Instructions**, provides information on how to view the DUIS XML Schema document

Appendix 3 **MMC XML Schema Definition Instructions**, provides information on how to view the MMC XML Schema document

Appendix 4 **XML Data Type Ranges**, summarises the XML numeric data type ranges

Appendix 5 **GBCS Assumptions – Requests**, provides a list of assumptions made with respect to GBCS v2.0 Draft 5 which affect requests to the Device

Appendix 6 **GBCS Assumptions – Responses**, provides a list of assumptions made with respect to GBCS v2.0 Draft 5 which affect responses from the Device

Appendix 7 **SEC and GBCS Version Assumptions**, provides a list of assumptions made with respect to SEC and GBCS Version

Appendix 8 **SMI Device Status**, provides a set of entity lifecycle diagrams for Devices held within the Smart Metering Inventory

Appendix 9 **Error Handling and DCC Alerts**, provides a set of diagrams that outline the main Error Handling scenarios, including the DCC Alerts generated in each scenario

Appendix 10 **Service Request Variant – GBCS UC Mapping Versioning**, provides the mapping of Service Request Variant to GBCS Use Case(s) applicable to the different DUIS XSD, MMC XSD and GBCS versions

Appendix 11 **Use of Multiple EUI64 Identifiers**, provides a description of the use of multiple EUI64 Service User IDs for the same SEC Party and Role

Appendix 12 **Firmware Version Alerts**, provides a description of the business rules used when tracking Firmware Versions on devices

Appendix 13 **Non-Critical Configurable Events / Alerts**, provides a summary of Events / Alerts that are configurable on ESME and / or GSME

Appendix 14 **Combined Supplier User Role**, provides a description of the behaviour associated with the Combined Supplier User Role

Appendix 15 **Firmware Distribution Tracking State Diagram** illustrates the possible states for tracking of a Firmware Distribution to a device.

Appendix 16 **Changes for the ECoS Service** provides a description of the reasons why ECoS service changes were made in DUIS before implementation in a later release

Appendix 17 **Permitted Activities with Suspended Devices** provides guidance on restrictions on Service Users for Devices where the Device Status is Suspended

1.4 Referenced Documents

Key	Document Title	Issue	Dated
Annex	DCC User Gateway Interface Design Specification Service Request Definitions	5.2a	June 2023
DUIS XML Schema	DCC User Interface Specification XML Schema	5.2a	June 2023
		5.1a	June 2022
		5.0a	November 2021
		4.0b	November 2020
		3.1a	June 2019
		3.0c	May 2019
		2.0 (2.0d)	March 2018
		1.0 (0.8.2.1)	February 2016
MMC XML Schema	DCC Service User Message Mapping Catalogue XML Schema	5.2a	June 2023
		5.1a	June 2022
		5.0a	November 2021
		4.0b	November 2020
		3.1a	May 2019
		3.0c	Aug 2018
		2.0 (2.0b)	May 2017
		1.0 (0.8.2.1)	February 2016
Error Handling Strategy	Error Handling Strategy Procedure	5.2	June 2023
XMLDSIG XSD ¹	W3C XML Signature Syntax and Processing http://www.w3.org/TR/xmlsig-core/	2.0	2008/06/10

Key	Document Title	Issue	Dated
GBCS	Smart Metering Implementation Programme Great Britain Companion Specification (GBCS)	4.2	November 2022
		4.1	November 2021
		4.0	November 2020
		3.3	November 2022
		3.2	June 2019
		2.1	June 2018
		2.0	February 2018
		1.1	November 2017
		1.0	November 2017
SMETS (per Device Type)	Smart Metering Implementation Programme Smart Metering Equipment Technical Specifications	GSMETS v4.3	November 21
		ESMETS v5.1	November 22
		IHDTS v4.3	November 21
		PPMIDTS v4.4	November 21
		HCALCSTS v5.1	November 21
		SAPCTS v5.0	November 21
SMETS	Smart Metering Implementation Programme Smart Metering Equipment Technical Specifications	5.0	November 2020
		4.2	June 2019
		3.0	February 2018
		2.0	February 2017
CHTS	Smart Metering Implementation Programme Communications Hub Technical Specifications	1.6	November 2022
		1.5	November 2021
		1.4	November 2020
		1.3	June 2019
		1.1	February 2018
		1.0	November 2017
SEC	Smart Energy Code	TBD	TBD
DUIS	SEC Subsidiary Document – DCC User Interface Specification	5.2	June 2023
		5.1	June 2022
		5.0	November 2021
		4.0	November 2020
		3.1	November 2020
		3.0	November 2020
		2.0	June 2018
		1.1	November 2018
MMC	SEC Subsidiary Document – Message Mapping Catalogue	5.2	June 2023
		5.1	June 2022
		5.0	November 2021
		4.0	November 2020
		3.1	May 2020
		3.0	July 2019
		2.0	February 2018
		1.0	November 2017
CoCo	SEC Subsidiary Document – DCC User Interface Code of Connection	5.14	Feb 2018

Key	Document Title	Issue	Dated
TADP	SEC Subsidiary Document – Threshold Anomaly Detection Procedures	5.14	Feb 2018
DCCKI	SEC Subsidiary Documents – DCC Key Infrastructure (see Section 15)	5.14	Feb 2018
SMETS1 Supporting Requirements	SEC SMETS1 Supporting Requirements	AM 12.0	December 2021
SRPD	SEC Appendix AB Service Request Processing Document	AB 6.0	November 2021

Table 1 Referenced Documents

¹ XSD that defines the XML Signature Syntax in the Service Request and Response XML messages

1.5 Term Alignment

There are a few definition discrepancies between this DUGIDS and the DCC User Interface Specification (DUIS) SEC Subsidiary document that the reader should be aware of. Where these terms have been used in DUGIDS they represent the same meaning as in DUIS.

DUGIDS term	DUIS term
DCC Data Systems	DCC Systems
DCC Only Services	Non Device Services
DCC Service User	User
DSP Scheduled	DCC Scheduled
Future Dated (Device)	Future Dated Response Pattern (Device)
Future Dated (DSP)	Future Dated Response Pattern (DSP)
SMETS1 Service Request (depending on context this may include DCC-only requests)	SMETS1 Supported Service Request (in DUIS this term includes DCC-only requests whereas “SMETS1 Service Request” excludes DCC-only requests)

Table 2 Term Alignment

In addition to the above, the following table details the correspondence between the DUGIDS and DUIS User Roles.

DUGIDS term	DUIS term
Electricity Import Supplier (EIS)	Import Supplier (IS)
Electricity Export Supplier (EES)	Export Supplier (ES)
Gas Import Supplier (GIS)	Gas Supplier (GS)

DUGIDS term	DUIS term
Supplier Nominated Agent (SNA)	Registered Supplier Agent (RSA)
Electricity Network Operator (ENO)	Electricity Distributor (ED)
Gas Network Operator (GNO)	Gas Transporter (GT)
Other User (OU)	Other User (OU)

Table 3 User Roles Term Alignment

1.6 XML Schema Precedence

The DUGIDS document set consists of many documents and 2 schemas. See section 1.2 for details.

For the avoidance of doubt, the DUIS/MMC XML Schema is provided as the authoritative source for data item definitions. Where any inconsistencies may exist between the definitions contained within the main text within this document and the DUIS/MMC XML Schema then the DUIS/MMC XML Schema shall take precedence.

2 Overview of Interface

2.1 Context

The DCC User Interface provides the means by which Service Users can send and receive Service Requests and Responses to/from Smart Metering Equipment, using the services of the Data Service Provider (DSP) and Communication Service Providers (CSPs).

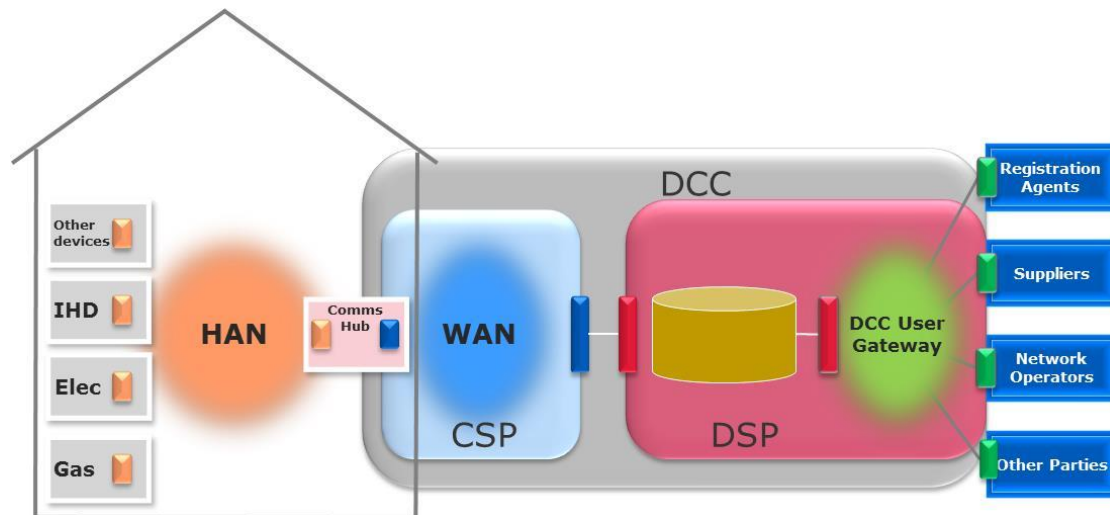


Figure 1 Overall Context

There are some Service Requests that do not involve interaction with Smart Metering Equipment, but the majority of usage for the DCC User Interface is for end to end messaging between DCC Service User systems and Devices within the customer premise.

The DCC User Interface has been designed to be a single common interface to enable communications for all SMETS devices, although some aspects of the DCC User Interface may be different for the two distinct sets of devices supported by the interface, namely those of;

- Devices conforming to SMETS2 or later versions of SMETS
- Devices conforming to SMETS1

The DCC User Interface was originally designed against SMETS2 Devices in v1.0, then extended in v2.0 to support SMETS Devices for later versions of SMETS than SMETS2, and further extended in v3.0 for support of SMETS1 devices.

2.2 Service Request Processing

The basic principles for Service Request processing involve a DCC Service User constructing a Service Request in the format described in this document (see section 9) and sending it to the DCC.

For Non-Critical Service Requests these are transformed to GB Companion Specification (GBCS) format and sent to the relevant Device.

For Critical Service Requests, the transformation to GBCS format is carried out by the DCC and the transformed request (a Pre-Command) is returned to the DCC Service User for checking and signing. The signed Pre-Command is returned to the DCC and is then sent to the relevant Device.

In both cases, a Service Response in GBCS format is sent by the Device to the DCC and the DCC forwards this response to the relevant DCC Service User.

Similarly, unsolicited Alerts in GBCS format are sent by the Device to the DCC and the DCC forwards the Alert to the relevant DCC Service User.

This basic Service Request/Response processing pattern is shown in Figure 2 below.

There are, of course, variations on this basic processing pattern. These are introduced in section 2.3 and also described in more detail in section 3.

In addition, processing of SMETS1 Service Requests follows a variation on this pattern since SMETS1 devices do not use GBCS format messages. This is described in section 2.10.

Note that throughout this document the term Request is used to refer to both Service Requests and Signed Pre-Commands, where behaviour is applicable to both.

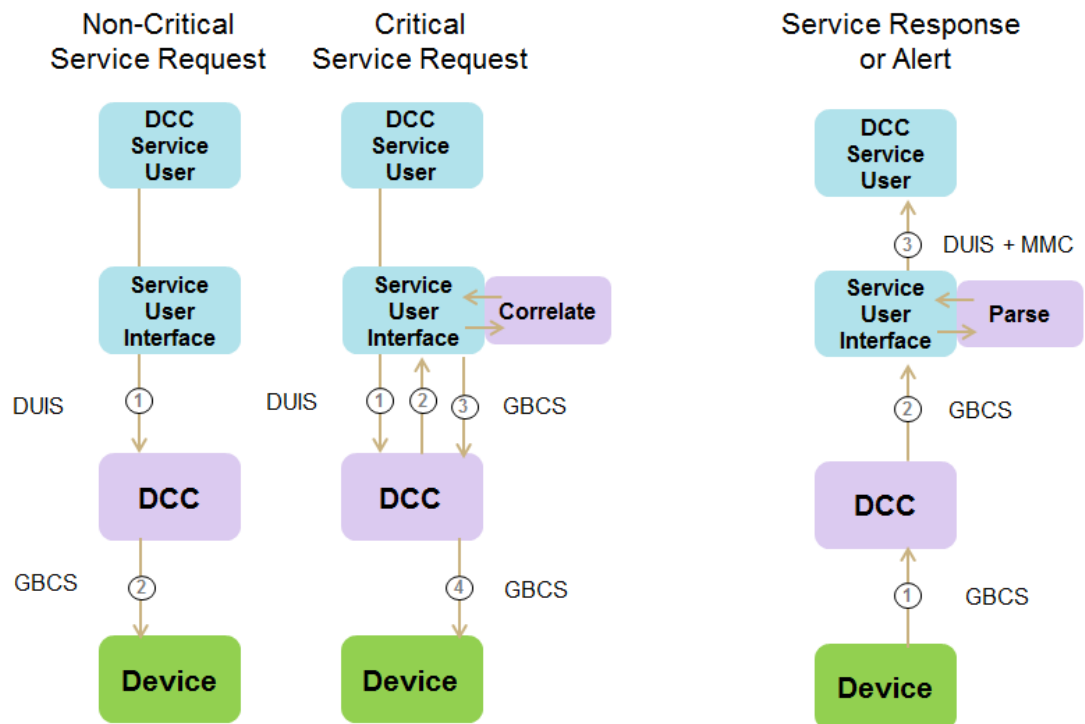


Figure 2 Basic Service Request Processing

An important factor in the end to end message processing for Service Users is the Parse & Correlate function (for which software is being made available by DCC).

The Correlate function supports the processing of Critical Service Requests and provides a mechanism to check that a returned Pre-Command in GBCS format is equivalent to (i.e. "correlates" with) the original DUIS format Service Request. Upon confirmation from the Correlate function, the DCC Service User can then sign and send the Pre-Command to the DCC.

The Parse function supports the processing of all Service Responses and Alerts from devices and provides a mechanism to transform GBCS format responses into a more accessible format. The output of the Parse function is referred to as the Parse Output and is defined in the Message Mapping Catalogue SEC Subsidiary document, however in order to provide a single design specification the format of responses produced by Parse are described in this DUGIDS document. See section 9.3.5 for more details.

2.3 Modes of Operation

As noted previously, there are a number of variations on the basic Service Request processing described above. There are some variations for Service Requests, Responses and Alerts that only require interaction with the DCC Data Systems and have no interaction with Devices. There are also variations in processing of Service Requests and Responses to/from Devices based on the scheduling requirements of when a Service Request needs to be executed.

Figure 3 below shows these variations as “Modes of Operation”.

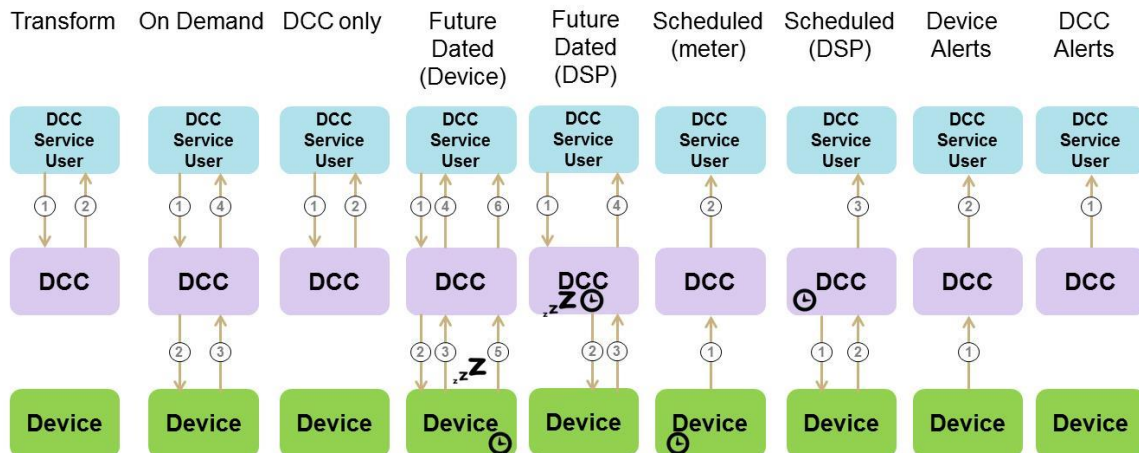


Figure 3 Modes of Operation

2.3.1 Transform

This Mode of Operation is only supported for SMETS2 or later Devices.

The Service Request in DUIS format is transformed to a GBCS Command and returned to the DCC Service User as a Pre-command to be digitally signed by the DCC Service User.

2.3.2 On Demand

A Non-Critical Service Request, Critical Service Request (for SMETS1 only) or Signed Pre-Command (for SMETS2 or later Critical Service Requests) is sent to the Device and the Device returns a Service Response.

2.3.3 DCC Only

The Service Request interacts with the DCC Data Systems only and a Service Response is sent to the Service User.

2.3.4 Future Dated (Device)

This Mode of Operation is only supported for SMETS2 or later Devices.

The Service Request or Signed Pre-Command is to be executed at a specified date/time in the future by the Device.

The Service Request with this future date/time is sent to the Device and the Device returns a Service Response confirming acceptance of the future command.

At the stated future date/time, the Device executes the command instructions and returns one Device Alert for each activation date-time, which the DCC Data Systems convert into Service Responses.

Note that, according to SMETS, a Device can only hold one future dated command per command type. Any new future dated command of the same type sent to a Device will simply overwrite the previous one (if not already executed).

The ability to set a particular Service Request for future dated execution on the device is driven by the definition of the relevant Use Case in GBCS (see section 9.4).

2.3.5 Future Dated (DSP)

Not all commands can be future dated at the Device and in this case the DSP is responsible for sending the Service Request to the Device at a specified date/time in the future. The Service Response is returned by the Device in response to that Service Request.

2.3.6 Meter Scheduled

This Mode of Operation is only supported for SMETS2 or later Devices.

The Meter Scheduled mode of operation is a special case where the Device holds a recurring schedule to send data to the Service User.

This mode of operation only applies to the Billing Calendar functionality within SMETS which sets a schedule for the Device to send a Billing Data Log Alert on a regular basis.

2.3.7 DSP Scheduled

A Service User can create a Schedule within the DCC that requires the DSP to send a Service Request on behalf of that Service User at regular intervals. The create Schedule response includes the DSP Schedule ID.

In line with the Schedule, the DCC Data Systems creates a Service Request and sends it to the relevant Device. The Device returns a Service Response and the DCC sends this Response, plus the DSP Schedule ID, to the Service User that created the Schedule.

Note that there are restrictions on what types of Service Request can be scheduled by the DSP (see section 9.4).

The rest of this section is additional information to provide guidance for Service Users.

As noted in section 5.1 (SRV 5.1 Create Schedule), for scheduling delivery of overnight readings based on data for a calendar day, Service Users are recommended to use the default setting for the start time.

The current DCC/DSP design for managing the DSP Scheduled Service Requests is as below:

- DSP creates a worklist containing all the scheduled Service Requests for each targeted Device per Service User with a run time (as specified by SRV 5.1) against each of the work items;
- DSP then works through the list, picking up any item from the list which has a run time in the past, at agreed rates per CSP/S1SP. DSP will select records using an approach which gives preference to those with older execution times for the same CSP/S1SP;
- the selection will not prioritise any Service User over another, and available capacity is distributed across ALL Service Users;
- On Demand messages for any Service User will always take precedence and will affect the delivery profile of requests/responses;
- the agreed rate for selection of schedules for execution is configurable on a per CSP/S1SP basis and should always be set to ensure that DCC is not operating at 100% capacity, so there should always be room to handle On Demand messages.
- it is not guaranteed that there will be an even spread across a particular Service Request or Service User;

- assuming Service User system capacity allows, there is no benefit for Service Users in staggering their Schedule Activation Times throughout the period; in fact, this could be detrimental since it means the DSP loses control over the scheduling. If Service Users stagger their activation times across the period, then we could end up with a lull in the processing because we can't action the next set of requests until 02:00 or 03:00 for example.

2.3.8 Device Alerts and SMETS1 Alerts

Unsolicited messages (Alerts) are generated by Devices and sent to the DCC. The DCC forwards these to the relevant Service User. The Alert recipient is defined in the message from the Device. The Device Alert list for SMETS2 or later Devices is mastered by GBCS.

SMETS1 Alerts are used to communicate Alert codes from a subset of GBCS Device Alert codes which are deemed also applicable to SMETS1 Devices, and additional Alert codes for SMETS1 Devices which are not in common with GBCS Alert codes. The SMETS1 Alert code list is mastered by DCC.

2.3.9 DCC Alerts and S1SP Alerts

The DCC Data Systems may generate unsolicited messages (DCC Alerts) which are sent to Service Users. Note that the DCC Alerts category includes Notifications to Service Users to inform them of actions taken within the DCC Data Systems.

Table 49 displays the list of DCC Alerts.

An S1SP Alert is a message originated by an S1SP and sent to the DSP for inclusion in a DCC Alert with a DCC Alert Code which indicates that it contains an S1SP Alert.

2.3.10 Firmware Distribution

SMETS2 or later

Although not explicitly a Mode of Operation, Services for delivery of new firmware images to Devices are a special use case for processing for both the DCC Data Systems and the CSP. Please note Firmware Distribution (Service References 11.1 and 11.4) is defined as Mode of Operation "DCC Only" in the rest of this documentation set.

Given the large volume of data involved for distribution of a firmware image, the responsibility for doing this is given to the CSP who may then optimise that distribution over the CSP SM WAN. For ESME, GSME and HCALCS this means there is a three stage process for delivering and applying a new firmware image to one or more Devices. This is shown in Figure 4.

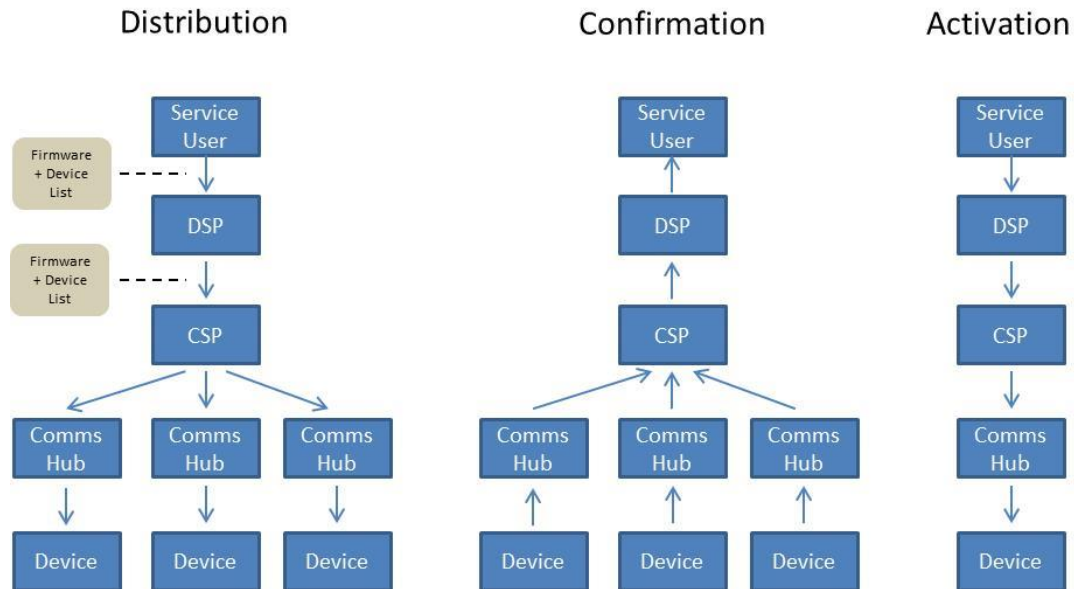


Figure 4: Firmware distribution process for ESME, GSME and HCALCS

The first stage is distribution of the new firmware image to one or more Devices. The DCC Service User sends the required firmware image and a list of Devices (Maximum Number of Devices = 50000) to the DSP in a standard Service Request. This firmware image and list of devices are then passed across to the CSPs for the CSPs to action. The CSPs will deliver the new firmware image to the relevant communication hub for each Device ready for onward transfer to the Device.

Upon completion of delivery of the firmware image by the Device, the Device will send a Device Alert to notify the DCC Service User that the firmware has been received.

Once a DCC Service User has received confirmation of successful delivery of the firmware image to a given device, then they are able to send an Activate Firmware command to that Device using the Activate Firmware Service Request.

For PPMIDs a separate activation request is not required. A PPMID automatically initiates the activation of a new firmware version upon successful receipt of a new firmware image. The PPMID will then notify its active Firmware Version to the DSP using a Device Alert and the DSP will forward this notification (via DCC Alerts) to all the Responsible Suppliers associated with its HAN. The process applicable to device type PPMID is shown in Figure 4.1 below.

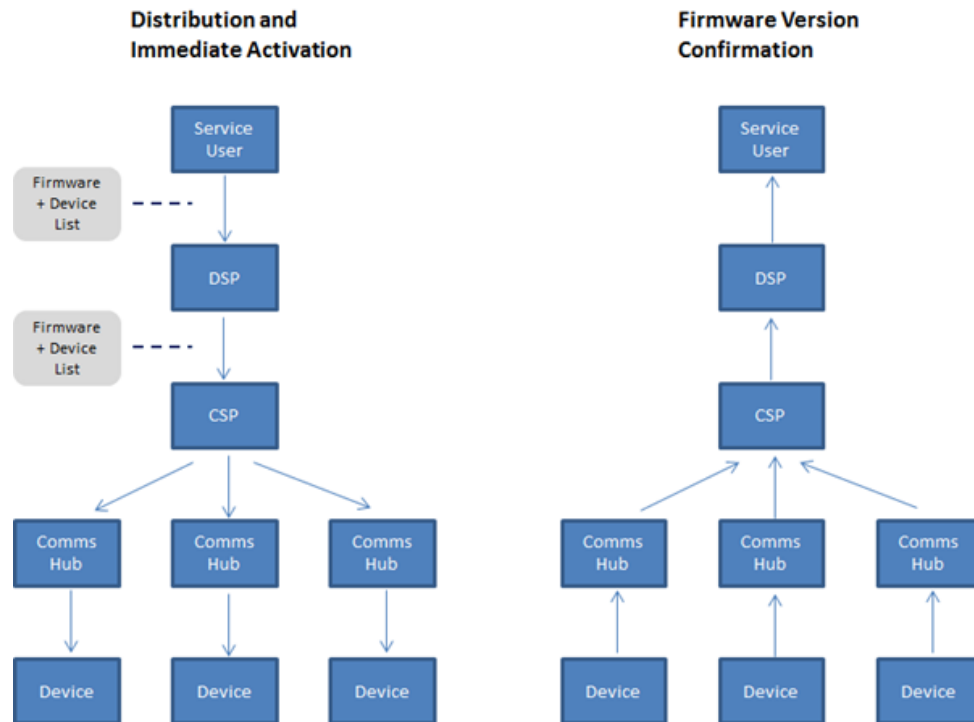


Figure 4.1: Firmware distribution and activation for PPMID

For SMETS2 Devices, after a firmware image distribution has been initiated using the Service Requests 11.1 (for ESME, GSME and HCALCS) or 11.4 (for PPMID), the Service Users will be notified of its progress through different stages of processing within DCC Data systems. The following table lists the processing statuses related to firmware distribution and activation, and see Appendix 15 – Firmware Distribution Tracking State Diagram for a diagram showing valid progressions between Firmware Distribution Tracking states.

Processing Stage	Processing Status	Description	Notification Mechanism
Processing within DSP	Rejected by DSP	DSP validation checks failed, with one of the following reasons: <ul style="list-style-type: none"> 'Invalid' 'Not Commissioned' 'Not Applicable Firmware' 'Quarantine Reject' 'Invalid GBCS Version' 	Synchronous Response to SR 11.1/11.4
	Accepted by DSP	DSP validation checks successful	
Processing within CSP	Not Accepted by CSP	CSP validation checks failed or there is a communications failure with the CSP, with one of the following reasons: <ul style="list-style-type: none"> 'Checksum provided did not match the firmware image' 'Invalid delivery point' 'Firmware image provided is too large' 'Unable to deliver to CSP' 'No firmware validation report' 'Incomplete request' 	DCC Alerts N18, N19, N20, N22 or N23

Processing Stage	Processing Status	Description	Notification Mechanism
	Approved for Distribution	CSP Validation Checks Successful	DCC Alert N59 ¹ , sent to other supplier only ³
	Failed CH Transfer	Delivery to Comms Hub by CSP Failed. Only set if the previous status reported was 'APPROVED_FOR_DISTRIBUTION'.	DCC Alert N60 ¹ .
	Successful CH Transfer	Delivered to Comms Hub by CSP. Only set if the previous status reported was 'APPROVED_FOR_DISTRIBUTION'.	DCC Alert N61 ¹ .
Processing Within HAN	Not Delivered at HAN	Delivery to target Device by the Comms Hub failed, with one of the following GBCS reason codes: <ul style="list-style-type: none"> 'imageDiscarded' (1) 'hardwareVersionMismatch' (2) 'fileTransferFailure' (3) 	DCC Alert N62 ¹ Information from GBCS Alert Code 0x8F89 indicated by one of the following TransferResponseCodes: <ul style="list-style-type: none"> FirmwareImageDiscarded - where the Firmware is discarded at the Comms Hub HardwareVersionMismatch - where the Firmware is rejected due to hardware version mismatch by the Comms Hub. FileTransferFailure - where the Comms Hub failed to deliver to the target Device
	Successful HAN Transfer	Delivered to the target Device by the Comms Hub successfully	DCC Alert N62 ¹ Information from GBCS Alert Code 0x8F8A indicated by TransferResponseCode: <ul style="list-style-type: none"> FileTransferSuccess
		Received (and validated) by the device.	GBCS Alert code 8F1C or 8F72 from ESME, GSME or HCALCS reporting the result of validation of the firmware.
Device Activation	Firmware Activated	For PPMIDs the firmware image activation happens upon its receipt, and successful activation is indicated by GBCS Device Alert 0x8F8B with Activate Image Result Code <i>ActivationSuccess</i> (0) Set with reason '8F8B Alert received'	DCC Alert N39 ² GBCS Alert Code is 0x8F8B (Applicable only for PPMIDs)

¹ Recipients that are on a version of DUIS earlier than 5.0 will receive an N999 Alert.

² Recipients that are on a version of DUIS earlier than 5.0 will receive the details of the 0x8F8B Device Alert, but without the activation outcome. SRV11.2 can be used to determine the firmware currently on the device

³ Applies only to SMETS2 PPMIDs

Processing Stage	Processing Status	Description	Notification Mechanism
		For ESME / GSME / HCALCS, firmware activation is done by sending the SR 11.3. Response has <i>ActivateImageResultCode</i> of <i>success</i> (SMETS1) or response reports the new firmware is active (SMETS2). Set with reason '11.3 response received'	Response to SR 11.3
		11.2 response reports the new firmware is active. Set with reason '11.2 response received'	Response to SR11.2 DCC Alert N49
	Activation Failed	For PPMIDs the firmware image activation happens upon its receipt, and successful activation is indicated by GBCS Device Alert 0x8F8B with <i>ActivateImageResultCode</i> <i>ActivationFailure</i> (1) Set with reason '8F8B Alert received'	DCC Alert N39 GBCS Alert Code is 0x8F8B (Applicable only for PPMIDs)
		For ESME / GSME / HCALCS, firmware activation is done by sending the SR 11.3. Response has an <i>Activate Image Result Code</i> indicating failure (SMETS1) or response reports a firmware version other than the new firmware (SMETS2). Set with reason '11.3 response received'.	Response to SR 11.3
Service Desk Intervention	Reset by DCC	Tracking status reset by DCC so that a new firmware distribution may be started	NA

Table 3.1 Firmware Distribution – Processing Statuses

SMETS1

The distribution of firmware to SMETS1 devices, including PPMIDs, follows the same distribution, confirmation and activation processing pattern as for SMETS2 non PPMID devices, with the SMETS1 Service Provider (S1SP) taking the role of the CSP. The status tracking DCC Alerts do not apply to SMETS1.

However, in some cases, SMETS1 devices activate the firmware as soon as it is delivered, therefore following the successful call of Service Request 11.1, the S1SP will generate a Firmware Verification Device Alert which is sent to the relevant DCC Service User. The Service User will then send an Activate Firmware Service Request to activate the firmware. On receipt of the Activate Firmware Service Request the S1SP will distribute the firmware which will activate automatically.

In addition to the Device Types for which Suppliers may update Firmware on SMETS2 or later Devices, the Lead Supplier of a SMETS1 HAN may also update the Firmware of a SMETS1 Communications Hub (which includes the associated GPF) or SMETS1 PPMID.

2.3.11 Change of Supplier

SMETS2 or later

The Service to support the Change of Supplier (CoS) process is a special use case for processing for the DCC Data Systems. In this case, a separate function within the DCC Total System called the CoS Party interacts with the main Access Control Broker (ACB) function to deliver an appropriately signed command to the Device. An overview of this interaction for a simple On Demand request is shown in Figure 5.

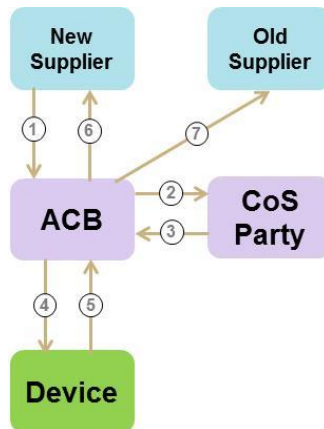


Figure 5: CoS On Demand Service Request processing

The new (gaining) Supplier sends a CoS Service Request to the DCC (step 1) which is acknowledged and processed by the ACB function. The ACB function then passes the request to the CoS Party function (step 2) which is responsible for creating a signed GBCS pre-command for the Device and returning it to the ACB (step 3). The ACB adds a MAC and sends the command to the Device (step 4) and receives a response (step 5). This response is then delivered to the new supplier (step 6) and the old (losing) supplier is notified of completion of the process via a DCC Alert N27 (step 7).

It is expected, however, that most CoS Service Requests will be Future Dated and in this case there is a further elaboration of the processing as shown in Figure 6.

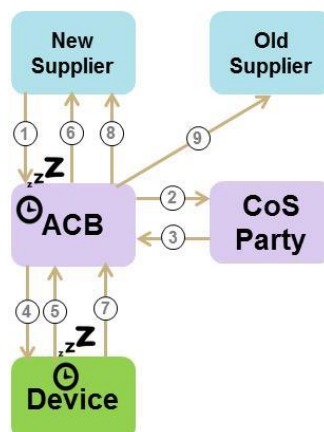


Figure 6: CoS Future Dated Service Request processing

If the CoS Service Request is sent by the new supplier to the DCC (step 1) more than 24 hours in advance of the stated Future Dated execution time or, (post CSS) the Registration has not reached Secured Active status, then the ACB function will hold this request until the time reaches 24 hours before the execution time³. At this point the ACB will schedule this request for processing and, when actioned, will forward the request to the CoS Party (step 2) and receive a signed future dated pre-command in return (step 3). The ACB will add a MAC and then deliver the signed future dated command to the Device (step 4) and receive a response confirming receipt by the device (step 5). This confirmation response is delivered to the new supplier (step 6). At the desired execution time, the Device will execute the command and send an execution response to the ACB (step 7). This execution response is then delivered to the new supplier (step 8) and the old supplier is notified of completion of the process via a DCC Alert N27 (step 9).

³ If a Secured Active status update is not received then shortly before the execution time the request will fail with ResponseCode E4.

If the CoS Service Request is sent less than 24 hours before the stated Future Dated execution time and, (post CSS) the Registration has already reached Secured Active status, then the ACB function will not delay the passing of the request to the Cos Party (steps 1 to 2) but thereafter the processing is exactly the same as described above.

SMETS1

SMETS1 devices do not hold any Supplier certificates and therefore there is no need to support the full Change of Supplier (CoS) process as DCC operates for SMETS2 devices. However, the Service Request associated with the Change of Supplier process (SR6.23 - Update Security Credentials (CoS)) is supported for SMETS1 devices in order to allow the DCC Data Systems and the relevant SMETS1 Service Provider to track the specific DCC Service User ID that the Supplier intends to use with respect to that device.

Please note that this Service Request is a DCC Only Service Request and the sending of this Service Request to the DCC does not result in any interactions with the target Device ID as specified within the Service Request. The DCC retains security credential information associated with the Device, as defined in the SMETS1 Supporting Requirements Document.

For SMETS1 devices, Service Requests follow the same pattern as described for SMETS2 devices above, except that

- The CoS Party does not create (and ACB does not validate) a signed GBCS pre-command.
- For SMETS1 Devices a CoS Service Request is treated as pure Future Dated (DSP), rather than using the hybrid approach described above for SMETS2 or later Devices. The sending of the Service Request to the S1SP will be triggered by the DCC Data Systems when the CoS execution date and time is reached.

As with SMETS2 or later Devices, when the CoS is completed the old (losing) supplier is notified of completion of the process via a DCC Alert N27.

2.3.11.1 Move to Enduring Change of Supplier

The Transitional Change of Supplier (TCoS) solution is being replaced by the Enduring Change of Supplier (ECoS) solution. The description above applies to both versions and this section explains the differences between the two solutions.

Each device that holds Supplier credentials has CoS Party credentials to support replacement of the Supplier credentials. These credentials currently all belong to the TCoS Party; over time the TCoS credentials will be replaced with ECoS credentials. Once the ECoS Party starts operation, new devices will be manufactured with ECoS credentials. Once all devices in the supply chain have ECoS credentials and all installed devices have had TCoS credentials replaced with ECoS credentials then the TCoS Party will be decommissioned.

Once the ECoS Party is in operation, the user experience will depend on whether the device they are sending the CoS Service Request to has TCoS or ECoS credentials. Further, all SMETS 1 CoS Service Requests will be sent to the ECoS Party.

The following changes will apply

- The check that the Service User is the Registered Supplier for the device will additionally be carried out against the Market Participant Identifier that is included within the certificate that is used to sign the CoS Service Request
 - On error E062306
- The DSP will determine the owner of the CoS certificate held in the transitionalCoS Trust Anchor Cell (slot 10) on the device according to the SMI

- The DSP will check that the identified party is an active CoS Party
 - On error E062305
- Where that party is the ECoS Party then the DSP will pass the request to the ECoS Party for processing.
 - On error E66, E67, E68, E69 or E71 will be returned using DCC Alert N26
 - The ECoS Party may generate a notification to the Service User, this will be delivered as DCC Alert N63
- Where that party is the TCoS Party then the DSP will pass the request to the TCoS Party for processing.
- After the CoS Party (either ECoS or TCoS) performs its processing and returns the request to the DSP, the DSP will carry out anomaly detection checks
 - On error the request is discarded (no quarantine), E70 will be returned using DCC Alert N26.

Where the Service User is using a version of DUIS prior to 5.1 then the response codes will be reported as follows:

DUIS 5.1 or later Response Code	Prior to DUIS 5.1 Response Code
E062306	E4
E66, E67, E68, E69, E70, E71	E19
E062305	E19

2.3.12 Power Outage Alerts

SMETS2 or later

To provide Network Operators with visibility of power outage events at customer premises, the DCC solution provides facilities to notify both power outage events and power restore events to the Network Operator.

Power Outage alerts are generated at the Comms Hub when power is lost and are notified via the CSP systems if the outage duration is greater than 3 minutes. The CSP systems notify the DSP via a dedicated power outage API and the DSP generates a DCC Alert AD1 for each Comms Hub that has been notified.

Power Restore events are recorded at the ESME and are notified via a GBCS Device Alert. There are different alert codes depending on the duration of the power outage and the phase that suffered the outage. In particular, the ESME will notify power restore events of less than 3 minutes as well as power restore events of greater than 3 minutes.

The overall processing for Power Outage and Power Restore alerts is shown in Figure 7.

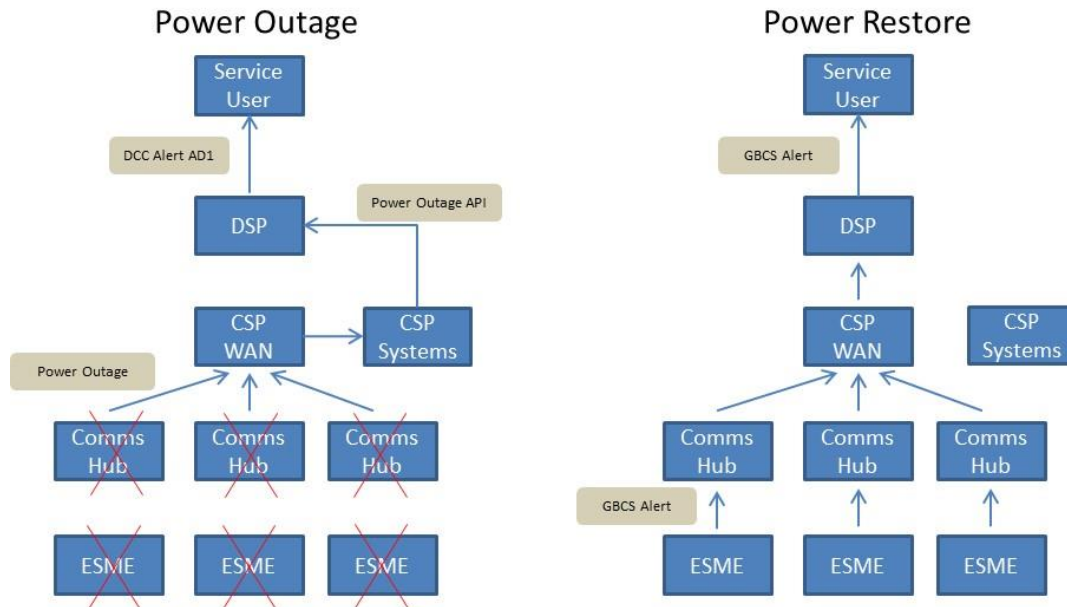


Figure 7: Power Outage and Power Restore alerts

As an exception to the above processing, an operational issue has been discovered where certain instances of a particular ESME device will cause power to be lost to the Comms Hub during the activation of new firmware on that ESME. This causes the Comms Hub to generate a Power Outage alert which is then notified all the way onwards to the Network Operator.

To prevent these spurious Power Outage alerts from reaching the Network Operator the DSP will track firmware activation requests to this particular set of ESME devices and will suppress any Power Outage alert from the associated Comms Hub that notifies an outage which started within [30 minutes] of the firmware activation.

2.4 Web Services

The technical implementation of the DCC User Interface is provided by using web services to allow Service Requests and Responses to be sent between the DCC Data Systems and the systems of the DCC Service Users.

To process Service Requests, there are three web services provided by the DCC Data Systems as follows:

- Transform Service – for SMETS2 or later Devices, a synchronous communication mechanism for transformation of Critical Service Requests into GBCS Format and the returning of a Pre-Command to the DCC Service User; for SMETS1 Devices, a SMETS1 Critical Service Request sent to this service is re-directed to the Send Command Service and follows the asynchronous communication mechanism for that service.
- DCC Only Service – a synchronous communication mechanism to process DCC Only Service Requests or a request for a Command to be returned by the DCC to the DCC Service User to be locally applied (via a Hand Held Terminal).
- Send Command Service – an asynchronous communication mechanism to which a DCC Service User must send any Non-Critical Service Request, Signed Pre-Command or Non-Critical SMETS1 Service Request where the DCC Service User wishes the DCC only to send the associated Command to the Device specified in the message.

See section 2.10 for more details of differences in behaviour for SMETS1 Devices.

The Transform and DCC Only web services follow a synchronous processing pattern and return Service Response data to DCC Service Users upon completion of the web service call.

The Send Command web service also completes synchronously and returns a response, but this response simply provides an acknowledgement of acceptance of the Service Request by the DCC. The Service Response from the Device is then delivered asynchronously to the DCC Service User.

To receive asynchronous Service Responses and Alerts, the DCC Service User system must implement a web service as follows:

- Receive Response Service – a service to receive Service Responses and Alerts from the DCC Data Systems.

The Receive Response web service returns an acknowledgement of acceptance of the Service Response or Alert upon completion of the web service call. This same web service is used for receipt of both DCC Alerts and Device Alerts by DCC Service Users.

Figure 8 below shows the Transform and DCC Only web services. Please note Correlate has been added to illustrate the End to End process, but it is not part of the Web Service.

Figure 9 shows the Send Command and Receive Response web services. The Receive Response Service Ack dotted line represents the HTTP acknowledgement of the Web Service call. Please note Parse has been added to illustrate the End to End process, but it is not part of the Web Service.

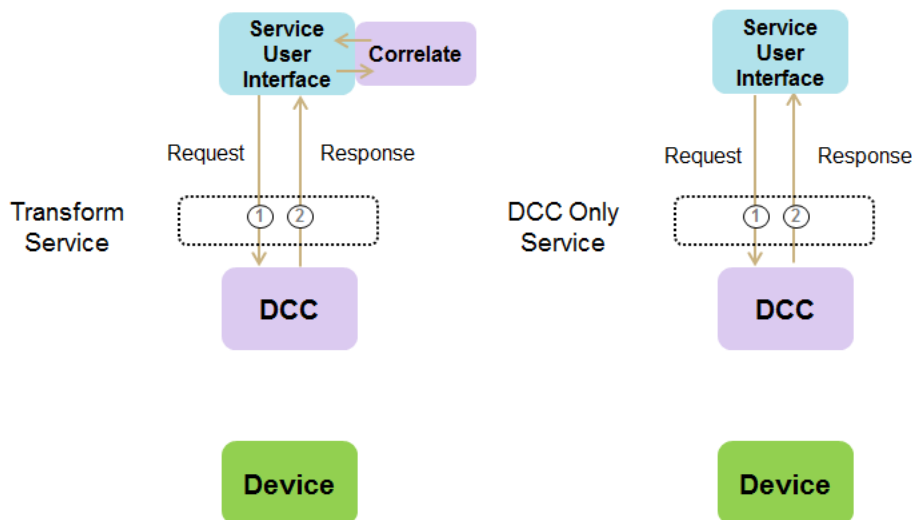


Figure 8 Transform and DCC Only services

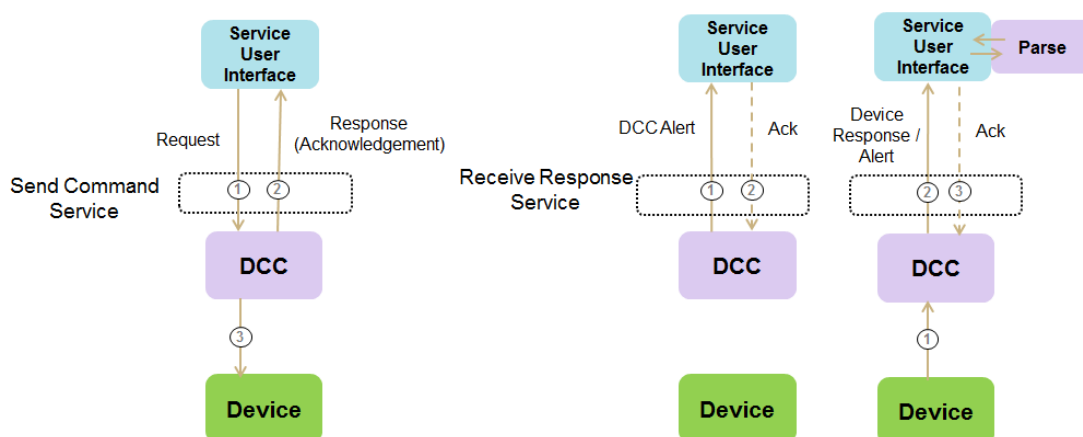


Figure 9 Send Command and Receive Response services

As an extension to the basic processing described above, Commands for local delivery are returned to the DCC Service User either as the response to the DCC Only service (if the command is not being sent to the Device), or they are returned asynchronously via a separate response delivered to the Receive Response service (if the command has been requested to be sent to the Device via the Send Command service). See section 3 for more details on these processing patterns.

For the purposes of supporting the measurement of Target Response Times, the concepts of 'receipt' and 'sending' are to be interpreted by Service Users and the DCC in the following manner:

For the Transform and DCC Only Services the DCC Data Systems shall record the date and time of Receipt of the Service Request from the DCC Service User and the date and time of Sending of the Service Response to the DCC Service User by those services.

For the Send Command Service the DCC Data Systems shall record the date and time of Receipt of the Service Request from the DCC Service User by the Send Command Service and then subsequently record the date and time of Sending of the Service Response to the DCC Service User's Receive Response Service.

For Device and DCC Alerts the DCC Data Systems shall record the date and time when the Alert is received/generated and the date and time of Sending of the Alert to the DCC Service User's Receive Response Service.

2.5 Use of the DCC User Gateway Network

Physical connectivity to the DCC Data Centres is provided by a dedicated private network which is referred to as the DCC User Gateway Network. The DCC is responsible for providing this network and for making available network services to allow DCC Service User organisations to obtain connectivity to the network. More details on the DCC User Gateway Network and connection mechanisms are contained in section 14.

DCC Service Users make use of this network to obtain secure connections to the DCC Data Systems and thus to gain access to the web services described in this Design Specification (see section 0).

An exception to this is an out of band mechanism which allows non domestic Energy Suppliers who do not wish to use DCC Services to opt out of the DCC Services. This mechanism provides the same details as contained within the "Service Opt Out" Service Request (Service Reference 8.5) but is delivered to the DCC outside of the DCC User Gateway Network.

2.6 Time

The DCC User Interface and DCC Data Systems shall use UTC (Coordinated Universal Time) for all Requests and Responses. All references to Time or Date-Time in this DUGIDS will use UTC. To avoid ambiguity, this should be indicated by using the trailing Z in the XML Date and Time formats.

For example;

xs:date data types shall be formatted as <Date>2015-12-25Z</Date>

xs:time data types shall be formatted as <Time>09:30:10.00Z</Time>

xs:dateTime data types shall be formatted as <DateTime>2015-12-25T09:30:10.00Z</DateTime>

All references to time for the DCC User Interface and DCC Systems shall use time with a format precision to 100th of a second.

Where time values are included within the “Body” of a Service Request, the values shall be populated in line with GBCS time definitions for the associated GBCS Use Case to the Service Request being sent by a User.

The DCC User Interface shall only process time values within Service Requests representing whole seconds for which the associated GBCS Use Case results in the creation of an ASN.1 Command as defined by GBCS, with 00 to represent whole second values as shown in the example above. The DCC User Interface shall process time values within Service Requests representing 100th of a second precision for which the associated GBCS Use Case results in the creation of a DLMS COSEM Command or a GBZ Command as defined by GBCS, with a value of 00 to 99 inclusive to represent 100th of a second precision.

Where time values are returned within Service Responses, the 100th of a second precision of time values will be populated where that precision is available otherwise it shall be populated with a value of 00.

For the avoidance of doubt all date-times specified within Service Requests by the User shall not be validated unless explicitly stated within the Service Request definitions.

For SMETS1 Devices, time values in Service Requests and Service Responses also shall be populated in line with the standard DUIS time definitions, in that all references to time shall use UTC time with a format precision to 100th of a second, unless otherwise directly stated.

2.7 Smart Metering Inventory – Device Status

The Smart Metering Inventory maintains Device Status. Some of the Service Requests submitted over the DUIS interface will change the Status of Devices in the Smart Metering Inventory (SMI). Individual Service Requests define what changes are to be applied to the SMI on successful completion. See Appendix 8 – SMI Device Status – Entity Lifecycle Diagrams for a summary of these changes.

For SMETS1 Devices accessed via DCC the DCC Data Systems shall maintain Device Status in the same ways as for SMETS2 or later Devices except that the following Device Statuses shall not apply:

- Whitelisted
- Recovery
- Recovered

See Appendix 8 – SMI Device Status – Entity Lifecycle Diagrams for SMETS1-specific diagrams.

2.8 Handling multiple GBCS versions

The DCC User Interface and DCC Data Systems must be able to support multiple versions of GBCS across the mixed estate of devices that will exist at any point in time.

Backward compatibility of GBCS Use Cases (unless mandated otherwise for a specific GBCS Use Case) will be supported, such that a new version of the DCC User Interface will support message codes for devices with older GBCS versions as well as the devices with the latest GBCS version.

Forward compatibility, meaning use of an older version of the DCC User Interface with a device running a newer GBCS version, will be supported for GBCS use cases which are in common between the older and newer GBCS versions. It will not be possible for a Service Request Variant (SRV) issued in an older version of the interface to be transformed to a GBCS use case/message code which was newly introduced in a later GBCS version.

The following diagram illustrates the basic principles of compatibility between versions of the DCC User Interface and versions of GBCS. SMETS1 devices are also shown on this diagram for completeness; see section 2.10 for more details of using SMETS1 devices via DUIS.

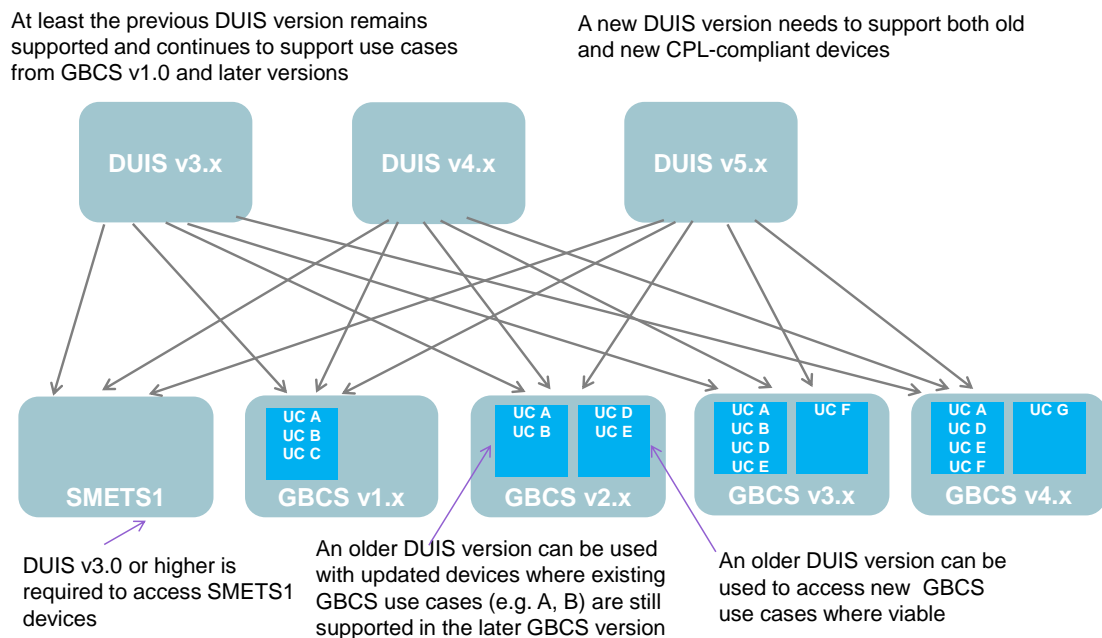


Figure 10 GBCS, SMETS1 and DUIS compatibility

NOTE: There are some specific exceptions to the above rule about not providing forward compatibility for new GBCS Use Cases, e.g. certain Service Requests in DUIS v3.0 can access new Use Cases in GBCS 4.0, but only where those Use Cases continue to support the functionality that is available in DUIS v3.0. This forward compatibility is described, where applicable, in the relevant Service Request Definition Annex.

2.9 Upgrading the DCC User Interface

This document describes the behaviour of the DCC User Interface up to version 5.2. To access version 5.2, DCC Service Users will use URLs as described in section 10.2.

Earlier DCC User Interfaces will also be supported where indicated in section 9.5.4 and will remain available at the existing URLs.

It is assumed that a DCC Service User will only use one version of the DCC User Interface at any point in time.

2.10 SMETS1

SMETS1 devices are supported by the DCC Data Systems in a similar fashion to SMETS2 or later devices. SMETS1 Service Requests are sent using the same Service Request definitions and SMETS1 Responses are sent using the same Service Response definitions. The most significant difference for SMETS1 devices is that the DCC Data Systems does not transform Requests and Responses to/from GBCS format.

Instead, the DUGIDS format Service Request is sent to the relevant SMETS1 Service Provider who is then responsible for transforming the Request to the required SMETS1 command format and sending it to the device. The SMETS1 Service Provider then receives the SMETS1 format response and transforms the response into a DUGIDS format SMETS1 Response which is returned to the DCC Data Systems and delivered to the DCC Service User as a Countersigned SMETS1 Response. This processing pattern is shown in Figure 11 below.

A similar pattern is followed for SMETS1 Device Alerts which are processed by the SMETS1 Service Provider and transformed to a DUGIDS format for sending to the DCC Data Systems and then onwards to the DCC Service User as a Countersigned SMETS1 Alert.

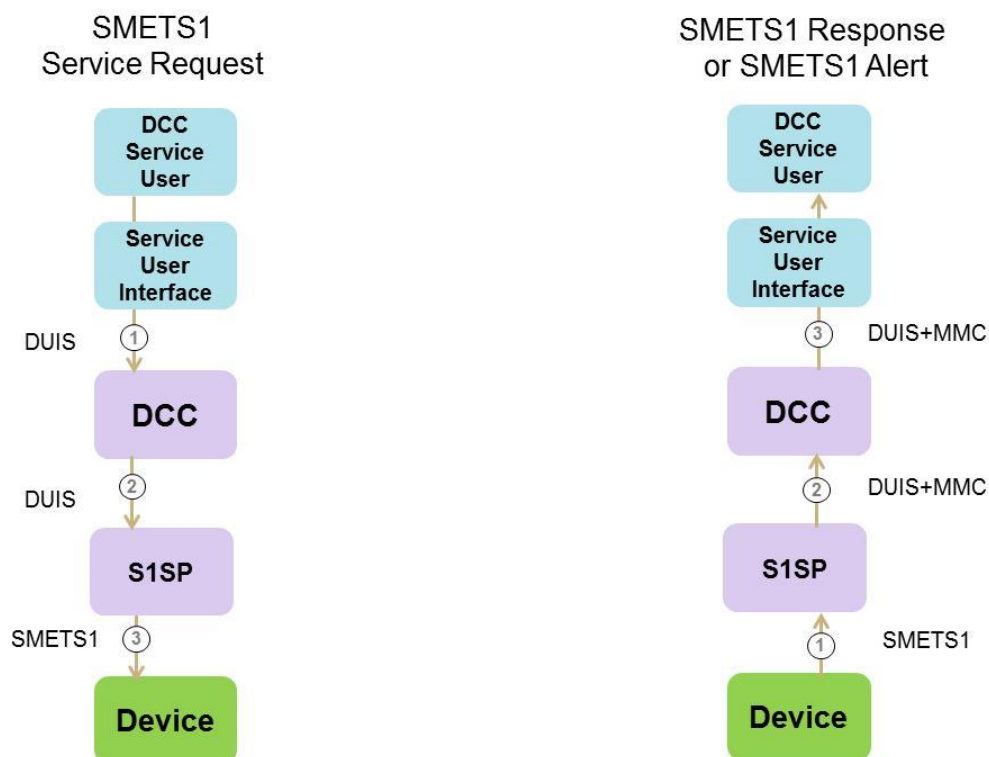


Figure 11 SMETS1 Service Request Processing

There is some difference in the processing pattern for SMETS1 Critical Service Requests compared to SMETS2 devices. SMETS1 Critical Service Requests should be submitted to the Transform Service with Command Variant 4, however instead of returning a Signed Pre-Command, the DCC will process the Service Request with the equivalent behaviour to a Non-Critical Command Variant 1 request to the Send Command Service.

References to the delivery, scheduling and retry of sending of Commands to a Device, where equivalent behaviour is supported by DCC for SMETS1 Devices, shall apply to the sending of instructions to a SMETS1 Device.

Service Users must use DUIS v3.0 or later for DCC SMETS1 Device functionality.

There are some validation conditions specific to SMETS1 Device functionality, including generic validation errors (e.g. E61) and validation conditions to specific Service Requests where appropriate.

2.11 APCs and SAPCs

2.11.1 Auxiliary Proportional Controllers

An Auxiliary Proportional Controller (APC) is a type of connected load control device that enables variable load as a percentage from 0-100%, rather than on or off as with ALCS and HCALCS.

In addition an APC may support two-directional load control, including input from the controlled load to the meter (i.e. export of energy) as well as output from the meter to the controlled load (i.e. import of energy).

From GBCS v4.0 the term “Auxiliary Controller” is a generic term for a connected load control Device, which may be an APC, ALCS or HCALCS.

ESME Devices of GBCS v4.0 or later may support up to 5 Auxiliary Controllers which may be any combination of APC, ALCS or HCALCS.

The presence of an APC in an ESME is indicated by the use of ESME Variant F, and this may occur in combination with other additional ESME Variants such as boost buttons.

As with other ESME Variant information, the CPL will record only variant A, B or C, and additional ESME Variant combinations are recorded for individual Devices when they are pre-notified using Service Request 12.2.

2.11.2 Standalone Auxiliary Proportional Controllers

A Standalone Auxiliary Proportional Controller (SAPC) is a Device which conforms to the requirements of SMETS2 section 9 (v5.0 or later).

SAPC Devices are implemented as Device Type ESME in DCC Data Systems and the CPL, and will be treated in the same way as other ESME devices for access control.

SAPCs will be implemented only as single element ESME Variant A, and will not exist in twin element or polyphase versions (ESME variant B and C respectively).

SAPCs will be identified by the inclusion of G in the ESME Variant combination, and may be in combination with other additional ESME Variants such as boost buttons.

As with other ESME Variant information, the CPL can record only variant A, B or C, and additional ESME Variant combinations are recorded for individual Devices when they are pre-notified using Service Request 12.2.

As with other ESME Devices conforming to GBCS v4.0 or later, an SAPC may support up to 5 Auxiliary Controllers, which may be any combination of APC, ALCS or HCALCS.

SAPC Devices need to conform to a minimum subset of GBCS Commands supported by an ESME, but do not need to conform to all GBCS Commands that would need to be supported by an ESME that is not an SAPC. Where an SAPC receives an ESME GBCS Command that it does not support, it will reject the request by issuing a Device Alert 0x8F85 (GBCS Use Case ECS100).

An ESME conforming to GBCS v4.0 or later may or may not be an SAPC. In this document set, where the term ESME is used it covers SAPCs as well, whether SAPCs are specifically mentioned or not, though the term SAPC is also used explicitly in some places to add clarity.

2.12 Throttling of Alerts

Throttling of Alerts will be triggered where multiple occurrences of the same Alert Code from the same Device exceeds a threshold rate. Where throttling is in progress, Alerts from that Device will be consolidated and an Alert sent to the DCC Service User only once for every N Alerts received or when a configurable time period has expired since the last Alert was sent.

Settings for parameters such as the threshold rate, 1 in N delivery rate and the maximum time period for delivery will be maintained as configurable parameters within the DCC Data Systems and any changes to these parameters will be discussed and agreed with Service Users through the SEC Operations group.

Alert storm protection applies to Device Alerts (SMETS2), SMETS1 Alerts and DCC Alerts (where a DCC Alert is used to deliver an Alert from a Device).

However, some Alert codes are excluded from Alert storm protection. The exclusion list will be discussed and agreed with SEC Operations as with other parameters.

Where an Alert is subject to throttling, consolidated Alerts will include additional fields showing that the Alert which has been sent is Alert "X" of a throttled sequence, and that it is a consolidation of "Y" Alerts since the previous forwarded Alert. The presence of these fields indicates that throttling is active for the Alert Code in question on that Device.

The specification of where throttling information is included in XML formats is in this document section 9.3.2 (Device Alerts) and 9.3.3 (DCC Alerts), and Annex 19 section 19.4.1 (SMETS1 Alerts).

For XML samples showing the use of throttling in Alerts, see Annex 15 section 15.2.3 (Device Alerts and SMETS1 Alerts) and Annex 16 section 16.2.2 (DCC Alerts).

3 Command Variant

The Command Variant is a common data item included in all DCC Service User Requests to indicate to the DCC Data Systems if a Request has to be:

- transformed to a GBCS Command and returned to the DCC Service User for signing
- sent to the Device via the CSP network
- returned to the DCC Service User to be locally applied (via a Hand Held Terminal)
- sent to the Device via the CSP network and returned to the DCC Service User to be locally applied (via a Hand Held Terminal)
- executed by the DCC Data Systems.

The following sections 3.1 to 3.12 describe the use of Command Variant in connection with SMETS2 or later Devices. The use of Command Variant in connection with SMETS1 Devices accessed via the DCC differs in some respects, and these differences are described in section 3.13.

3.1 Interface Message Types

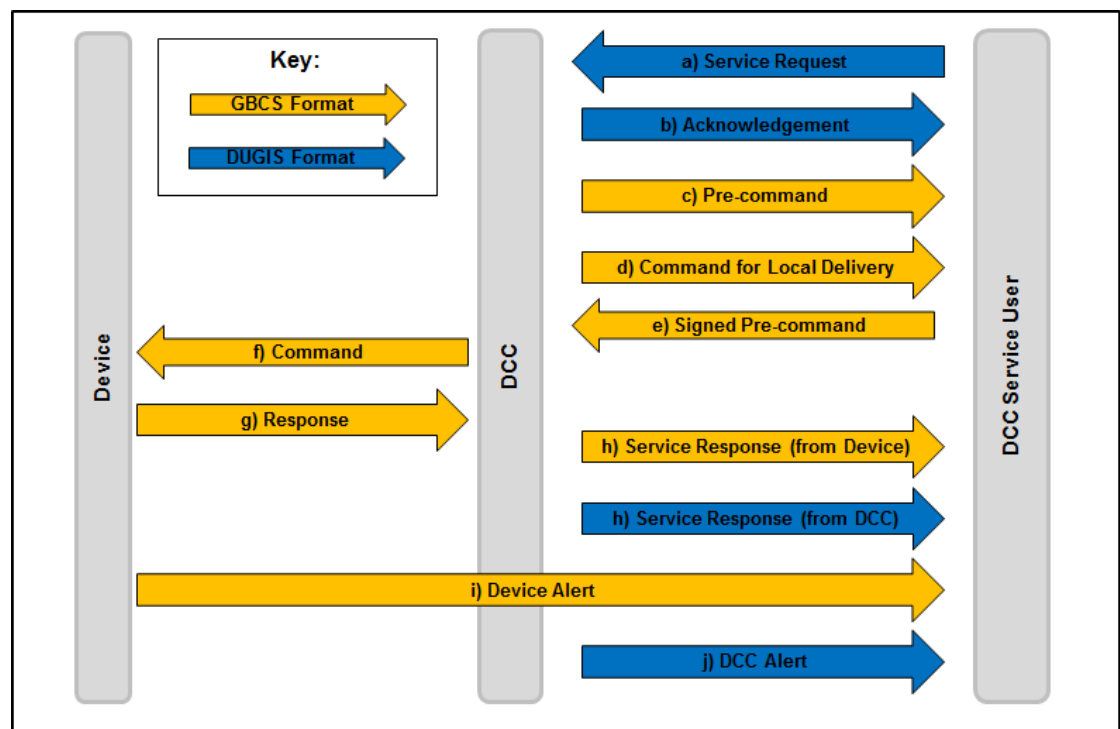


Figure 12 Interface Message Types – SMETS2 or Later

This diagram illustrates the message types supported by the interface.

a) Service Request. A request sent by a DCC Service User to be processed by the DCC Data Systems. Service Requests are listed in section 9.4;

b) Acknowledgement. Synchronous message sent by the DCC Data Systems to the DCC Service User, acknowledging receipt of a Non-Critical Service Request or Signed Pre-Command.

- It is returned when:

- Access Control is successful. In those cases where no other synchronous response is returned
- or Access Control fails. In all Access Control failure scenarios
- It isn't returned when one of the following is returned synchronously in place of the Acknowledgement message:
 - A Pre-Command
 - A Service Response (from DCC)
 - A Command for Local Delivery

c) Pre-Command. Synchronous message sent from the DCC Data Systems to the DCC Service User for digital signing. It includes:

- Command, in the format required by the GBCS (but excluding MAC headers/footers and signatures), prepared in response to a Critical Service Request
- and successful Service Request Acknowledgement

d) Command for Local Delivery. Synchronous or Asynchronous message sent from the DCC Data Systems to the DCC Service User. It includes: (Please note this definition differs from that in the SEC2 Consultation to align with the technical solution)

- Command, in the format required by the GBCS, to be applied locally to the Device
- and successful Service Request or Signed Pre-command Acknowledgement

e) Signed Pre-Command. Pre-Command that has been Digitally Signed by a DCC Service User in relation to a Critical Service Request;

f) Command. Communication sent by the DCC Data Systems to a Device, in the format required by the GBCS. Signed Pre-Commands become Commands once the DCC has applied a Message Authentication Code;

g) Response. Sent by the Device to the DCC Data Systems in reply to a Command;

h) Service Response. Synchronous or Asynchronous message sent by the DCC Data Systems to the DCC Service User, in response to a Service Request. Service Responses may be generated by Devices (in which case they will be in GBCS format), or generated by the DCC Data Systems (in DUIS format), depending on the type of response;

i) Device Alert. Asynchronous message forwarded by the DCC Data Systems in response to a problem or the risk of a potential problem identified by a Device (see GBCS); and

j) DCC Alert. Asynchronous message generated by the DCC Data Systems. It is sub-divided in 2 sub-types (see Table 49):

- Alert: Message generated in response to a problem or the risk of a potential problem (e.g. the receipt by the DCC Data Systems of an Alert from a Communications Hub)
- Notification: Message generated in response to an event (e.g. the decommissioning of a Smart Meter Device) triggered within the DCC Data Systems processing

The rest of this document will use the term Request to generically refer to Service Request and Signed Pre-Command messages sent by the DCC Service User to the DCC Data Systems and Response to generically refer to solicited Service Responses and unsolicited Responses (Device Alerts and DCC Alerts) sent to the DCC Service User.

3.2 Command Variant Types

The list of possible Command Variant values, their descriptions, etc. is as follows (see section 3.1 for Interface Message Types); note that this table only covers SMETS2 or later Devices (see section 3.13.2 for applicability to SMETS1 Devices):

CV Value	Command Variant Description	Input	Output	Processing Pattern for DCC Service User	Return to Service User	Delivery Over SM WAN
1	Non Critical Service Request to be sent to a Device via the CSP Communications network	Service Request	Command	Asynch	No	Yes
2	Non Critical Service Request to be returned to the DCC Service User for local delivery to a Device	Service Request	Command for Local Delivery	Synch	Yes	No
3	Non Critical Service Request to be sent to a Device via the CSP Communications network as well as a copy to be returned to the DCC Service User for local delivery	Service Request	Command and Command for Local Delivery	Asynch	Yes (Command for local delivery only)	Yes
4	Transform Service Request and return Pre-command to DCC Service User for Correlation	Service Request	Pre-command	Synch	Yes	No
5	Critical Signed pre command to be sent to a Device via the CSP Communications network	Signed Pre-command	Command	Asynch	No	Yes
6	Critical Signed pre command to be returned to the DCC Service User for local delivery to a Device	Signed Pre-command	Command for Local Delivery	Synch	Yes	No
7	Critical Service Request to be sent to a Device via the CSP Communications network as well as a copy to be returned to the DCC Service User for local delivery.	Signed Pre-command	Command and Command for Local Delivery	Asynch	Yes (Command for local delivery only)	Yes
8	Request a DCC Only Service	Service Request	Service Response (from DCC)	Synch	Yes	No

Table 4 Command Variant Values – SMETS2 or Later

Please note that there is a Command Variant 9 which is generated internally by the DCC Data Systems for DSP Scheduled Requests. This Command Variant value is N/A to Service Requests. Response Code E12 will be returned for Service Requests where the Command Variant is 9.

The following sections describe the message types and interactions for the different Command Variant Values. The Access Control failure scenario is applicable to all cases and is described separately (see section 3.11.1 for CV = 1, 2, 3, 4 or 8 Access Control failure and section 3.11.2 for CV = 5, 6 or 7 Access Control failure).

3.3 CV = 1 (Non-Critical Service Request – Send Command over SM WAN)

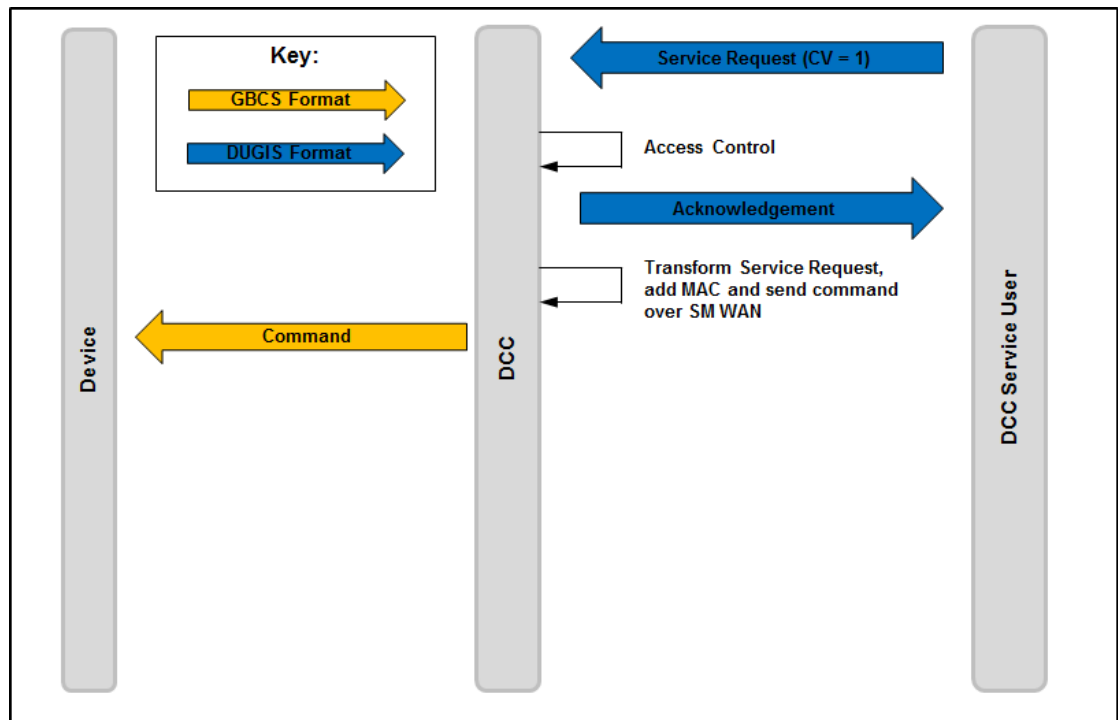


Figure 13 Command Variant = 1

Possible Service Responses:

- Service Response (from Device) if the Command is executed by the device
- Device Alert, if the Device rejects the Command, e.g. because it doesn't recognise the sender
- DCC Alert, if the Command fails to be delivered (see Table 49 DCC Alert Code N12)

3.4 CV = 2 (Non-Critical Service Request – Return Command for Local Delivery)

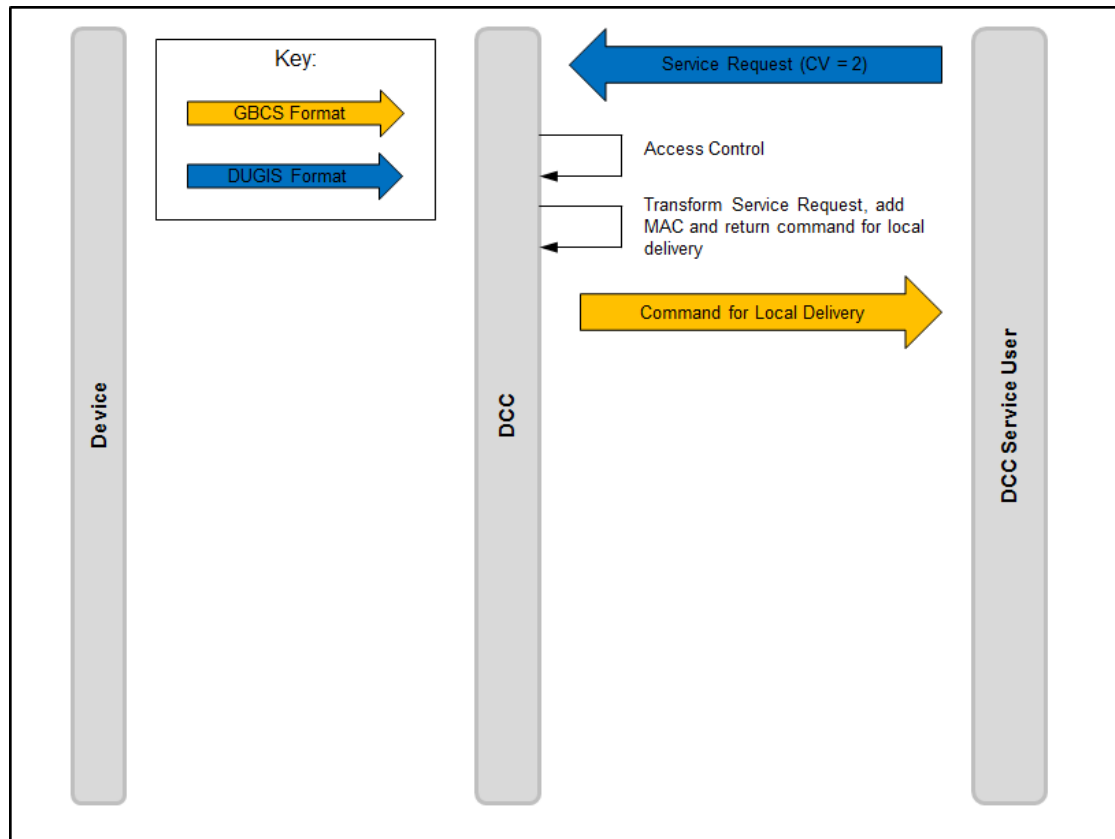


Figure 14 Command Variant = 2

Possible Service Responses:

- From DCC: Returning the Command for Local Delivery to the DCC Service User is the Service Response
- From DCC Service Users: After the Command has been applied locally, the DCC Service Users can upload the subsequent GBCS format response message from the Device to the DCC Data Systems via the "Return Local Command Response" (8.13) Service Request. Note that for certain Service Requests the DCC Service User **must** return the locally applied Command response to the DCC Data Systems. Please see Annex for a definition of Service Requests where this is required,
- From Device: If the SM WAN is available when the Device returns the Command Response to the Communications Hub during local delivery, it will be returned to the DCC Data Systems via the SM WAN channel and it will be processed as if the Command had been sent to the Device via the SM WAN. The DCC Data Systems will forward this message to the DCC Service Users as a Service Response (from Device).

3.5 CV = 3 (Non-Critical Service Request – Send Command over SM WAN and Return for Local Delivery)

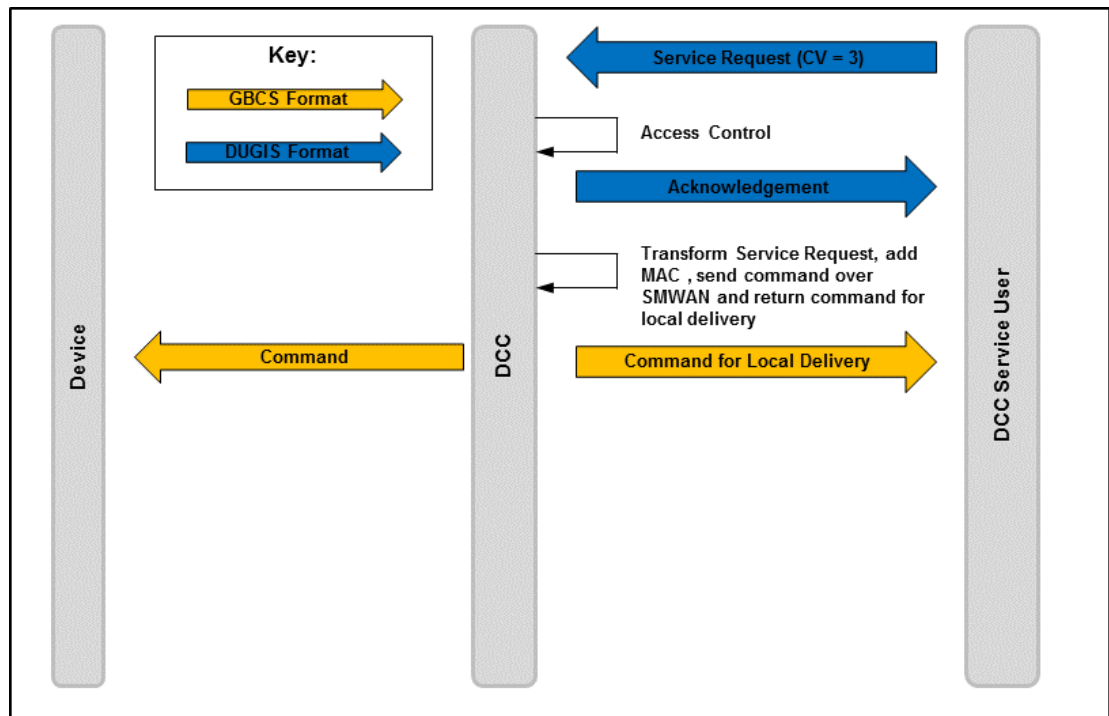


Figure 15 Command Variant = 3

Possible Service Responses:

- Command sent over SM WAN
 - Service Response (from Device) if the command is executed by the device
 - Device Alert, if the Device rejects the command, e.g. because it doesn't recognise the sender
 - DCC Alert, if the command fails to be delivered (see Table 49 DCC Alert Code N12)
- Command Delivered Locally
 - Returning the Command for Local Delivery to the DCC Service User is not the Service Response. The Service Users should only apply this command to the device if they receive no response to the Command sent over SM WAN. If the Command is delivered locally, its possible responses are as defined in section 3.4.

3.6 CV = 4 (Transform Service Request – Return Pre-Command)

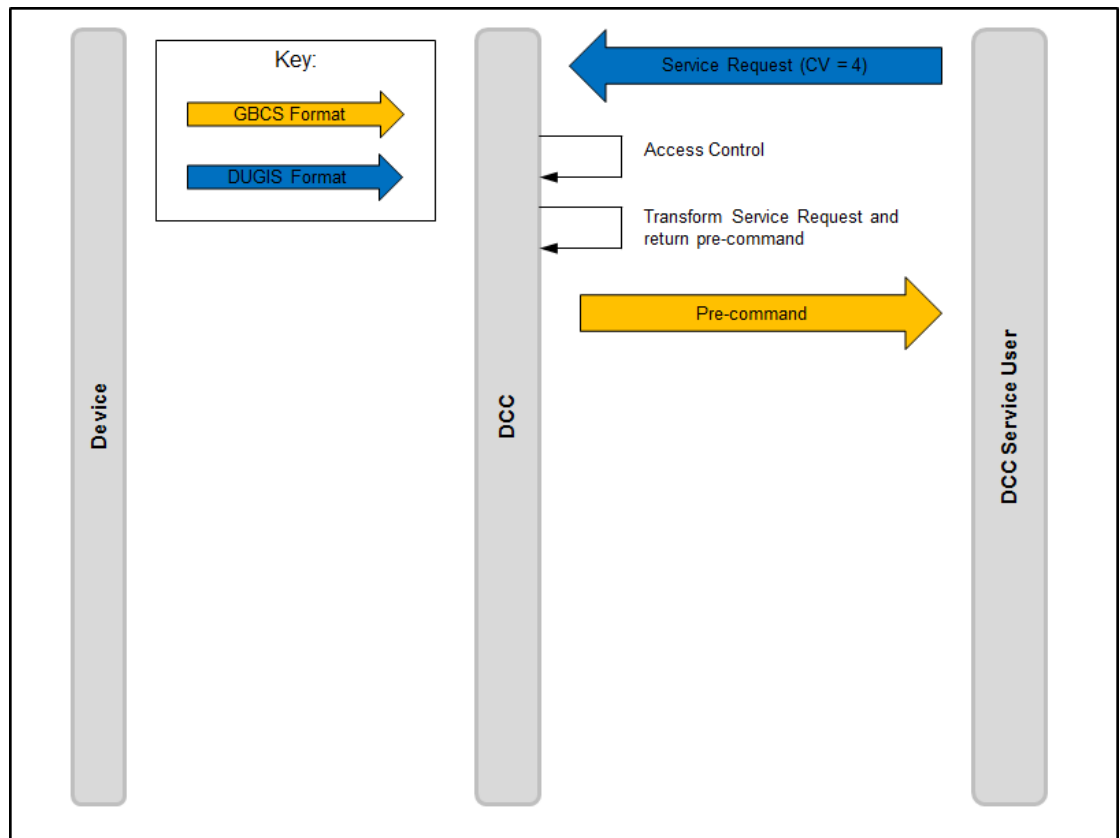


Figure 16 Command Variant = 4

Possible Service Responses:

- The Pre-command returned to the DCC Service User is the Service Response

3.7 CV = 5 (Signed Pre-command – Send Command over SM WAN)

The diagram includes the transformation of the Service Request to a Pre-command (CV = 4) as well as the CV = 5 itself.

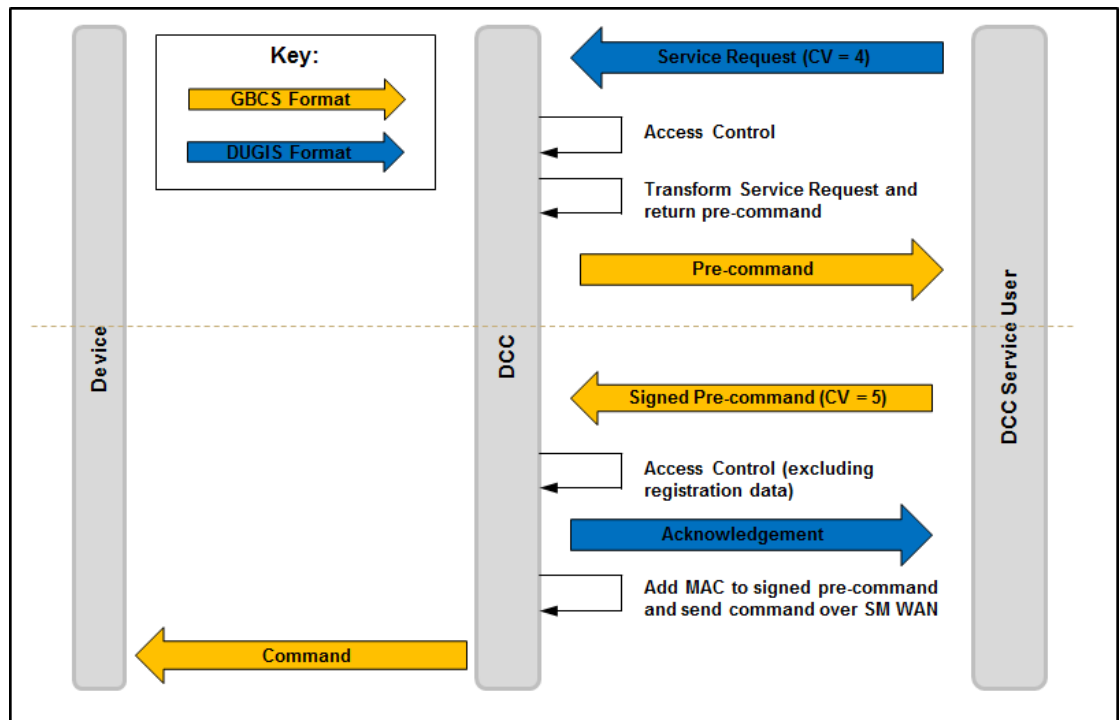


Figure 17 Command Variant = 4 and 5

Possible CV = 5 Service Responses (see section 3.6 for CV = 4 details):

- Service Response (from Device) if the Command is executed by the device
- Device Alert, if the Device rejects the Command, e.g. because it doesn't recognise the sender
- DCC Alert, if the Command fails to be delivered (see Table 49 DCC Alert Code N12)

3.8 CV = 6 (Signed Pre-command – Return Command for Local Delivery)

The diagram includes the transformation of the Service Request to a Pre-command (CV = 4) as well as the CV = 6 itself.

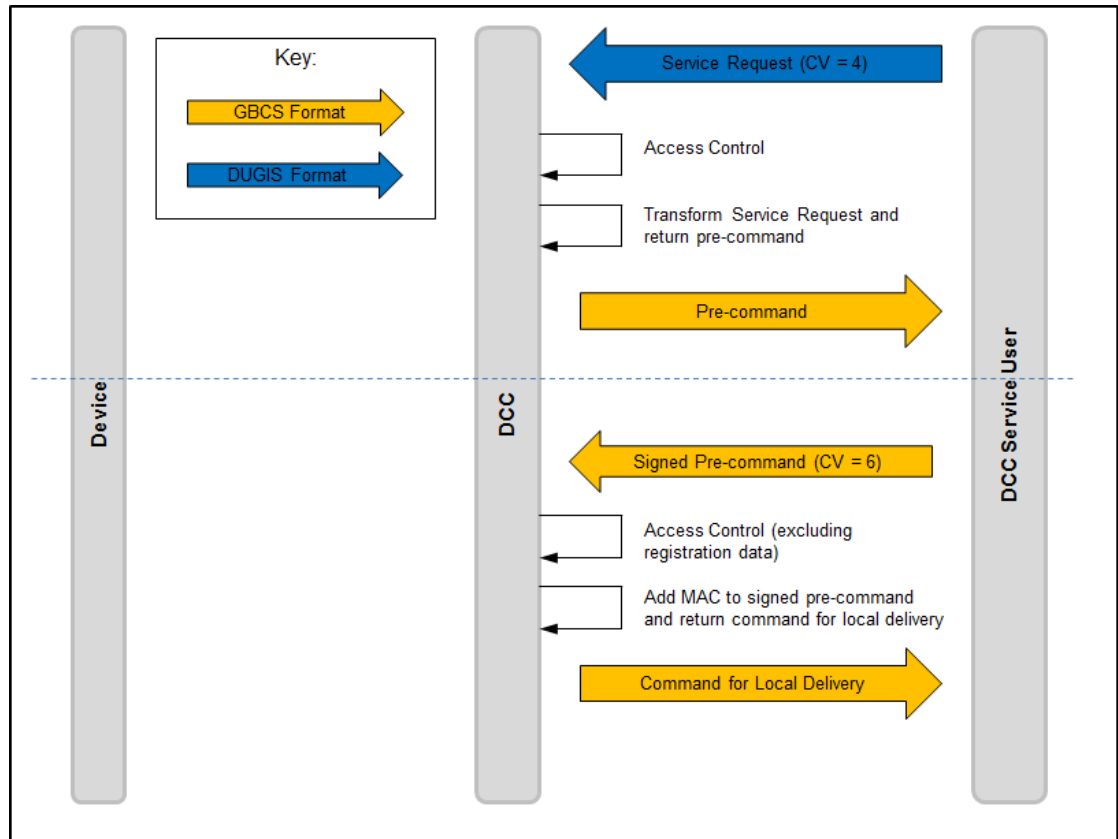


Figure 18 Command Variant = 4 and 6

See section 3.6 for CV = 4 Service Responses.

The Service Responses applicable to CV = 6 are those described in section 3.4.

3.9 CV = 7 (Signed Pre-command – Send Command over SM WAN and Return for Local Delivery)

The diagram includes the transformation of the Service Request to a pre-command (CV = 4) as well as the CV = 7 itself.

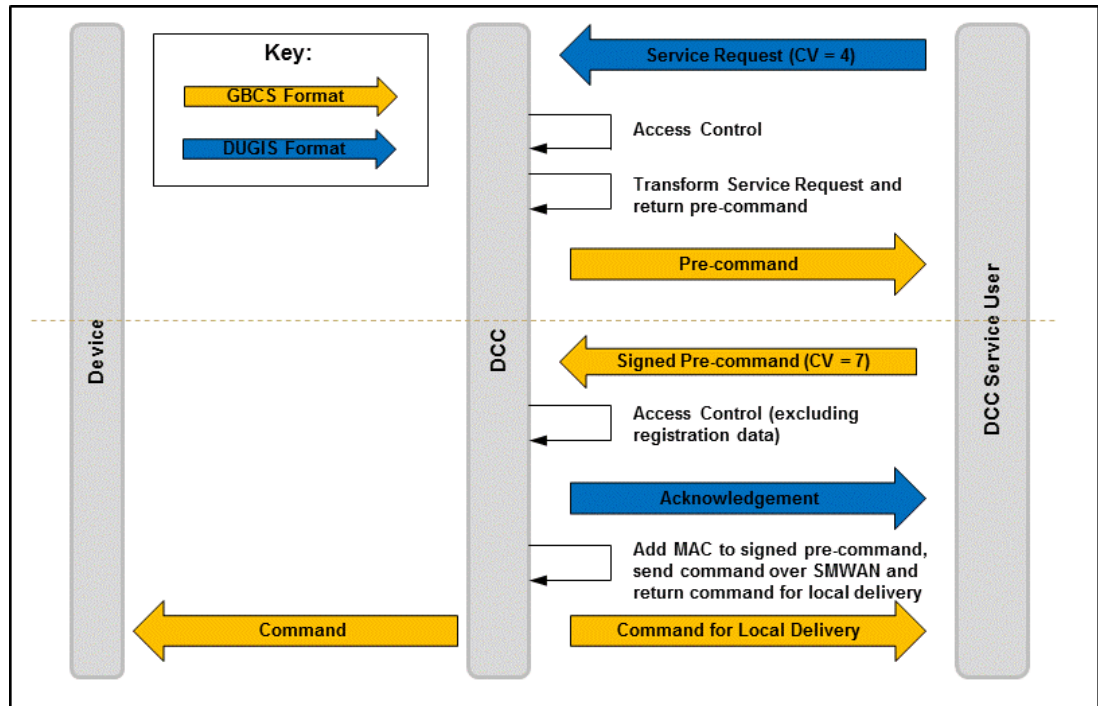


Figure 19 Command Variant = 4 and 7

Possible CV = 7 Service Responses (see section 3.6 for CV = 4 details):

- Command sent over SM WAN
 - Service Response (from Device) if the Command is executed by the device
 - Device Alert, if the Device rejects the Command, e.g. because it doesn't recognise the sender
 - DCC Alert, if the Command fails to be delivered (see Table 49 DCC Alert Code N12)
- Command Delivered Locally
 - Returning the Command for Local Delivery to the DCC Service User is not the Service Response. The Service Users should only apply this command to the device if they receive no response to the Command sent over SM WAN. If the Command is delivered locally, its possible responses are as defined in section 3.4.

3.10 CV = 8 (DCC Only Service Request – Service Response Returned)

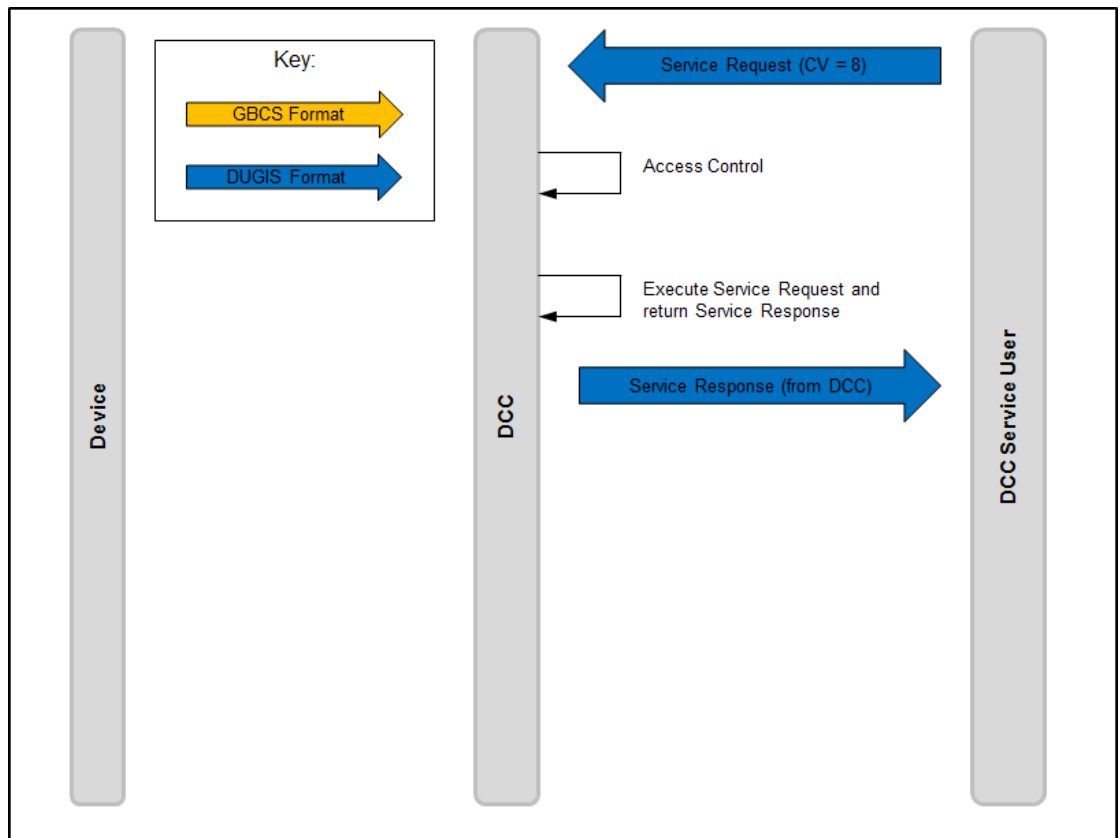


Figure 20 Command Variant = 8

Possible Service Responses:

- The Service Response (from DCC) is the Service Response

3.11 Access Control Failure

3.11.1 CV = 1, 2, 3, 4 or 8 Access Control Failure

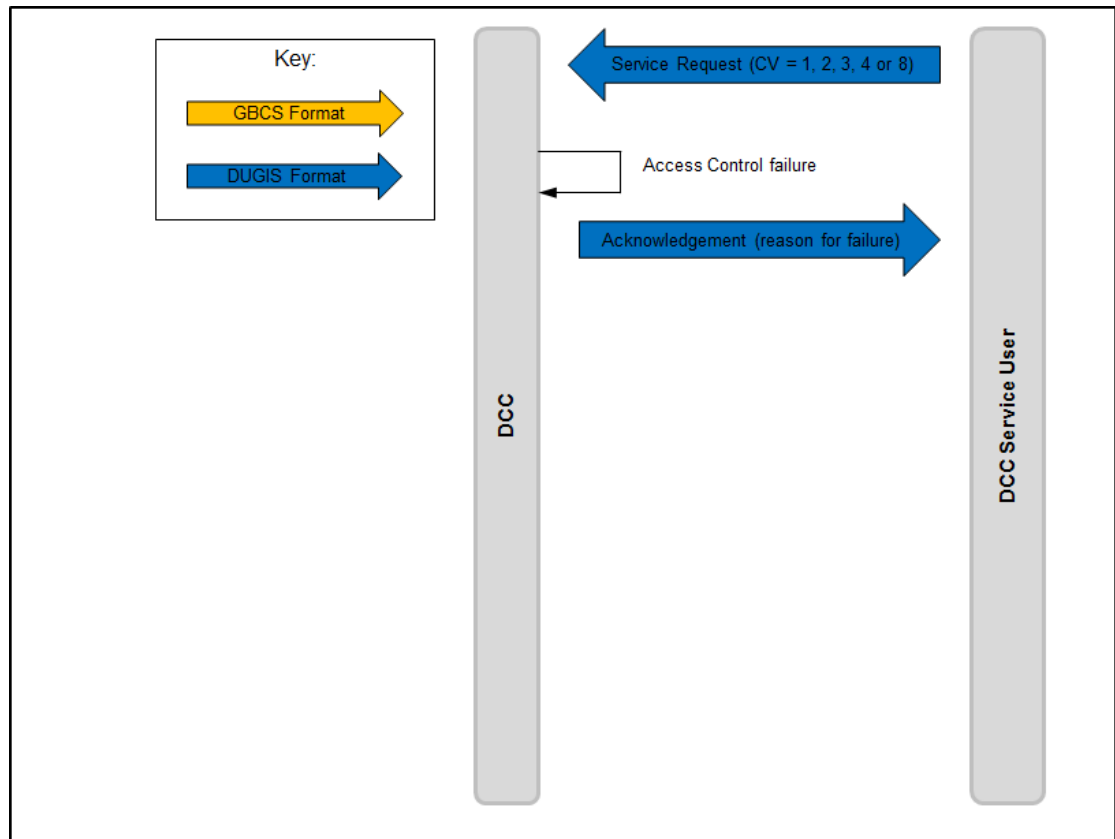


Figure 21 Command Variant = 1, 2, 3, 4 or 8 Access Control Failure

Possible Service Responses:

- The Acknowledgement message, which includes the reason why the Service Request failed Access Control (Response Code), is the Service Response

3.11.2 CV = 5, 6 or 7 Access Control Failure

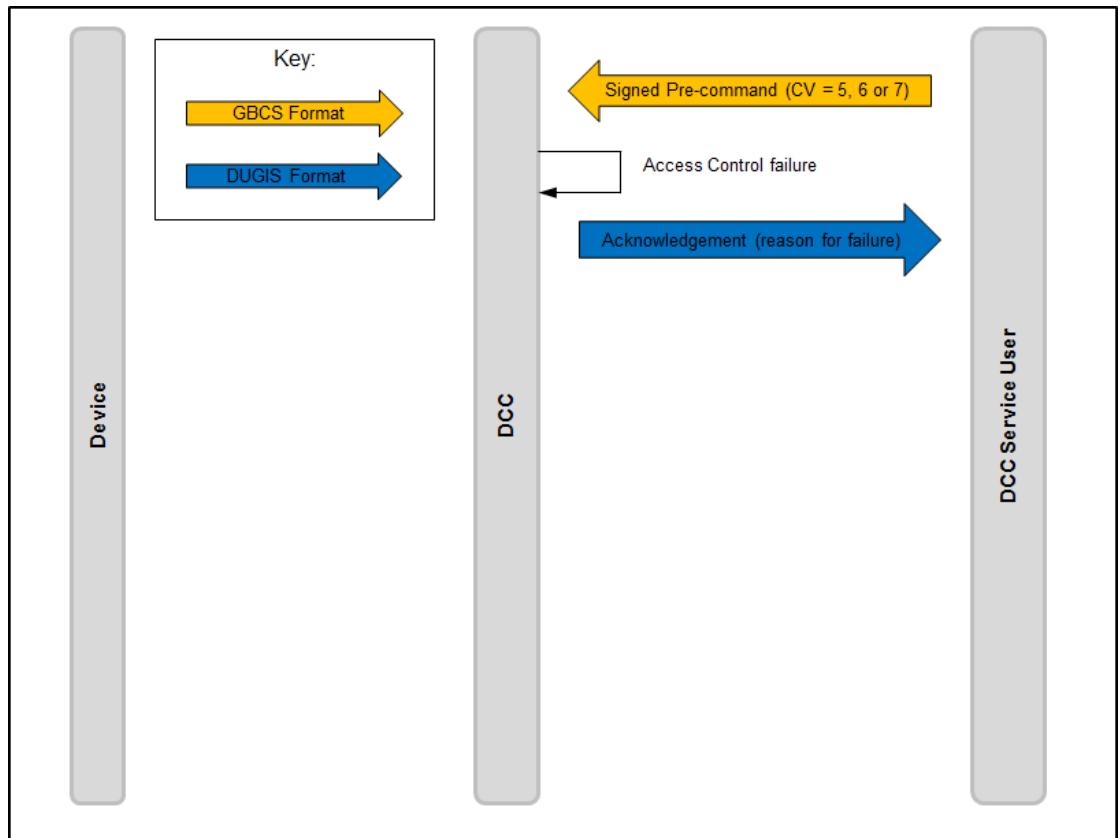


Figure 22 Command Variant = 5, 6 or 7 Access Control Failure

Possible Service Responses:

- The Acknowledgement message, which includes the reason why the Signed Pre-command failed Access Control (Response Code), is the Service Response

3.12 Command Variant / Mode of Operation and Web Services

The following table describes the relationship between a Request's Command Variant, Mode of Operation (see section 2.3) and Web Services (see section 0) (see section 3.13.3 for applicability to SMETS1 Devices):

Command Variant	Mode of Operation	Web Services	
		Request	Response
1	"On Demand", "Future Dated (DSP)"	Send Command Service	Receive Response Service
2 ²	"On Demand" ¹	DCC Only Service	Completion of DCC Only Service
3	"On Demand" ¹	Send Command Service	Receive Response Service
4	"Transform"	Transform Service	Completion of Transform Service
5	"On Demand", "Future Dated (Device)"	Send Command Service	Receive Response Service
6 ²	"On Demand" ¹	DCC Only Service	Completion of DCC Only Service
7	"On Demand" ¹	Send Command Service	Receive Response Service
8	"DCC Only"	DCC Only Service	Completion of DCC Only Service
N/A	"Meter Scheduled"	N/A	Receive Response Service
N/A	"DSP Scheduled"	N/A	Receive Response Service
N/A	"Device Alert"	N/A	Receive Response Service
N/A	"DCC Alert"	N/A	Receive Response Service

Table 5 Command Variant, Mode of Operation and Web Services – SMETS2 or Later

¹ "In those cases where a Command for Local Delivery is returned to the DCC Service User, the definition of "On Demand" is extended to "A Non-Critical Service Request or signed Pre-Command (for Critical Service Requests) is sent to the Device / returned to the DCC Service User immediately and, if sent to the device via SM WAN, the device returns a Service Response."

² Although Mode Of Operation is "On Demand" (since the command is ultimately delivered locally to a Device), the initial interaction with the DCC follows the same processing pattern as "DCC Only" and hence uses the "DCC Only" services.

3.13 Command Variants and SMETS1 Devices

This section describes differences in the use of Command Variant in connection with SMETS1 Devices, as an addendum to usage with SMETS2 or later Devices as described in sections 3.1 to 3.12.

3.13.1 SMETS1 Interface Message Types

Message types in section 3.1 apply to SMETS1 Devices apart from exceptions as noted in this section.

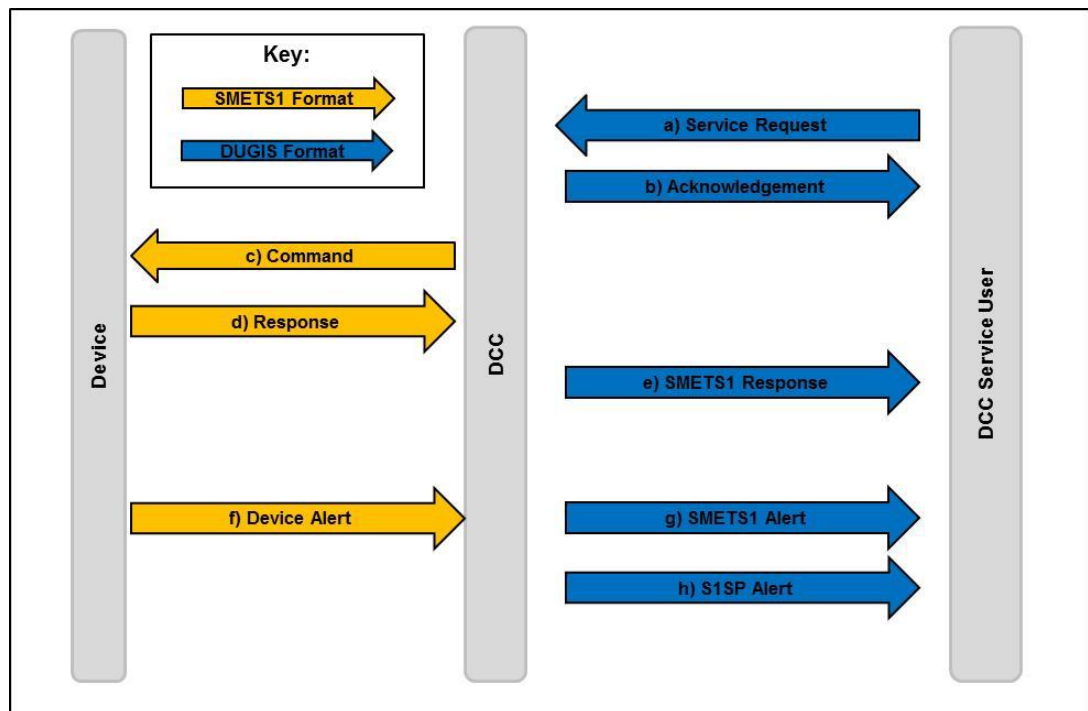


Figure 23 Interface Message Types – SMETS1

The following differences in message types and terminology are applicable to SMETS1 Devices:

- Countersigned SMETS1 Response. Synchronous or Asynchronous message sent by the DCC Data Systems to the DCC Service User, in response to a Service Request. A Countersigned SMETS1 Response wraps a SMETS1 Response provided by an S1SP. Where the term Service Response is used within DUGIDS it may, depending on the context, include Countersigned SMETS1 Responses;
- Countersigned SMETS1 Alert. Asynchronous message sent by the DCC Data Systems to the DCC Service User which wraps a SMETS1 Alert provided by an S1SP (see section 2.3.8). Where the term Device Alert is used within DUGIDS it may, depending on the context, include Countersigned SMETS1 Alerts;
- Countersigned S1SP Alert. Asynchronous message sent by the DCC Data Systems to the DCC Service User which is a DCC Alert with a DCC Alert Code that indicates it carries an S1SP Alert within it; an S1SP Alert is an asynchronous message signed by an S1SP. Where the term DCC Alert is used within DUGIDS it may, depending on the context, include Countersigned S1SP Alerts;
- Command. Although defined in connection with GBCS, as in section 3.1, this term shall also be used in DUGIDS, where applicable according to context, to mean a communication sent by the DCC Data Systems to a Device in a format required by SMETS1.

The following message types from section 3.1 do not apply to SMETS1 Devices:

- Pre-Command;

- Command for Local Delivery;
- Signed Pre-Command.

3.13.2 SMETS1 Command Variant Types

Note that in the following table “Command” should be interpreted as meaning SMETS1 formats, since they are in connection with SMETS1 Devices, instead of GBCS, as explained in section 3.13.1. That is generally the case throughout DUGIDS.

CV Value	Command Variant Description	Input	Output	Processing Pattern for DCC Service User	Return to Service User	Delivery Over SM WAN
1	Non Critical Service Request to be sent to a SMETS1 Device via the S1SP communications network	Service Request	Command	Asynch	No	Yes
2	SRV 2.2: SRV-specific redefinition for SMETS1 Devices; see Annex Section 2. N/A otherwise	Service Request	S1SP Alert	Asynch	Yes	No
3	SRV 2.2: SRV-specific redefinition for SMETS1 Devices; see Annex Section 2. N/A otherwise	Service Request	S1SP Alert and Command	Asynch	Yes (S1SP Alert only)	Yes
4	Send SMETS1 Critical Service Request to a SMETS1 Device via the S1SP communications network	Service Request	Command	Asynch	No	Yes
5	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A
8	Request a DCC Only Service	Service Request	Service Response (from DCC)	Synch	Yes	No

Table 6 Command Variant Values – SMETS1

3.13.3 SMETS1 Command Variant / Mode of Operation and Web Services

The following table describes the relationship between a Request’s Command Variant, Mode of Operation (see section 2.3) and Web Services (see section 00) in connection with SMETS1 Devices (see section 3.12 for SMETS2 or later Devices):

Command Variant	Mode of Operation	Web Services	
		Request	Response
1	"On Demand", "Future Dated (DSP)"	Send Command Service	Receive Response Service
2 (SRV2.2 only)	"On Demand"	DCC Only Service	Receive Response Service
3 (SRV2.2 only)	"On Demand"	Send Command Service	Receive Response Service
4	"On Demand", "Future Dated (Device ¹)"	Transform Service	Receive Response Service
8	"DCC Only"	DCC Only Service	Completion of DCC Only Service
N/A	"DSP Scheduled"	N/A	Receive Response Service
N/A	"Device Alert" (used for SMETS1 Alerts)	N/A	Receive Response Service
N/A	"DCC Alert" (including S1SP Alert)	N/A	Receive Response Service

Table 7 Command Variant, Mode of Operation and Web Services – SMETS1

¹ Future dating for Future Dated (Device) Service Requests targeted at SMETS1 Devices is implemented by DCC Data Systems

4 Request and Response IDs

Where a DCC Service User sends a Service Request or a Signed Pre-Command, the DCC Service User shall ensure that it contains a unique message identifier. This unique message identifier is the Request ID.

Each Request includes a unique Request ID. Depending on the interaction type, each Response includes the corresponding Request ID and / or a unique Response ID. See Table 8 for details.

Request and Response IDs are defined by GBCS. In line with the GBCS Message Identifier, both Request and Response IDs consist of 3 elements (concatenated with “:”) both for “Device Services” and “Non-Device Services”:

- Business Originator ID
- Business Target ID
- Originator Counter (the sender of the Request (DCC Service User or DSP Broker) needs to control the Originator Counter as per GBCS and keep incrementing it – does not need to be contiguous).

For Critical Service Requests for SMETS2 or later devices, the same Request ID is submitted twice. The first time to transform the Service Request into a Pre-command and the second time to send the Signed Command to the Device. See Table 8 for Response ID details.

For solicited Service User Device Requests for which the DCC Data Systems identify an issue, e.g. Command can't be delivered, the DCC will return a DCC Alert to the DCC Service User, with a DSP Broker Response ID different from that of the Service User request ID. In these cases, the Request ID of the DCC Service User Request will be part of the message payload.

Although SMETS1 Devices do not use GBCS, the SMETS1 Service Requests shall use the same format of Request and Response IDs in order to ensure commonality across the DCC User Interface. See Table 9 in section 4.19 to see how Request and Response IDs are applied to SMETS1 Devices.

The following table lists Request and Response IDs content in DUIS format (XML) for the different interaction types. Note that in some cases there are multiple interaction types for a single Command Variant, since the behaviour is different depending on whether the Service Request is being sent by a DCC Service User which is a Known Remote Party (KRP) or Unknown Remote Party (URP) to the Device. Where the DCC Service User is an Unknown Remote Party then the DSP Broker carries out the request on behalf of the DCC Service User. The BusinessOriginatorID and OriginatorCounter from within the RequestID contained within the DUIS XML format message shall be replaced with those used by the Access Control Broker required to enable communication with the Device and the original values provided by the User are transferred to the otherInformation field within the Command's GroupingHeader as defined by GBCS (added to Supplementary Remote Party ID and Supplementary Remote Party Counter respectively). The BusinessTargetID remains unchanged.

This table is applicable to SMETS2 or later Devices. See section 4.19 for information on applicability to SMETS1 Devices.

Request ID				Response ID				Response includes Request ID	Interaction Type
CV Type	Business Originator ID	Business Target ID	Originator Counter	Type	Business Originator ID	Business Target ID	Originator Counter		
1	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device)	Request's Device ID	Request's Service User ID	Request's Originator Counter	Yes	Send Command and Receive Response (KRP) – Command Response

Request ID				Response ID				Response includes Request ID	Interaction Type
CV Type	Business Originator ID	Business Target ID	Originator Counter	Type	Business Originator ID	Business Target ID	Originator Counter		
									(see section 4.1)
N/A	N/A	N/A	N/A	Future Dated Device Alert (unsolicited response to Service User) ⁵	Device ID	DCC Service User ID	Device Originator Counter	Yes	Send Command and Receive Response (KRP) – FDEDA ⁴ (see section 4.2)
1	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device)	Request's Device ID	Request's Service User ID	Request's Originator Counter	Yes	Send Command and Receive Response (URP) (see section 4.3)
N/A	N/A	N/A	N/A	Future Dated Device Alert (unsolicited response to Service User) ⁵	Device ID	Request's Service User ID	Request's Originator Counter	Yes	Send Command and Receive Response (URP) – FDEDA ⁶ (see section 4.4)
2	DCC Service User ID	Device ID	Service User Originator Counter	Command for Local Delivery (from DCC)	N/A	N/A	N/A	Yes	Return Command for Local Delivery (KRP) (see section 4.5)
2	DCC Service User ID	Device ID	Service User Originator Counter	Command for Local Delivery (from DCC)	N/A	N/A	N/A	Yes	Return Command for Local Delivery (URP) (see section 4.6)
3	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device) / Command for Local Delivery (from DCC)	Request's Device ID / N/A	Request's Service User ID / N/A	Request's Originator Counter / N/A	Yes / Yes	Send Command and Return for Local Delivery (KRP) (see section 4.1 and 4.7)
3	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device) / Command for Local Delivery (from DCC)	Request's Device ID / N/A	DSP Broker / N/A	Command's Originator Counter / N/A	Yes / Yes	Send Command and Return for Local Delivery (URP) (see section 4.3 and 4.8)
4	DCC Service User ID	Device ID	Service User Originator Counter	Pre-command (from DCC)	N/A	N/A	N/A	Yes	Transform Command (KRP) (see section 4.9)

Request ID				Response ID				Response includes Request ID	Interaction Type
CV Type	Business Originator ID	Business Target ID	Originator Counter	Type	Business Originator ID	Business Target ID	Originator Counter		
5	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device)	Request's Device ID	Request's Service User ID	Request's Originator Counter	Yes	Transformed Send Command and Receive Response (KRP) (see section 4.10)
N/A	N/A	N/A	N/A	Future Dated Device Alert (unsolicited response to Service User) ⁵	Device ID	DCC Service User ID	Device Originator Counter	Yes	Transformed Send Command and Receive Response (KRP) – FDEDA ⁴ (see section 4.11)
6	DCC Service User ID	Device ID	Service User Originator Counter	Command for Local Delivery (from DCC)	N/A	N/A	N/A	Yes	Transform and Return Command for Local Delivery (KRP) (see section 4.12)
7	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device) / Command for Local Delivery (from DCC)	Request's Device ID / N/A	Request's Service User ID / N/A	Request's Originator Counter / N/A	Yes / Yes	Transformed Send and Return Command for Local Delivery (KRP) (see section 4.10 and 4.13)
8	DCC Service User ID	DSP Broker ID	Service User Originator Counter	Service Response (from DCC)	N/A	N/A	N/A	Yes	DCC Only (see section 4.14)
N/A	N/A	N/A	N/A	Device Alert (unsolicited response to Service User) ⁷	Device ID	DCC Service User ID	Device Originator Counter	No	Device Alert (see section 4.15)
N/A	N/A	N/A	N/A	DCC Alert (unsolicited response to Service User)	DSP Broker ID	DCC Service User ID	DSP Broker Originator Counter	No	DCC Alert (see section 4.16)
9 ¹	DSP Broker ID ²	Device ID ²	DSP Broker Originator Counter ²	Service Response (from Device) ³	Request's Device ID	DSP Broker ID	Request's DSP Broker Originator Counter	Yes ²	DSP Scheduled Command and Response (see section 4.17)

Table 8 Request and Response IDs – SMETS2 or later Devices

¹ Command Variant 9 is an internal only value used for DSP Scheduled Command to a Device

² The Request ID is generated by the DSP Broker and included in the GBCS Command to the Device

³ The Response XML and GBCS Payload include the DSP Schedule ID

⁴ The Device holds the Remote Party ID, Message Code and Future Dated Counter (= Originator Counter) of the Command to be executed

⁵ The Device Alert Payload includes the Command Message Code and Originator Counter of the executed Command

⁶ This interaction is only applicable to Service Request 6.23 (Update Security Credentials (CoS)). The Device holds the Remote Party ID (CoS Party), Message Code and Future Dated Counter (= Originator Counter) of the Command to be executed. The DCC Data Systems hold the relationship between the Service Request ID (from the DCC Service User) and the Command (from the CoS Party)

⁷ For Device Alerts with 2 recipients (as defined by GBCS), the second recipient's Response ID is: Business Originator ID = Device ID, Business Target ID = Device Alert Supplementary Remote Party ID, Originator Counter = Device Originator Counter

The following diagrams illustrate the content of Request and Response IDs in all the interaction types. The values in the diagrams indicate the originator and target rather than their IDs. See section 3 for Command Variants applicable to each case.

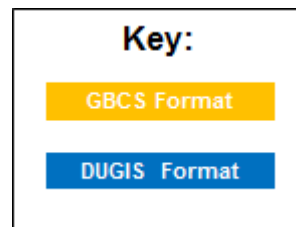


Figure 24 Request and Response IDs Diagrams Key

4.1 Send Command and Receive Response (KRP) – Command Response

Applicable to Non-Critical Service Requests Commands from a KRP delivered via SM WAN, where the response is either to an On Demand Command or the Device acceptance of a Future Dated (Device) Command. See section 4.2 for the Device Alert returned when the Future Dated (Device) Command is executed by the Device.

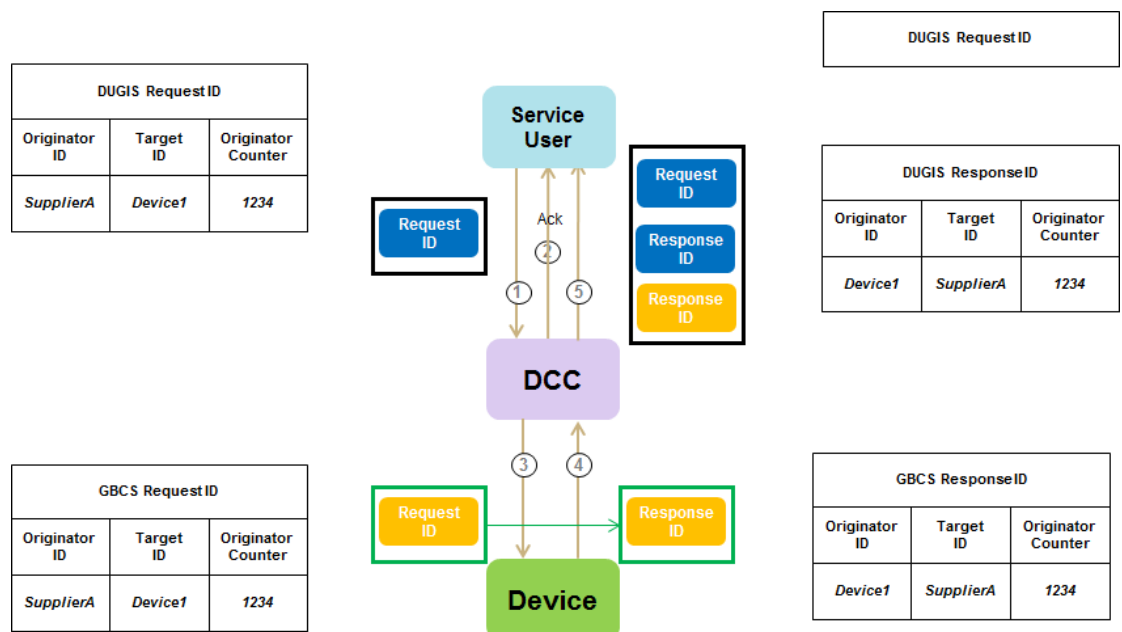


Figure 25 Send Command and Receive Response (KRP) – Command Response

Note that the synchronous Acknowledgement response (flow 2 on the diagram) returns only the original DUIS Request ID.

4.2 Send Command and Receive Response (KRP) – FDEDA

Applicable to Non-Critical Service Requests Commands from a KRP delivered via SM WAN, where the response is the Future Dated (Device) Execution Device Alert (FDEDA).

There are currently no instances of this interaction.

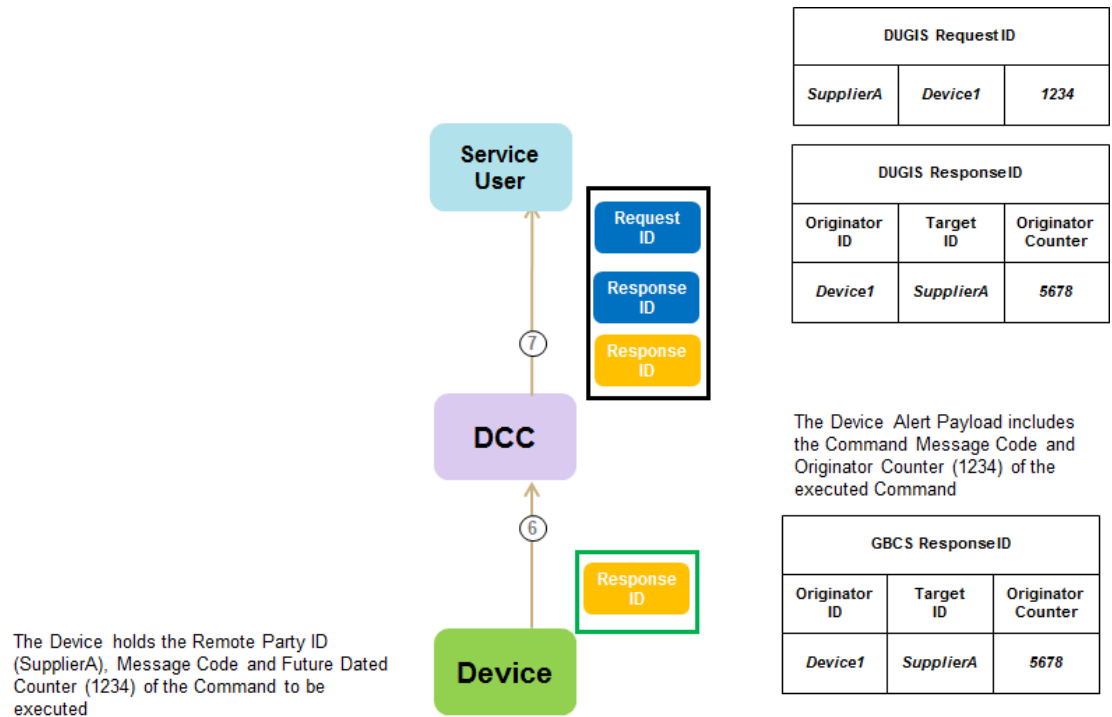


Figure 26 Send Command and Receive Response (KRP) – FDEDA

4.3 Send Command and Receive Response (URP)

Applicable to Non-Critical Service Requests Commands from a URP delivered via SM WAN. Also applicable to Service Requests 6.21 (Request Handover Of DCC Controlled Device) and 8.5 (Service Opt Out), because even though the DCC Service User submitting the Service

Request to the DCC Data Systems is a KRP, the Command is Critical and has to be digitally signed by the DSP Broker.

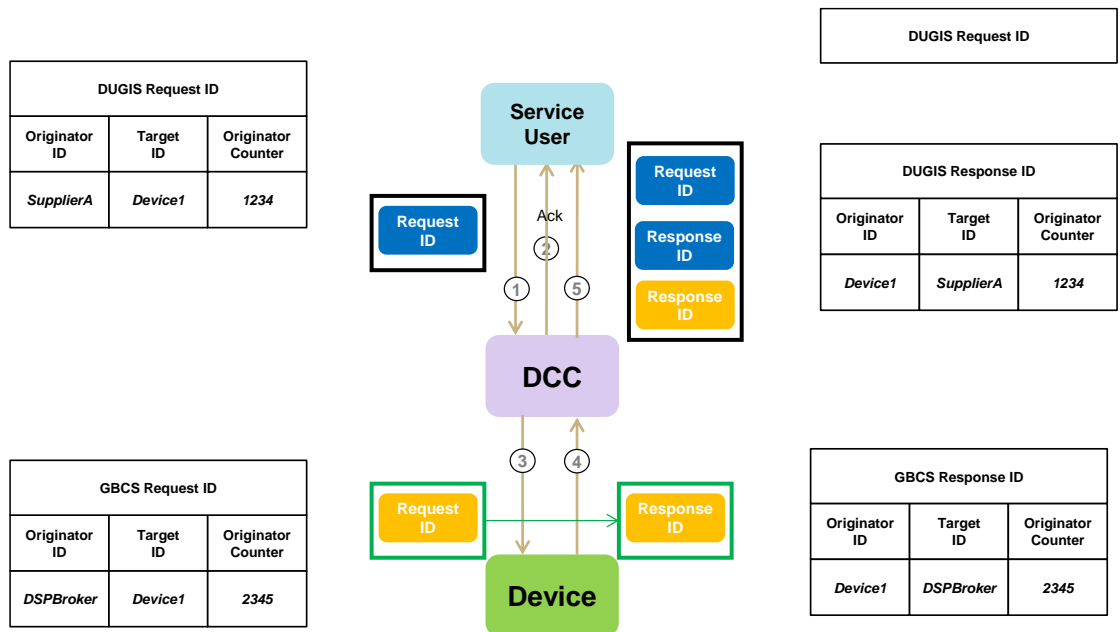


Figure 27 Send Command and Receive Response (URP)

4.4 Send Command and Receive Response (URP) – FDEDA

Applicable to Non-Critical Service Requests Commands from a URP delivered via SM WAN, where the response is the Future Dated (Device) Execution Device Alert (FDEDA).

The only instance of this interaction is Service Request 6.23 (Update Security Credentials (CoS)).

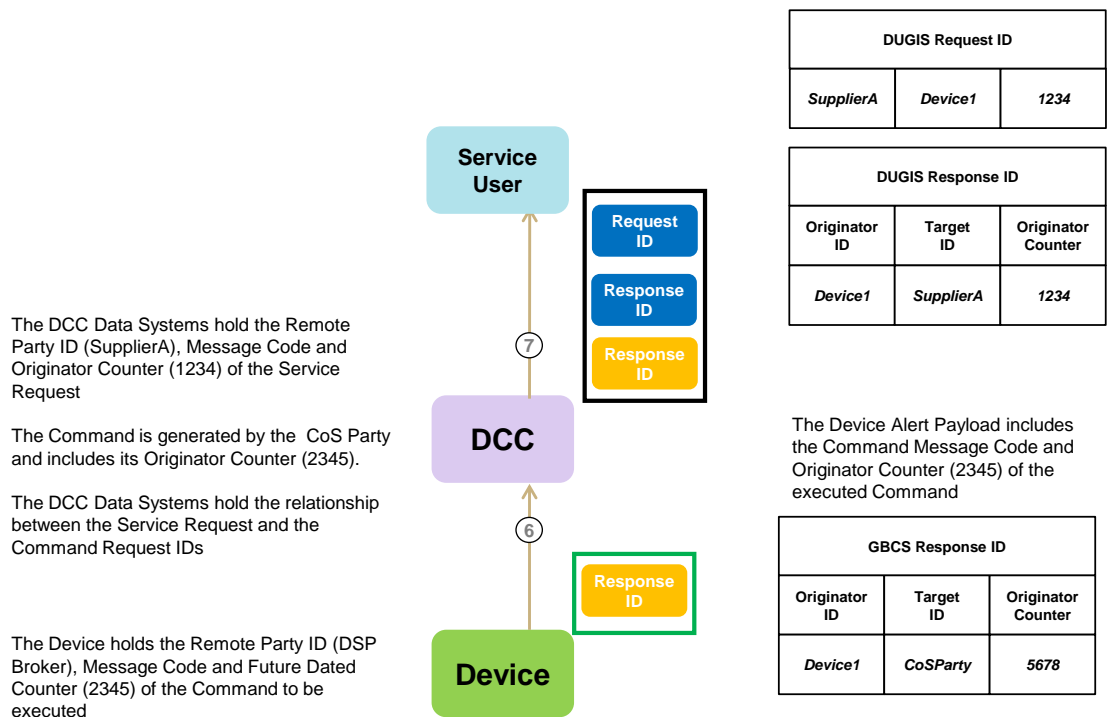


Figure 28 Send Command and Receive Response (URP) – FDEDA

4.5 Return Command for Local Delivery (KRP)

Applicable to Non-Critical Service Request Commands from a KRP returned to the DCC Service User for Local Delivery.

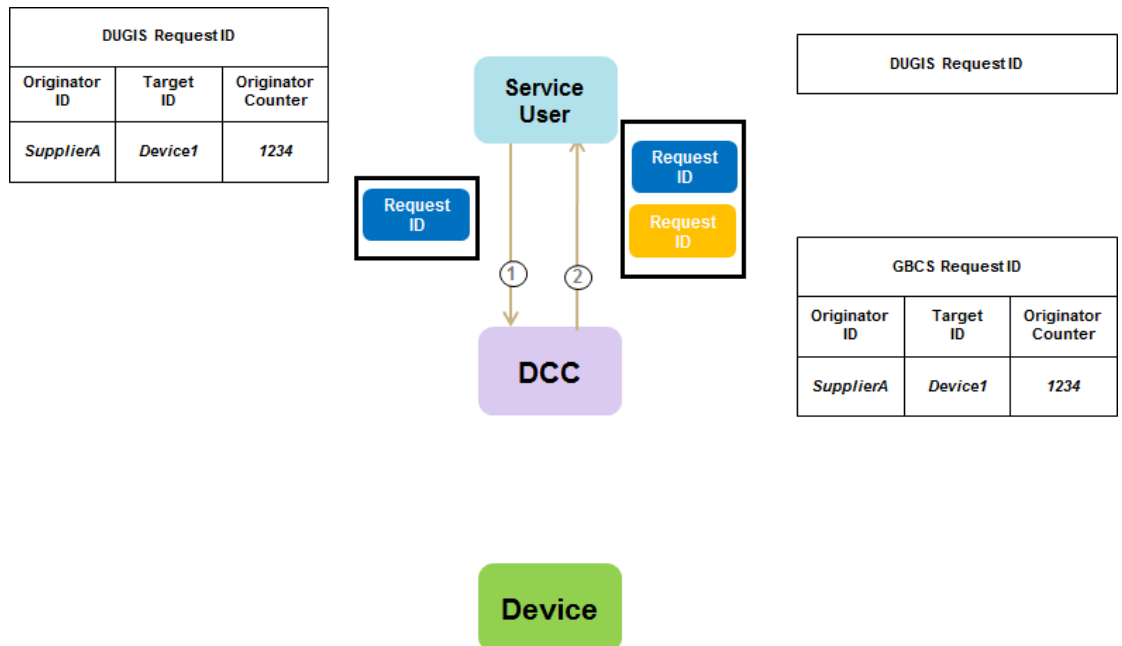


Figure 29 Return Command for Local Delivery (KRP)

4.6 Return Command for Local Delivery (URP)

Applicable to Non-Critical Service Request Commands from a URP returned to the DCC Service User for Local Delivery.

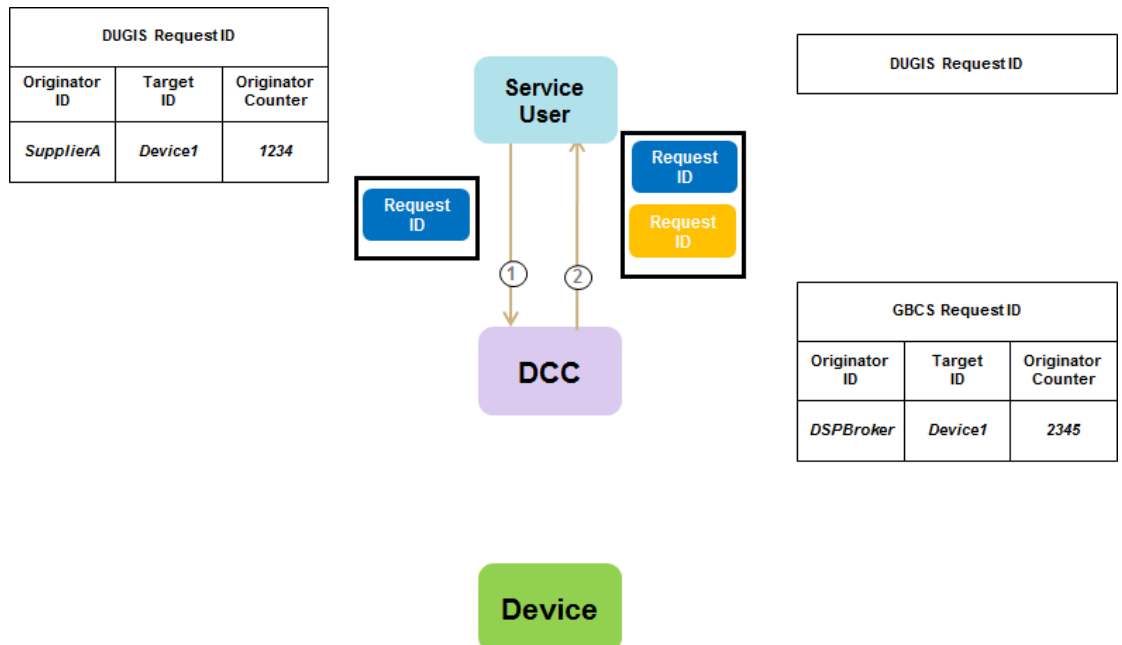


Figure 30 Return Command for Local Delivery (URP)

4.7 Send Command and Return for Local Delivery (KRP)

Applicable to Non-Critical Service Request Commands from a KRP delivered via SM WAN and returned to the DCC Service User for Local Delivery.

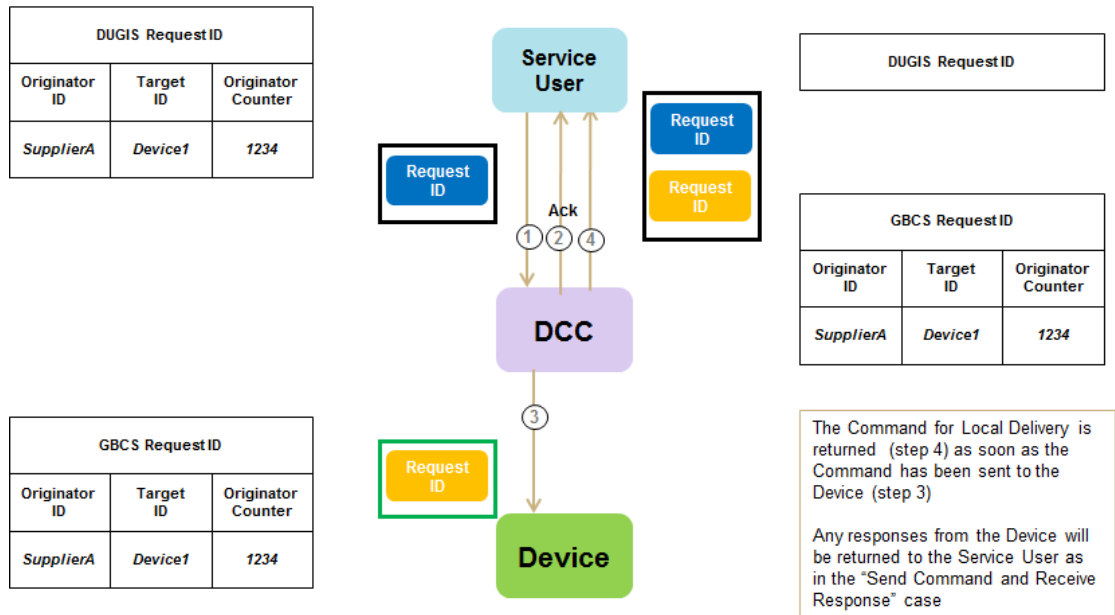


Figure 31 Send Command and Return for Local Delivery (KRP)

4.8 Send Command and Return for Local Delivery (URP)

Applicable to Non-Critical Service Request Commands from a URP delivered via SM WAN and returned to the DCC Service User for Local Delivery.

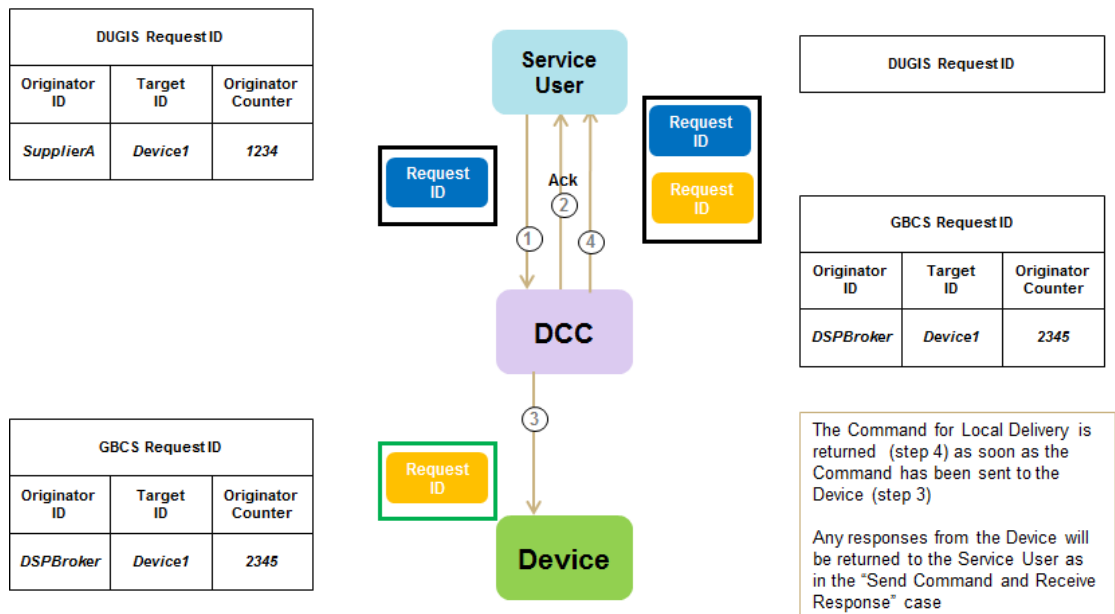


Figure 32 Send Command and Return for Local Delivery (URP)

Applicable to Critical Service Request Commands.



Applicable to Signed Pre-Commands delivered via SM WAN, where the response is either to an On Demand Command or the Device acceptance of a Future Dated (Device) Command. See section 4.11 for the Device Alert returned when the Future Dated (Device) Command is executed by the Device.



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4.11 Transformed Send Command and Receive Response (KRP) – FDEDA

Applicable to Signed Pre-Commands from a KRP delivered via SM WAN, where the response is the Future Dated (Device) Execution Device Alert (FDEDA).

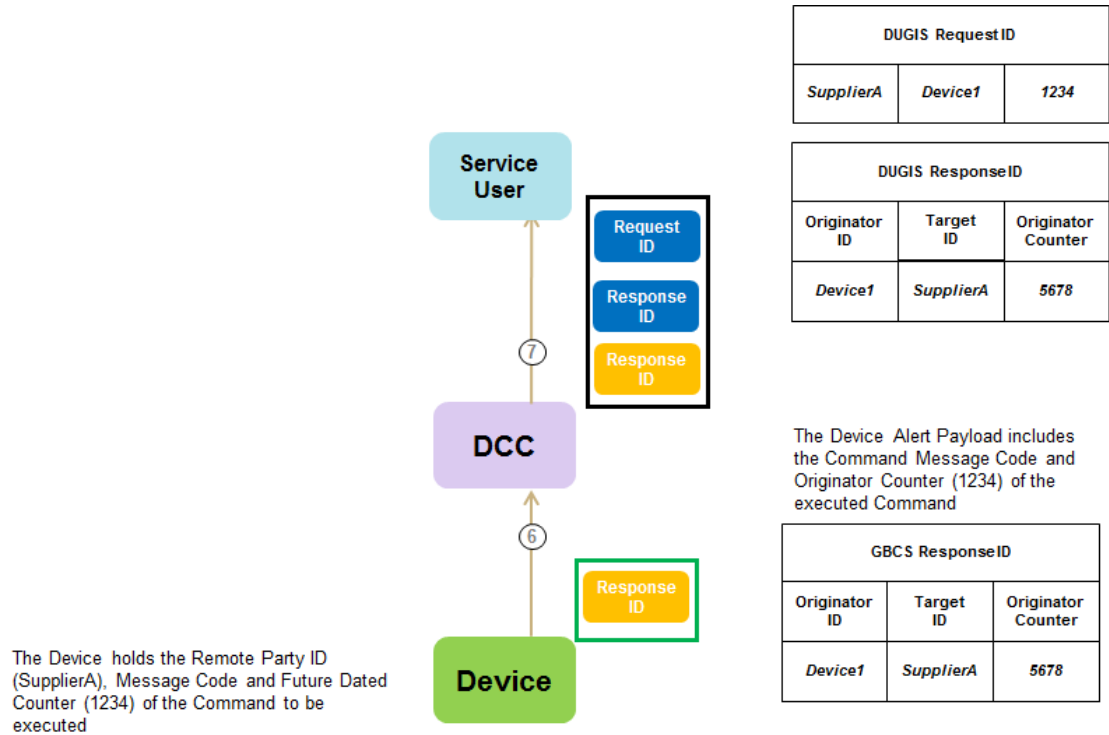


Figure 35 Transformed Send Command and Receive Response (KRP) – FDEDA

4.12 Transform and Return Command for Local Delivery (KRP)

Applicable to Critical Service Request Commands returned to the DCC Service User for Local Delivery.

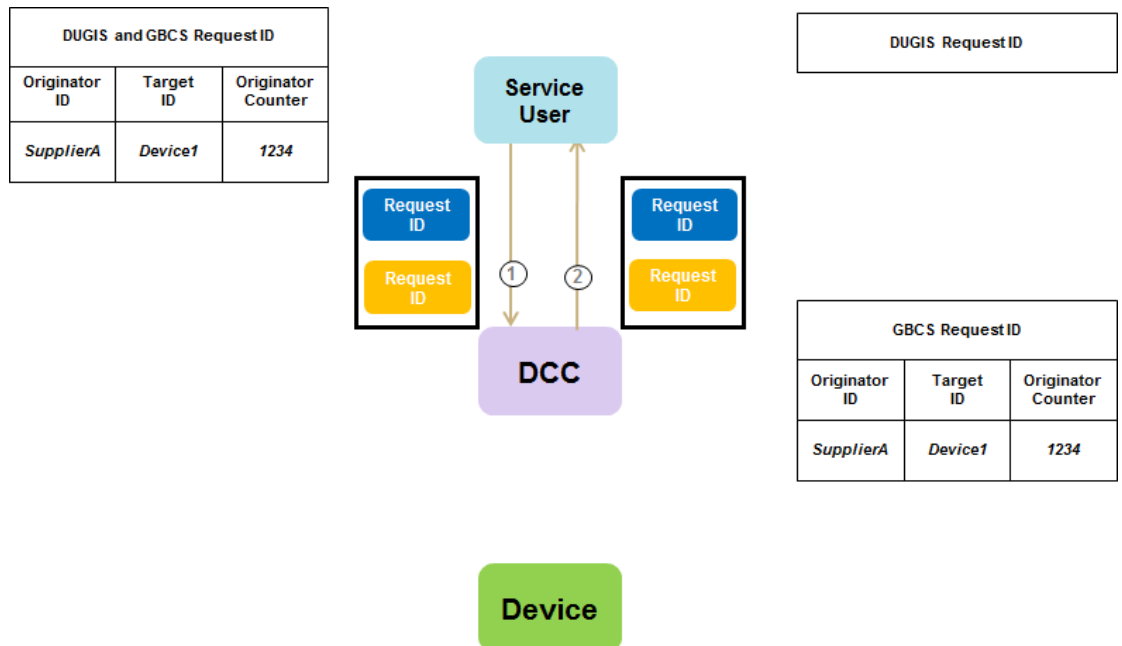


Figure 36 Transform and Return Command for Local Delivery (KRP)

4.13 Transformed Send and Return Command for Local Delivery (KRP)

Applicable to Signed Pre-Commands delivered via SM WAN and returned to the DCC Service User for Local Delivery.

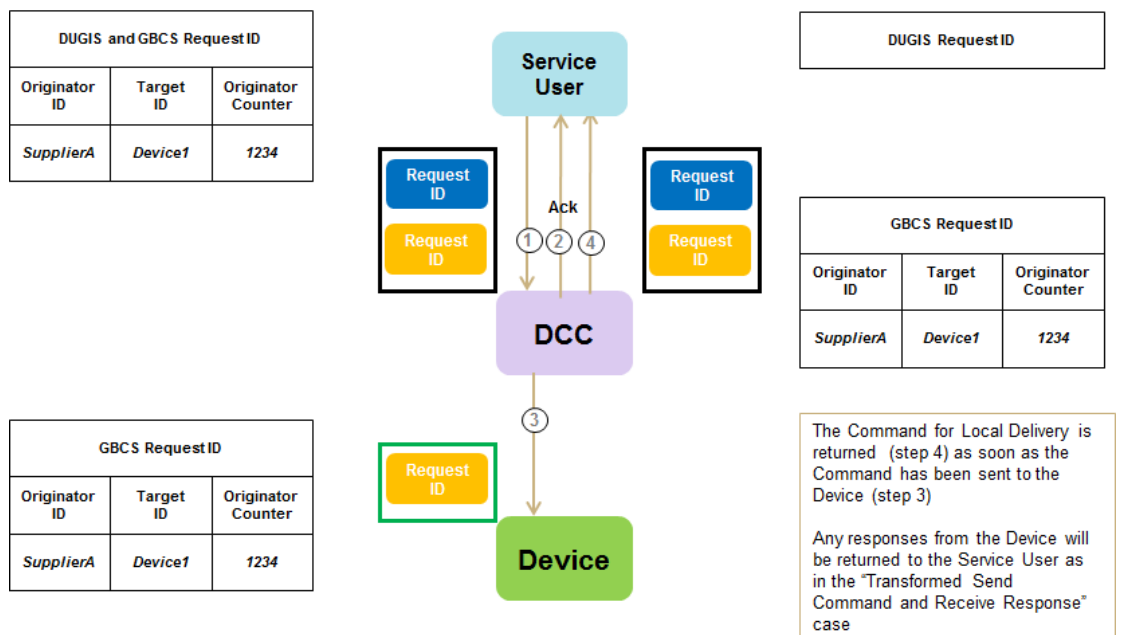


Figure 37 Transformed Send and Return Command for Local Delivery (KRP)

4.14 DCC Only

Applicable to “DCC Only” Service Requests.

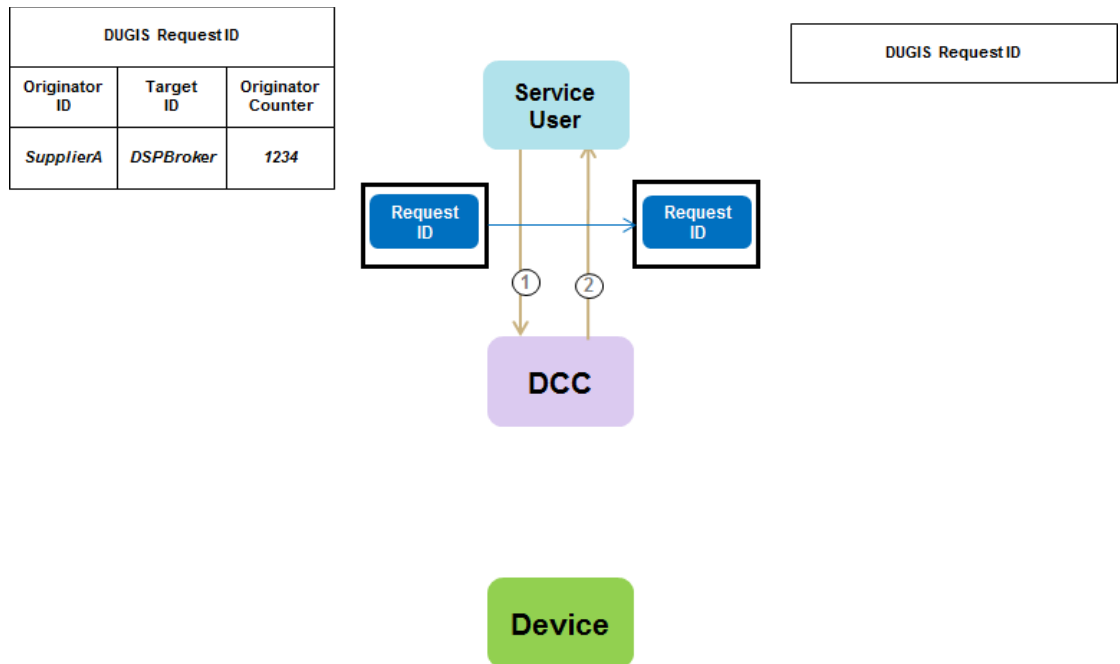


Figure 38 DCC Only

4.15 Device Alert (including Billing Data Alert)

Unsolicited response (Device Alert). The Device sends “Meter Scheduled” Billing Data Log data as an Alert.

For Device Alerts with 2 recipients (as defined by GBCS), the second recipient’s DUIS Response ID is: Business Originator ID = Device ID, Business Target ID = Device Alert Supplementary Remote Party ID, Originator Counter = Device Originator Counter

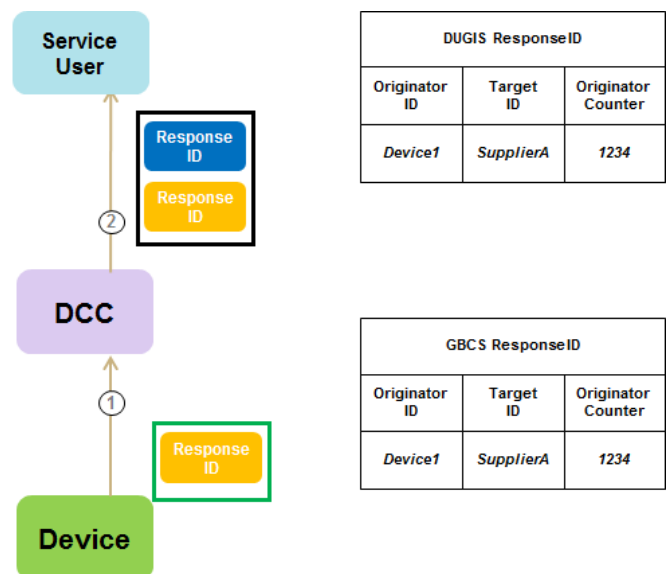
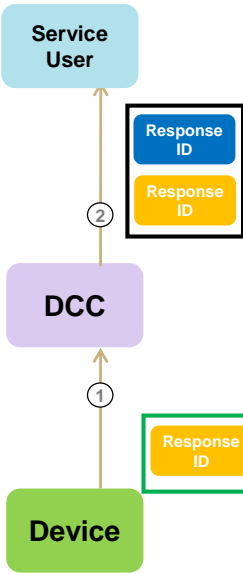


Figure 39 Device Alert (including Billing Data Alert)



DUGIS Response ID – First Recipient		
Originator ID	Target ID	Originator Counter
Device1	SupplierA	1234

DUGIS Response ID – Second Recipient		
Originator ID	Target ID	Originator Counter
Device1	NOperatorB	1234

Originator ID = Device ID, Target ID = Device Alert Supplementary Remote Party ID, Originator Counter = Device Counter

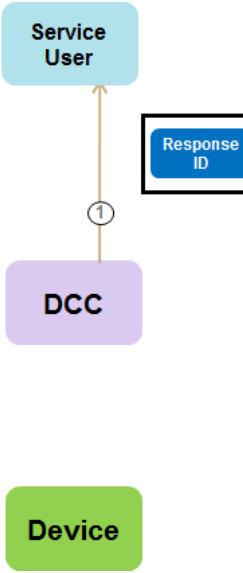
GBCS Response ID		
Originator ID	Target ID	Originator Counter
Device1	SupplierA	1234

Device Alert Supplementary Remote Party ID = Target ID of Second Recipient (NOperatorB)

Figure 39.1 Device Alert With Two Recipients

4.16 DCC Alert

Unsolicited response (DCC Alert).



DUGIS ResponseID		
Originator ID	Target ID	Originator Counter
DSPBroker	SupplierA	1234

Figure 40 DCC Alert

4.17 DSP Scheduled Command and Response

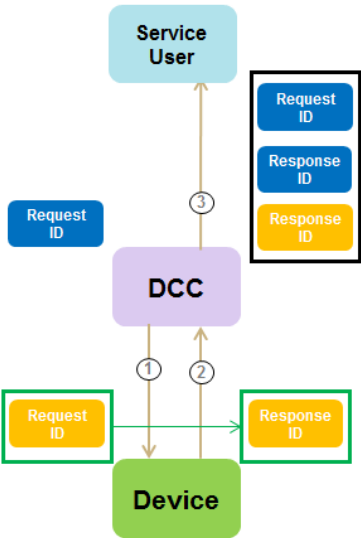
Unsolicited response to DCC Service User (request generated by DSP Broker). The Response XML and GBCS Payload include the DSP Schedule ID.

The DSP Schedule has been created via a Create Schedule Service Request and the response to that request provides a DSP Schedule ID to the Service User

At each scheduled execution, the DSP creates a Service Request with a DSP originated Request ID.

GBCS Request ID		
Originator ID	Target ID	Originator Counter
DSPBroker	Device1	2345

The GBCS Command includes the DSP Schedule ID



DUGIS Request ID (DSP Originator)

DUGIS ResponseID		
Originator ID	Target ID	Originator Counter
Device1	DSPBroker	2345

The XML Response includes the DSP Schedule ID

GBCS ResponseID		
Originator ID	Target ID	Originator Counter
Device1	DSPBroker	2345

The GBCS Command Response includes the DSP Schedule ID

Figure 41 DSP Scheduled Command and Response

4.18 Originator Counters and Anti-Replay

This section is specific to SMETS2 or later Devices. Please see section 4.19.5 for applicability to SMETS1 or later Devices.

The Originator Counter within the Request ID plays a crucial part in providing protection against replay of Commands at the Device. This is explained in detail in GBCS, however this section attempts to summarise the behaviour for DCC Service Users.

Each Device maintains one Execution Counter per Known Remote Party (KRP) and Command type combination for all Commands that are marked as requiring 'Protection Against Replay' as defined in GBCS. The Device shall reject a Command where the Originator Counter in the request is not greater than the value of the Execution Counter held for that Command type and Remote Party.

Therefore, if the Command being sent to the Device has "Protection Against Replay Required" as defined by GBCS then the Device will store the Originator Counter of that Command when processed and only process higher value counters for that Command type and Remote Party combination. This means that the order of processing of Commands on Devices is important for these Commands to ensure that they are successfully processed by the Device. If a DCC Service User sends multiple Service Requests of the same type that require "Protection Against Replay" to the same Device then the DCC Service User must ensure that they are sent and confirmed as completed in order.

Service Requests which are Future Dated at the DSP (see section 5.1.2) have the additional complication that if before the corresponding Command is sent to the Device the DCC Service User sends an On Demand Service Request of the same Command type to the same Device, then when the Future Dated Command is subsequently sent by the DSP to the Device it will fail in the Device. DCC Service Users will need to manage this risk.

If "Protection Against Replay" is not required then DCC Service Users are free to send Service Requests to the device in any order and the originator counter values are not checked by the device.

Table 36 in section 9.4 indicates which Service Requests use Commands that require "Protection Against Replay".

4.19 SMETS1 Request and Response IDs

This section describes differences in the use of Request and Response IDs in connection with SMETS1 Devices,

Although SMETS1 Devices do not use GBCS, the SMETS1 Service Requests shall use the same format of Request and Response IDs in order to ensure commonality across the DCC User Interface. The following table shows the use of Request and Response IDs for SMETS1 Devices, and is the SMETS1 equivalent of Table 8 in section 4.

Request ID				Response ID				Response includes Request ID	Interaction Type
CV Type	Business Originator ID	Business Target ID	Originator Counter	Type	Business Originator ID	Business Target ID	Originator Counter		
1	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device)	Request's Device ID	Request's Service User ID	Request's Originator Counter	Yes	Send Command and Receive Response (KRP) (see section 4.19.1)
1	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device)	Request's Device ID	Request's Service User ID	Request's Originator Counter	Yes	Send Command and Receive Response (URP)

Request ID				Response ID				Response includes Request ID	Interaction Type
CV Type	Business Originator ID	Business Target ID	Originator Counter	Type	Business Originator ID	Business Target ID	Originator Counter		
									(see section 4.19.1)
2 (SRV 2.2 only)	DCC Service User ID	Device ID	Service User Originator Counter	UTRN S1SP Alert (from DCC)	N/A	N/A	N/A	Yes	Generate and return UTRN (see section 4.19.2)
3 (SRV 2.2 only)	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device) / UTRN S1SP Alert (from DCC)	Request's Device ID / N/A	Request's Service User ID / N/A	Request's Originator Counter / N/A	Yes / Yes	Generate, return and send UTRN (see sections 4.19.1 and 4.19.2)
4	DCC Service User ID	Device ID	Service User Originator Counter	Service Response (from Device)	Request's Device ID	Request's Service User ID	Request's Originator Counter	Yes	Send Command and Receive Response (KRP) (see section 4.19.1)
8	DCC Service User ID	DSP Broker ID	Service User Originator Counter	Service Response (from DCC)	N/A	N/A	N/A	Yes	DCC Only (see section 4.14)
N/A	N/A	N/A	N/A	SMETS1 Alert (unsolicited response to Service User) ⁷	Device ID	DCC Service User ID	Device-specific Originator Counter generated by the S1SP	No	SMETS1 Alert (see section 4.19.3)
N/A	N/A	N/A	N/A	DCC Alert (unsolicited response to Service User) other than S1SP Alert	DSP Broker ID	DCC Service User ID	DSP Broker Originator Counter	No	DCC Alert other than S1SP Alert (see section 4.16)
N/A	N/A	N/A	N/A	DCC Alert (unsolicited response to Service User) which is an S1SP Alert	DSP Broker ID	DCC Service User ID	DSP Broker Originator Counter	Yes (of corresponding Service Request)	DCC Alert which is an S1SP Alert (see section 4.19.2)
9 ¹	DSP Broker ID ²	Device ID ²	DSP Broker Originator Counter ²	Service Response (from Device) ³	Request's Device ID	DSP Broker ID	Request's DSP Broker Originator Counter	Yes ²	DSP Scheduled Command and Response (see section 4.19.4)

Table 9 Request and Response IDs – SMETS1 Devices

¹ Command Variant 9 is an internal only value used for DSP Scheduled Command to a Device

² The Request ID is generated by the DSP Broker and included in the Request to the S1SP

³ The Response XML includes the DSP Schedule ID

4.19.1 SMETS1: Service Responses

In the Response to a SMETS1 Service Request originated by a Service User where a SMETS1 Device is the target, for both the Countersigned SMETS1 Response (i.e. the corresponding Service Response created by the DCC Data Systems) and the SMETS1 Response (i.e. the message contained within it which was created by an S1SP) the following shall be populated:

- The Business Originator ID shall be the value of the Business Target ID in the Request ID, which shall be the Device;
- the Business Target ID shall be the value of the Business Originator ID in the Request ID, which shall be the originating Service User;
- the Originator Counter shall be the value of the Originator Counter in the Request, as created by the originating Service User.

This shall apply regardless of whether the equivalent request to a SMETS2 or later Device would be KRP or URP.

4.19.2 SMETS1: S1SP Alerts

See section 2.3.9 for a description of S1SP Alerts.

The payload of an S1SP Alert, which is delivered in a DCC Alert, includes the Request ID of the Service Request to which it corresponds.

An S1SP Alert may correspond to a Service Request in the following ways:

- Validation error. For any Service Request sent to an S1SP, the S1SP may reject it because of a validation condition, and that shall be communicated by sending an S1SP Alert contained in a DCC Alert with DCC Alert Code N55;
- notification. An S1SP may initiate a notification in connection with a SMETS1 device, and that shall be communicated by sending an S1SP Alert contained in a DCC Alert with DCC Alert Code N55;
- delivery of a UTRN. Where a Service Request 2.2 is sent to an S1SP with CV2 or CV3, the S1SP shall generate a UTRN and it will be sent to the requesting Service User as an S1SP Alert contained in a DCC Alert with DCC Alert Code N56.

4.19.3 SMETS1: SMETS1 Alerts

See section 2.3.8 for a description of SMETS1 Alerts.

As defined in the SMETS1 Supporting Requirements Document, the Request ID of a SMETS1 Alert includes an originator counter created by the relevant S1SP.

SMETS1 Alerts are delivered using DUIS XML elements which incorporate the MMC Device Alert format.

4.19.4 SMETS1: Scheduled Responses

Where a Countersigned SMETS1 Response is the response to a DSP Scheduled request, for both the Countersigned SMETS1 Response (i.e. the corresponding Service Response created

by the DCC Data Systems) and the SMETS1 Response (i.e. the message contained within it which was created by an S1SP) the following shall be populated:

- The Business Originator ID shall be the value of the Business Target ID in the Request ID, which shall be the Device;
- the Business Target ID shall be the Access Control Broker;
- the Originator Counter shall be the value of the Originator Counter created by the Access Control Broker in the scheduled Request.

4.19.5 SMETS1: Originator Counters and Anti-Replay

This section is specific to SMETS1 Devices and provides information supplementary to section 4.18.

For SMETS1 Service Requests, protection against Replay is performed by DCC Data Systems and S1SPs instead of Devices, as defined in the SMETS1 Supporting Requirements Document.

The set of SRVs for which protection against Replay is required with regard to SMETS1 Devices is not exactly the same as for SMETS2 Devices. It is defined in DUIS and can also be seen in the Service Request Matrix in this document section 9.4 by use of footnotes 8 and 9 to the "Protection Against Replay" column.

DCC Data Systems and S1SPs shall maintain Execution Counters on a per-SRV, per-Role and per-Device basis where Replay protection is required, with the exception of SRV 6.23, for which the requirement is to maintain Execution Counters on a per-Supplier basis.

If a SMETS1 Service Request is rejected by the DCC Data Systems because of protection against Replay, the Service User will receive a validation error by synchronous response, and the error will be indicated by error code E63.

If a SMETS1 Service Request is rejected by the S1SP because of protection against Replay, the Service User will receive an S1SP Alert which indicates a validation error due to protection against Replay.

Execution Counters maintained by the DCC shall be established as zero for a new Device with the exception of SRV 6.15.1 Update Device Security Credentials. For SRV 6.15.1 the Execution Counter for a new Device shall be set such that it prevents use of the SRV until SRV 6.21 Handover of DCC-Controlled Device has been used successfully for a Remote Party Role, following which the floor counter for that Role for SRV 6.15.1 shall be set to zero.

Where the DCC accepts a Service Request for which it maintains Execution Counters, the Execution Counter for that SRV and Role shall be updated to the originator counter of that Service Request.

Where an SRV 6.23 Update Security Credentials (CoS) is accepted for processing by the DCC for a SMETS1 Device, the Execution Counters maintained by the DCC, for the Supplier Role for that Device for SRVs other than SRV 6.21 and the SRV 6.23 itself, shall be updated to the SupplierFloorSeqNumber supplied in the Service Request, with effect from the execution date and time of the request.

It shall not be possible to reset Execution Counters maintained by the DCC other than by the mechanisms described in this section, and the remote party floor sequence number parameters of SRV 6.15.1 Update Device Security Credentials or SRV 6.21 Handover of DCC-Controlled Device shall not be used to change Execution Counters maintained by the DCC.

5 Scheduling

There are four main use cases which involve some sort of scheduling, either at the meter or within the DCC Data Systems, as shown in Figure 42.

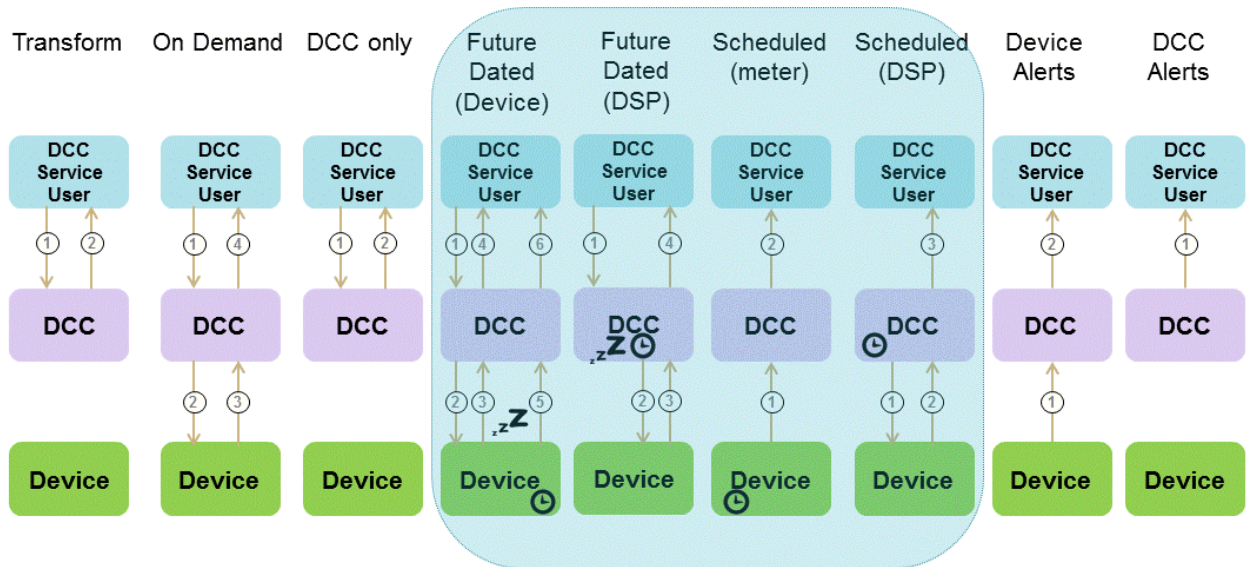


Figure 42: Scheduled Use Cases

5.1 Future Dated

Future Dated Service Requests incorporate an element of scheduling in that they are retained by either the device or the DCC Data Systems for execution at a specified time and date in the future.

Service Requests which support the ability to be Future Dated have an optional attribute for execution date/time defined within the Service Request Definition (see Annex). If this attribute is set then the Service Request is treated as Future Dated.

For Critical Service Requests which are to be Future Dated at the Device, the initial Transform Service Request requires this attribute to be set in order for the Pre-Command to be created with the required execution date/time. In all cases, the Signed Pre-Command must also include the execution date/time to allow the DSP to schedule and/or track the completion of the Future Dated request.

5.1.1 Future Dated (Device)

The set of commands which can be future dated at the Device is defined by the GBCS. For these commands the DCC actions the Service Request or Signed Pre-Command immediately and sends the command to the device where it is stored for execution at a later date. The device sends a Service Response to indicate acceptance of the future dated command and upon execution sends an Alert to confirm execution. Where the Command includes more than one instruction the Device sends one Alert per activation date-time instruction. This is illustrated in Figure 43.

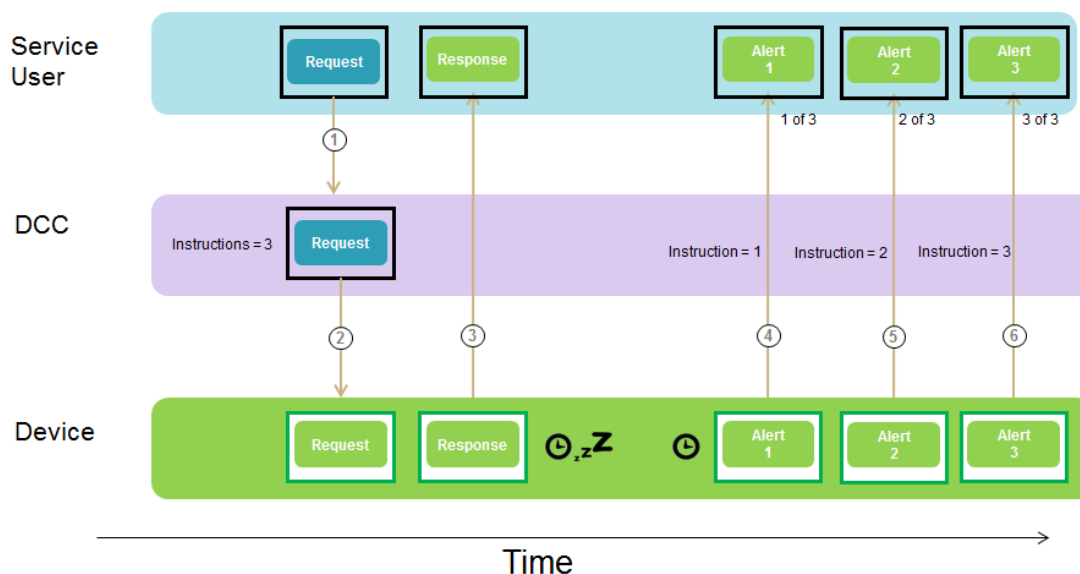


Figure 43 Future Dated Device – Processing Pattern

For a list of Service Requests that can be Future Dated at the Device see Table 36, where “Future Dated” column is set to “Device”. For further details on how Responses are constructed see section 9.3.7. For details on how many instructions are contained in each Command please refer to the relevant Annexes.

If a Service Request that can be Future Dated at the Device is run On Demand, the Device will simply return a Service Response to confirm execution, in line with the standard On Demand processing pattern.

To cancel a Future Dated Service Request held at the Device, the DCC Service User has to send another Service Request of the same Service Reference Variant (mapping to the same GBCS Use Case and Message Code) with an execution date of 31/12/3000 to the same Device. The Device will cancel the original Command and return a Response to the Cancellation Service Request’s Command but no further Response or Alert will be sent for the original Command being cancelled.

To modify a Future Dated Service Request held at the Device, the DCC Service User has to send another Service Request of the same Service Reference Variant (mapping to the same GBCS Use Case and Message Code) (with an execution date different from 31/12/3000) to the same Device. The Device will overwrite the values of the old Command with those of the new one.

If there is a change of Supplier on a Device which is after a future dated Command is stored but before it is activated, the change of control process will cancel that Command at the point of updating the Security Credentials. No Response or Alert will be returned by the Device to either the old or new Supplier in relation to any such cancellations. See GBCS for details.

5.1.2 Future Dated (DSP)

If a command cannot be Future Dated at the Device then the DCC can provide a similar function within the DCC Data Systems. In this case the Command is stored within the DCC Data Systems for a future scheduled delivery. This scheduling will be activated at the requested execution date and time and will be delivered in line with the relevant Target Response Time for Future Dated commands. Upon delivery the Device then sends a Service Response to confirm execution as it would for any other immediate execution of a command. For a list of Service Requests that can be Future Dated at the DSP see Table 36, where “Future Dated” column is set to “DSP”. Please note that only Non Critical Service Requests can be Future Dated (DSP) for SMETS2 or later devices. For SMETS1 devices both Critical and Non-Critical Service Requests can be Future Dated (DSP).

To cancel a Future Dated Service Request held at the DSP, the DCC Service User has to send another Service Request of the same Service Reference Variant with an execution date of 31/12/3000 to the same Device. The DCC Data Systems will cancel the original Service Request and return a Service Response to the cancellation Service Request, but no further Service Response will be sent for the original Service Request being cancelled. Note that, if it isn't possible to cancel the original Service Request, e.g. because it had already been submitted to the Device, the Service Response will include failure Response Code E52.

To modify a Future Dated Service Request held at the DSP, the DCC Service User has to send another Service Request of the same Service Reference Variant (with an execution date different from 31/12/3000) to the same Device. The DCC Data Systems will only treat this Request as a modification if they can identify the Service Request to be modified as one not yet submitted to the Device, in which case the values of the old Service Request will be overwritten with those of the new one. Otherwise the Request won't be considered a modification and will be processed as a new one instead.

For SMETS1 Devices only, where an On Demand Service Request is received for a Device, any stored Future Dated (DSP) Critical Service Request of the same Service Reference Variant shall not be sent to the Device by the DCC Data Systems. The Service User shall receive an N11 DCC Alert which shall be actioned at the time at which the execution would have taken place.

5.2 Meter Scheduled

Electricity and Gas Smart Meters are capable of maintaining a meter held schedule for delivery of data from the Billing Data Log as defined in SMETS. The schedule is set by the Registered Energy Supplier using the Update Billing Configuration Calendar Service Request 6.8, with this request being passed directly to the meter the same as any other configuration command. Once the billing calendar has been set, the meter will initiate the sending of billing data as a specific Billing Data Log Device Alert at the stated date/time as per the schedule.

The DCC Data Systems receives these scheduled Device Alerts as unsolicited messages and processes them accordingly, forwarding them to the relevant DCC Service User.

5.3 DSP Scheduled

DCC Service Users may create schedules for sending Service Requests which are maintained and executed by the DCC Data Systems. Such schedules are created using the Create Schedule Service Request 5.1 and are stored within DCC Data Systems. At the relevant date and time, the DCC Data Systems sends the required Service Request to the Device and receives the Service Response. This Service Response is then returned to the DCC Service User that set up the schedule.

On successful creation of a Schedule, the Service Response to Service Request 5.1 includes a unique Schedule Id which is returned to the DCC Service User. When subsequent Service Requests are sent according to this schedule then the corresponding Service Responses will identify the Schedule Id from which they were created.

Each DCC Service User shall ensure that the number of active schedules created by themselves for any specified Device does not exceed 99 Schedules.

6 Sequencing

A DCC Service User has the option to orchestrate a number of Service Requests and Signed Pre-Commands into a business process through the use of sequencing. Each Service Request or Signed Pre-Command in the sequence is only released for execution once the previous one in the sequence has completed successfully.

Sequencing is applicable to SMETS1 Devices where Modes of Operation are supported, as can be seen in section 2.3 (e.g. Future Dated (Device) Requests are not supported on SMETS1 Devices).

For SMETS1 Devices the success of a Request in a sequence is determined from the SMETS1 Response outcome, rather than from the Command response which is applicable to SMETS 2 or later Devices.

In this section the term Request is used to refer to Service Requests or Signed Pre-Commands, where the behaviour is applicable to both.

Sequencing is only applicable to Requests that are for execution on Devices and more specifically (see section 3 and section 2.3):

- non-Critical Service Requests
- Critical Service Requests (SMETS1 only)
- and Critical Signed Pre-commands
 - Critical Requests for SMETS2 or later are submitted to the DCC Data Systems twice, both times with the same Request ID. First as a Service Request to be transformed to a Pre-command and second as a Signed Pre-command to be executed by the Device. When sent as part of a sequence, both Requests will include the sequencing related common data items, i.e. First In Sequence flag and / or Preceding Request ID (see section 9.2). The DCC Data Systems will ignore these data items in the Service Request for transformation but will use them in the Signed Pre-command. This is in line with the general sequencing orchestration rule to only release a Request for execution once the previous one has completed

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	No	No	No	Yes	No	No	No

Table 10 Command Variant Values valid for sequencing

Note that for Future Dated Service Requests:

- Future Dated (Device). The trigger to release the following Command in the Sequence, where applicable, is when all the Future Dated Alerts corresponding to the Future Dated (Device) Command have been received by the DCC Data Systems and they are all successful
- Future Dated (DSP). The Service Request can only be the first in the Sequence

Sequencing is not applicable to:

- Transformation of Service Requests
 - See Critical Signed Pre-commands bullet point above
- DCC Only Service Requests. These Service Requests should be atomic in their own right and the purpose of sequencing is only to guarantee the order of Command execution on a Device

- Commands to be delivered locally. For these Requests the DCC Data Systems could ensure the order in which the Commands are returned to the DCC Service User, but not the order in which the Commands are delivered to the Device which makes the service redundant
- DSP Scheduled Service Requests
- All Gas Service Requests that return encrypted data in SMETS2 or later responses. In this case the DSP cannot read the message which includes the Response Code from the Device indicating successful execution or error reason and so cannot determine when to release subsequent Service Requests to the Device. See Table 36 for details. Please note that this Sequencing restriction applies at the SRV level and therefore also applies to SMETS1 devices.

The DCC Data Systems will process sequenced Requests in the order specified by the DCC Service User.

The following diagram illustrates the successful processing of a sequence of 3 “On Demand” Non-Critical Requests (Request ID = 1 is the “First In Sequence”. Request ID = 2 “Preceding Service Request ID” = 1 and Request ID = 3 “Preceding Service Request ID” = 2):

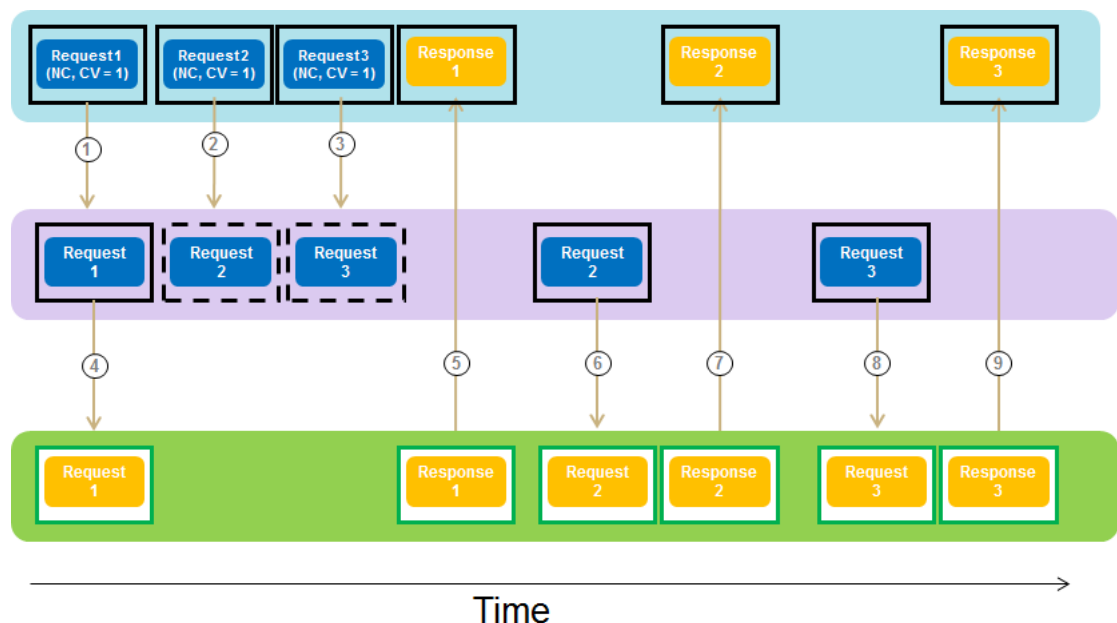


Figure 44 Sequencing – “On Demand” Non-Critical Requests

6.1 Starting a Sequence

The first Request in a sequence will have the First In Sequence flag set to true and no Preceding Request ID.

The DCC Data Systems treat the first Request in a sequence as a non-sequenced Request, except

- the First In Sequence flag being set to true is used to identify that its Command completion has to be monitored

6.2 Continuing a Sequence

The DCC Data Systems shall process all Requests in a sequence in the order specified by the DCC Service User. All Requests in a sequence, except the first one, will have the First In

Sequence flag set to false and the Preceding Request ID set to the Request ID of an earlier Request in the sequence.

Each Request that is intended to be sequenced from another Request shall only trigger the release of a single Request. The DCC Service User shall not link multiple Requests to a single Preceding Request ID.

If a Request is part of a sequence, its associated Command is only released by the DCC Data Systems to the specified Device for execution once its preceding Request's associated Command has completed successfully on the Device and a response is received by the DCC Data Systems.

6.3 Ending a Sequence

The DCC Data Systems will identify the last Request in the sequence in one of two ways:

- as the Request that makes the number of Requests in the Sequence reach the maximum number of Requests supported in a Sequence (currently set to a maximum of 99)
- as the last Request with a Preceding Request ID and with its Request ID not being the Preceding Request ID of another Request
 - The DCC Data Systems will wait for up to 2 minutes from the reception of a sequenced Request to determine if it is the last in the Sequence

If after the Last Request in the Sequence has been determined a subsequent Request is received, itself and any subsequent Requests will be set to errored.

- Their Acknowledgement Message Response Code will be set to E46 (provided they don't fail XSD validation or Access Control)

Note that the Sequence itself won't be failed and all Requests up to the last in the sequence that are still held, will be processed as defined in section 6.2.

6.4 Failed Sequenced Requests

Should a Request in a chain of sequenced Requests fail validation or execution, then all held Requests (including any already received out of order) in the Sequence that are dependent on the failed one will themselves be marked as failed and a DCC Alert will be sent to the DCC Service User. See Table 49 (DCC Alert Code N14) and Annex section 16.

For subsequent Requests received after this, the Acknowledgement Message Response Code will be set to E43 and no DCC Alert will be returned to the DCC Service User.

There is no attempt to reverse the action of the preceding successful Requests and it is the responsibility of the DCC Service User to resend corrected failed Requests (either as non-sequenced or as part of a new sequence), having first examined the failure reason given in the response message and corrected the underlying fault.

6.5 Quarantining of Sequenced Requests

In the event that a Request received as part of a sequence is identified as anomalous and is Quarantined, all not yet processed Requests identified as being part of that sequence shall also be held alongside the anomalous Request and processed or rejected as a set in accordance with the DCC Service User's instruction.

6.6 Out of Order Sequenced Requests

If sequenced Requests are received out of order, the DCC Data Systems shall cache the request for a "Wait Period" of 2 minutes from the reception of the Request to allow the missing Request to be received. If the missing Request is received within that period then the processing shall proceed as normal. If not, then the cached Request is not executed, the

Sequence is marked as failed and a DCC Alert is sent to the DCC Service User. See Table 49 (DCC Alert Code N15) and Annex section 16.

Any held subsequent Requests in the sequence dependent on the one just failed, will also be marked as failed and a DCC Alert (DCC Alert Code N15) sent to the DCC Service User.

For subsequent Requests received after the Sequence had failed (and provided they don't fail XSD validation or Access Control), the Acknowledgement Message Response Code will be set to E44 and no DCC Alert will be returned to the DCC Service User.

If the missing Request is received once the "Wait Period" has elapsed, it will be treated as the subsequent Requests received once the Sequence has failed.

6.7 No Sequence Number

The use of Sequencing is optional. Where the data items that indicate a Request is part of a Sequence (First In Sequence or Preceding Request ID) aren't included in Requests, the ordering of execution of Requests for a given device is not guaranteed.

7 Access Control

All Service Requests and Signed Pre-Commands submitted by the DCC Service User via the DCC User Interface undergo three logical modes of Access Control, namely: Authentication, Validation and Authorisation.

(In this section the term Request is used to refer to Service Requests or Signed Pre-Commands, where the behaviour is applicable to both.)

Authentication is based on two form factors: one covering the establishment of a secure communications channel, the other authentication of individual Requests. Similarly, Validation consists of both XSD Schema validation and data content validation. The DCC shall perform five stages of Access Control for all Service Requests and Signed Pre-Commands. These are executed in five stages as per the following table, See Table 11.

Stage	Description
Communications Authentication	Has the DCC Service User established a secure communications channel with the DCC, using a valid corporate TLS certificate issued by the DCC key Infrastructure (DCKI)?
XSD Validation	Is the Request consistent with the DUIS XML Schema?
Request Authentication	Has the Request been signed with a valid certificate issued by the Smart Meters Key Infrastructure (SMKI)?
Request Authorisation	Is the DCC Service User organisation and associated User Role a valid SEC party of active status? If so, does the User Role specified have access rights to perform the Request for the specified Device?
Data Validation	Is the Request valid and complete?

Table 11 Access Control Stages

The checks carried out as part of the various Access Control stages meet the obligations as outlined in SEC, including the obligation to Verify the Service Request meets the requirements of the DCC User Interface Specification.

The DCC shall only successfully process Service Requests and Signed Pre-Commands where all five stages are passed.

As soon as any one Access Control check fails, the processing of the Request is halted and an error response is returned to the DCC Service User with an appropriate response code or HTTP status code indicating the error reason.

Authorisation and Data Validation is also applied for a second time at the point a “DSP Scheduled” Command or a “CoS Update Security Credentials” Command are generated by the DCC.

7.1 Stage 1 – Communications Authentication

All communications between the DCC and DCC Service Users shall be via a secure communications channel. Individual XML Requests will flow over this secure communications channel.

The communications channel will consist of an encrypted and authenticated session between a DCC and DCC Service User Policy Enforcement Point (PEP). This session will be based on the Transport Layer Security (TLS) v1.2 protocol standard and will make use of mutual authentication using PKCS #3 Ephemeral Diffie Hellman key exchange to generate a shared secret (TLS-RSA) with AES-128-GCM-SHA256 for communications encryption. The RSA Signing Key is the PEP corporate Digital Signing Key. This may support more than one organisation as defined by the Smart Meter Key Infrastructure (SMKI) organisation id. If this Authentication step fails then a TLS message of Access Denied will be returned to the DCC Service User. See section 15 for details.

The RSA (public) Signing Key will be issued to the DCC Key Infrastructure along with a PKCS #3 Certificate Signing Request. The Certificates for both PEPs keys will be stored on the DCC Public Key Store. The process for Certificate request / verification is described in section 15.

The establishment of this communications channel is illustrated in Figure 45 Secure Communications Channel.

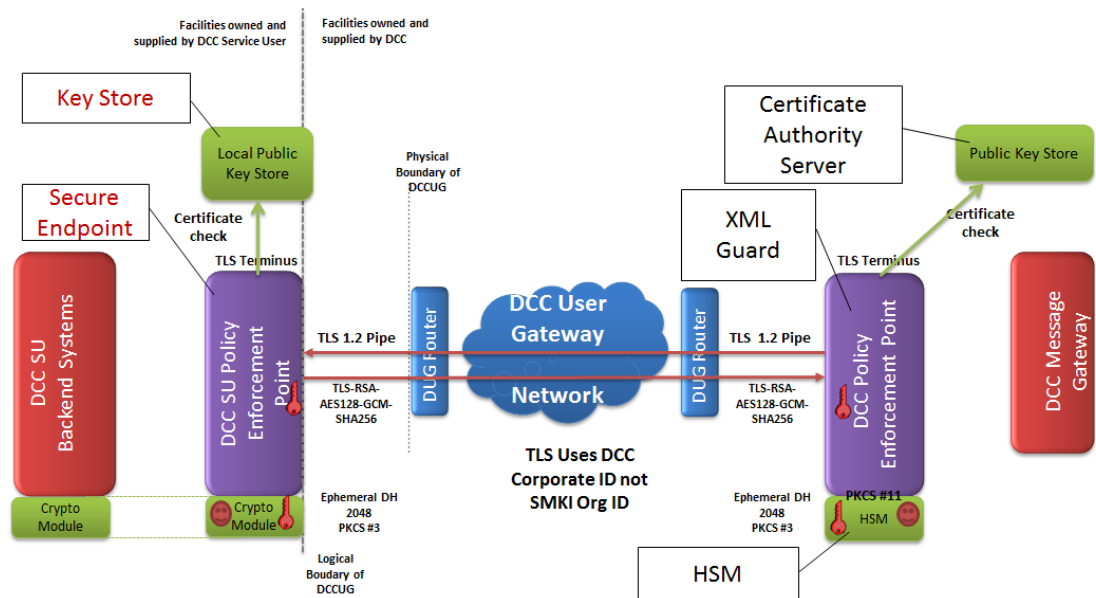


Figure 45 Secure Communications Channel

Facilities on the left hand side of the Logical Boundary of the DCCUG are owned and supplied by the DCC Service User. These reflect the expectation that each DCC Service User will put in place a boundary protection device that is capable of enforcing the TLS controls specified. The PEP must have logical access to a key store for TLS authentication and be able to create or import keys in a secure fashion such as via a Cryptographic Module. What provides the PEP capability, whether there is an Cryptographic Module in operation and the nature of the Local Public Key Store is at the discretion of the DCC Service User and their own risk assessment and risk treatment, subject to SEC conditions.

7.2 Stage 2 – XSD Validation

All Requests sent to the DCC User Interface will be subject to XSD Schema Validation.

If validation fails, the DCC Data Systems won't return a Synchronous Response as defined in section 9.3.1. Instead an HTTP status code 400 will be returned to the DCC Service User.

It is the DCC Service Users responsibility to ensure their Requests have been XSD Schema validated.

Validation Check	Process
Is the Service Reference valid?	Check that the Service Reference contained within an incoming Request from a DCC Service User is a valid and recognised request that can be received and processed by the DCC Data Systems.
Is the Service Reference format valid?	Check that the format of the Request is valid as per the Service Reference but not the content of the individual data items
Is the Request syntactically correct?	Check that the Request structure is syntactically correct with respect to the XML schema.

Validation Check	Process
Are the Request's data items valid?	Check that all the data items in the Request are valid according to the XSD. See DUIS XML Schema

Table 12 XSD Validation Checks

7.3 Stage 3 – Request Authentication

Where XSD validation is passed then the Request will be authenticated through the consumption of a Digital Signature applied to each and every XML format Request. This Digital Signature will be the organisational P-256 bit Elliptic Curve Digital Signature Algorithm (ECDSA) key generated under the auspices of the Smart Meter Key Infrastructure (SMKI).

This is illustrated in the diagram below.

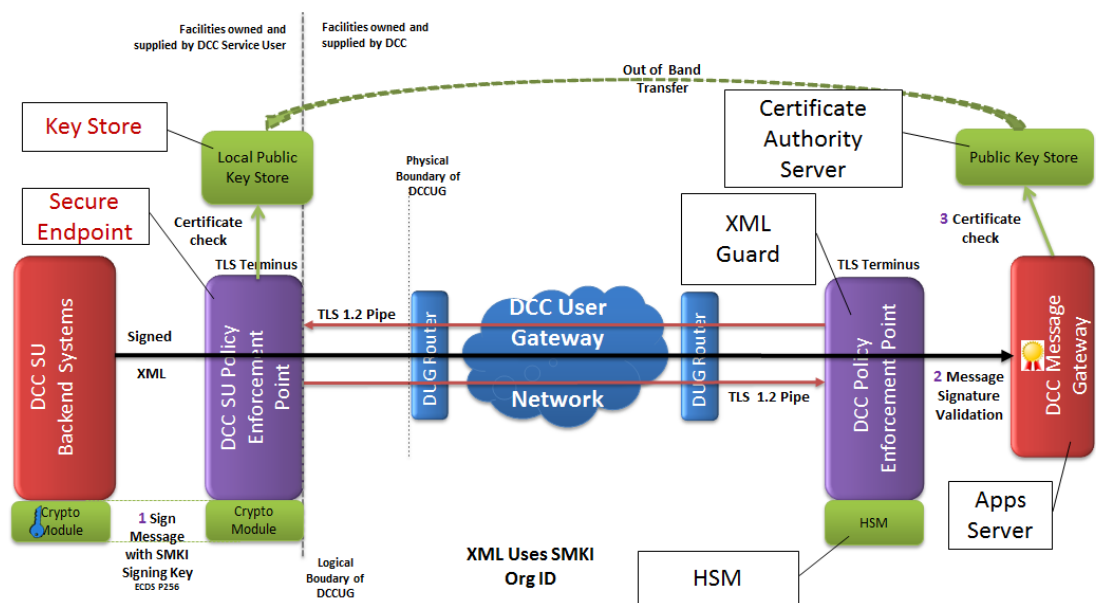


Figure 46 XML Request Authentication

To support graceful transition when approaching certificate expiry (or graceful non-emergency certificate revocation) the XML Digital Signature element `KeyInfo` must be included in the digital signature and it must define the certificate used to sign the request using a single `X509IssuerSerial` element (in a single `X509Data` element). This enables support for overlapping certificates for a period of time during a certificate transition.

In the case of all XML format Requests received by the DCC Data Systems via the DCC User Interface, the DCC will conduct the following checks.

Message Authentication Check	Process	Response Code (if checks are failed)
Validate the Remote Party Role of the DCC Service User's Certificate	Check that the Remote Party Role of the DCC Service User's Organisation Certificate is xmlSign.	E65 ¹
Has the DCC Service User presented a valid SMKI client certificate?	<p>The SMKI digital certificate referred to in the Request XML is verified to prove that the DCC Service User is eligible to communicate with the DCC Data Systems and the Request is intended for the DCC Data Systems.</p> <p>Checks undertaken¹:</p> <ol style="list-style-type: none"> 1. Check that the DCC Service User organisation ID in the Request Business Originator ID is consistent with the corporate ID used to secure the TLS connection (see section 15) 2. Use the <i>KeyInfo</i> in the Request to access the DCC Service User's signing certificate and check that it matches the signing certificate of the Request Business Originator ID 3. Use the public key from the DCC Service User's certificate to verify the authenticity of the Request 4. Verify the certificate's chain of trust up to the DCC root CA 5. Check the Certificate Revocation List to verify that no certificates in the chain of trust have expired or been revoked 	E100 ¹

Table 13 Authentication Check Steps

Requests that fail authentication will not be processed by the DCC Data Systems. The DCC Service User will be advised should authentication fail as part of the Service Response or Acknowledgment generated and sent to the requesting DCC Service User with an appropriate Response Code as listed in Table 13 above.

¹ For users on DUIS versions prior to 5.1, E100 is also used in place of E65.

7.4 Stage 4 – Request Authorisation

The permissions associated with the presented SMKI Certificate are checked to ensure that it has permission to perform the method requested.

This check is comprised of the following steps:

Authorisation Check	Process	Response Code
Does the DCC Service User have a valid User Role?	The sending organisation (DCC Service User) and their associated User Role are checked to confirm it is a valid SEC party / User Role combination	E1
Does the DCC User Role allow them to call that Request?	This is a User Role based check for the mapping between Requests and DCC Service User Roles (see section 9.4)	E2
Does the DCC Service User's status allow them to call that Request?	This is a status based check to find out if the DCC Service User is suspended (not allowed to run that Request) during the period against which the Request is placed for	E3

Authorisation Check	Process	Response Code
Is the DCC Service User, in the User Role defined in the Request, a "legitimate Registered Party" for the Device? ¹	This check is based on the registration data for the Device, and the date of execution of the Request or, for historical data, on the date-time period for which the data is required	E4
Is the Service Reference applicable to the Device status? ²	This is a check to confirm that the target Device has a status within the Smart Metering Inventory that enables the DCC Service User to send it the particular Request ³	E5
Does the User Role / Device status allow the Request to be delivered locally?	This is a check to confirm that if a Request is to be delivered locally (see section 3) the DCC User Role / Device status combination allows it (see section 9.4.1)	E17
Does the Device exist? ⁴	This is a check to confirm that the target Device exists	E19

Table 14 Authorisation Check Steps

¹ The registration data check only applies to Energy Suppliers, Network Operators or Supplier Nominated Agents and is not applied for SMETS2 or later devices for Critical Service Requests and Signed Pre-Commands.

- A "legitimate Registered Party" means that a given DCC Service User is associated with an energy market participant having an industry registration data record for a given MPxN and in a given User Role on a given date, where there is not a Change of Supplier Objection against the industry registration data Supplier relationship effective on that date, with a status of Objection Raised or Objection Upheld
 - Where there is an Objection with one of the statuses given above against the Supplier relationship effective on that date, then the "legitimate Registered Party" is the DCC Service User associated with the previous industry registration data record for the same MPxN and in the same User Role without such an Objection.
 - Note that the "legitimate registered party" in the Supplier Nominated Agent role is dependent on any Objection raised against a Supplier relationship with a Meter Point, because the Supplier Nominated Agent is nominated by a particular Supplier. During the Change of Supplier process, the system must take account of which Supplier Nominated Agent registration corresponds to which Supplier registration. (Note that the generic Supplier Nominated Agent role corresponds to Meter Operator for electricity and Meter Asset Manager for gas.)
 - Where a Change of Supplier Request from a new Supplier has been withdrawn by the new Supplier, this means that the previous Supplier becomes the legitimate registered Supplier (with no end date). This scenario is recorded in the industry registration data as an Objection with status Registration Withdrawn, and therefore the access control rules treat Objection statuses of Objection Raised, Objection Upheld and Registration Withdrawn in the same way."
 - The DCC Data Systems will store historical registration data for 24 months. Requests from a DCC Service User that had ceased to be a "legitimate Registered Party" more than 24 months ago will be rejected.
- If the Device Type is a Communications Hub, this check is done on the Device(s) being added to or already existing on the same HAN for which the Service User / User Role is a Registered Party.
- If the Device Type is a 'Type 1', 'Type 2' or Gas Proxy Function, this check is done on the Device(s) in the same HAN Device Log for which the Service User / User Role is a Registered Party.
- Authorisation is done using the device specified in the business target id except for "DCC Only" Service Requests, where the Target Device ID is specified in the Request itself, where applicable.
- This check is not applicable to Service Request 8.2 (Read Inventory), 12.1 (Request WAN Matrix) or 12.2 (Device Pre-notification)
- This check is not applicable to Service Request 8.11 (Update HAN Device Log) where an IHD is being added to the Device Log and the command is for Local Delivery only.
- If Service Request 11.3 Activate Firmware is sent by a GIS and the target Device is a SMETS1 CHF or SMETS1 PPMID, it would be rejected with response code E4 because only the EIS is able to update the firmware in these cases.

² This check is not applicable to Service Requests 8.2 (Read Inventory) and 12.1 (Request WAN Matrix) or to Critical Service Requests or Signed Pre-Commands. As an exception, this

check will be carried out for Signed Pre-Commands if the Device Status is 'Recovery' (see footnote below).

³ Devices can only be communicated with if they are in a status of 'Commissioned', 'Installed Not Commissioned', 'Whitelisted', 'Pending' or 'Recovered'. As an exception, Service Requests 11.1 (Update Firmware), 11.2 (Read Firmware Version), 11.4 (Update PPMID Firmware) and 6.23 (Update Security Credentials (CoS)), and, only for SMETS1 Devices, 2.2 (Top Up Device) with CV2, will be allowed if the Device Status is 'Suspended'. If the Device Status is 'Recovery' DCC Only Service Requests are allowed, subject to their specific validation.

⁴ For DCC Only Service Requests this Response Code will be returned if the Business Target ID is not the DSP Access Control Broker ID.

If any of these checks fails at the point the Request is received by the DCC Data Systems, the Request is errored, no further checks are carried out and a Service Response is generated with the appropriate Response Code (error message) to inform the DCC Service User of the issue identified. See section 12.3 for Response Code details.

If any of these checks fails at the point a "DSP Scheduled" Command or a "CoS Update Security Credentials" Command is being generated, the associated Service Request is also errored, no further checks are carried out and a Service Response (see Table 49) is generated with the appropriate Response Code (error message) to inform the DCC Service User of the issue identified.

7.5 Stage 5 – Data Validation

All Requests sent to the DCC User Interface will be subject to Data Validation. Data Validation is driven by application functionality rather than syntax.

Service Request specific validation is included in the Annex Service Request Definitions. The table below describes common validation checks.

Data validation checks (see section 12.3 for more information on Response Code details):

Validation Check	Process	Response Code
Is the Request applicable to the Device type and, for Electricity Smart Meter, its variant? ²	Check that the Request content is applicable to the Device type (and, for Electricity Smart Meter, the first character of its variant), e.g. Service Request 14.1 Record Network Data (Gas) is only applicable to a Gas Smart Meter ¹	E11
Is the Request's Command Variant valid?	Check that the Command Variant (see section 3) is applicable to the Request ⁵	E12
Is the Request valid for the Web Service?	Check that the Request has been sent to the correct Web Service. See section 0	E13
Is the first request in a sequence valid?	Check that if the Request includes the FirstInSequence flag set to true, it doesn't include a PrecedingRequestID	E40
Is the sequenced Request's PrecedingRequestID the PrecedingRequestID of another Request?	Check that the sequenced Request's PrecedingRequestID is not the PrecedingRequestID of another Request	E41

Validation Check	Process	Response Code
Does the sequence contain a circular reference?	Check that there are no circular references in the sequence, i.e. a Request's PrecedingRequestID is not its own RequestID or the PrecedingRequestID of a Preceding Request in the sequence is not the currently processed Request's RequestID	E42
Have any of the sequenced Request's Preceding Requests failed?	Check that none of the Request's Preceding Requests have failed	E43
Have all the sequenced Request's Preceding Requests been received? ³	Check that all Request's Preceding Requests in the sequence have been received during their "Wait Period" (see section 6.6)	E44
Is the sequenced Request's Command Variant valid?	Check that the Command Variant (see section 3) is applicable to sequenced Requests (see section 6)	E45
Has the sequenced Request been received before the Last in Sequence has been determined? ³	Check that the Request does not follow a Request that has been determined to be the Last In Sequence (see section 6.3)	E46
Have any of the sequenced Request's Preceding Request Responses been received?	Check that the Request has not been received after the Sequence has been failed because of no response received from the Device to a previous Command	E47
Is the ServiceReference / ServiceReferenceVariant combination valid?	Check that the combination of Service Reference and Service Reference Variant is correct, i.e. it aligns to the definitions in Table 36.	E48
Is the Request Format correct for the Request? ²	Check that the actual Request format matches the Service Reference Variant in the message header	E49
Is the Command for Local Delivery returned??	Check that Service Request requesting a Command for Local Delivery has returned a Command	E50
Is the Signed Pre-Command GBCS message code correct? ⁴	Check that the GBCS message code in the Signed Pre-Command is consistent with the Service Reference Variant contained in the XML Request Header	E51
Is the Request to cancel a Future Dated (DSP) Service Request valid?	Check that if the Service Request is the cancellation of a Service Request Future Dated (DSP), the corresponding Service Request can be found and it hasn't yet been submitted to the Device	E52
Is the sequenced Future Dated (DSP) Request valid?	Check that if the Service Request is Future Dated (DSP) and it is part of a Sequence, it is the first Request in the Sequence	E53
Is the sequenced Gas Service Request valid?	Check that if the sequenced Service Request returns Gas Data, the response is not encrypted (See Table 36 for details)	E54
Is the Request ID a duplicate?	Check that the Request ID is not the duplicate of another Request which is currently being processed by the DCC Data Systems	E55
Is the Service Request still supported by the DCC Data Systems?	Check that the requested Service Request is still supported by the DCC Data Systems. This error will only occur if a Service Request which exists in an older version of the DUIS schema can no longer be accepted by the DCC Data Systems on that version of the interface.	E56

Validation Check	Process	Response Code
Is the Request applicable to the Device GBCS version ²	Check that the Request content is applicable to the Device GBCS version, e.g. Service Request 6.26 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) is only applicable to an Electricity Smart Meter at GBCS version 2.0 or later ¹	E57
Is the Request applicable to SMETS1?	Check that if the target Device's SMETS version is SMETS1, the Service Request is applicable to SMETS1 (Table 36 'SMETS1 Applicability' set to Yes)	E60
Is the SMETS1 Service Request's Command Variant valid?	Check that if the target Device's SMETS version is SMETS1, the Command Variant (see section 3) is applicable to SMETS1 Service Requests ⁶	E61
If DCC protection against Replay is required, has the Service Request been processed already?	Apply protection against Replay checks where DCC protection against Replay is required, as specified in the Service Request Processing Document.	E63
If DCC protection against Replay is required, does the Service Request come from the correct Supplier or Network Operator ID?	Where DCC protection against Replay is required, check that the Originator ID in the Service Request matches the Notified Critical Supplier ID or Notified Critical Network Operator ID as stored by the DCC Data Systems.	E64

Table 15 Data Validation Checks

¹ This check is not applicable to DCC Only Service Requests, except for Service Request 5.1 (Create Schedule) where it does apply to the Scheduled Service Request

² Validation is only applied to the XML data within the Request. There is no validation of the format of the GBCS Command held within a Signed Pre-Command. The E57 check is not applicable for Service Request 11.2 if the target Device is a PPMID, to cater for the scenario where a firmware update has been executed on a Device but the confirmation Device Alert was not received and processed by DSP, so the Firmware Version ID in the SMI is misleading.

³ Validation takes into account Out of Order Sequenced Requests Rules (see section 6.6) and it will only fail if the "Wait Period" for the Preceding Requests has elapsed

⁴ Validation only applicable to GBCS Command held within a Signed Pre-Command

⁵ The valid combinations of Command Variant and Mode Of Operation are defined in Table 5

⁶ The valid combinations of Command Variant, Mode Of Operation and SMETS1 Services are defined in Table 6

7.6 Responses and Alerts

When sending Responses and Alerts to DCC Service Users, the DCC Data Systems have to determine the correct recipient of those Responses or Alerts. This is the only relevant "access control" carried out for Responses or Alerts.

The rules below describe how this is determined:

1. Device Response. The DCC Data Systems forward the Device Response to the Business Target ID specified in the Device Response. Where the Business Target ID is the Access Control Broker acting on behalf of a URP the DCC Data Systems forward the Device Response to the DCC Service User that made the original Request. There is no checking against Registration data to determine Response routing.
2. Device Alert. The DCC Data Systems forward the Device Alert to the Business Target ID in the Device Alert and, for those with two recipients, also to the Supplementary Remote

Party ID in the Device Alert. There is no checking against Registration data to determine Alert routing.

3. DCC Alert. The DCC Data Systems generates the Alert in response to a trigger and sends it to the Recipient(s) associated to that DCC Alert (see Table 49) via checking against Registration data to determine the registered recipient, where applicable.

8 Security

8.1 Introduction

Much of the content, processing and structure of Remote Party Messages (as defined in GBCS) are common across multiple Messages. This Section lays out such common requirements with a specific focus on interactions between the DCC Service User and DCC User Gateway Services.

The following Section includes use cases between the DCC and DCC Service User that fall outside the scope of the GB Companion specification as they do not involve Device communications. It also includes use cases that are included within the GB Companion Specification but with embellishments supplied in relation to the interaction between and actions of the DCC and the DCC Service User.

Please note; one significant clarification that has been made with respect to those diagrams in the GB Companion Specification is that the Transform Service (DCC) (see section 0) is a dedicated function solely to support Critical Command Transformation and Signing. For Non-Critical Commands, transformation is seen as part of the core DCC Send Command Service and is performed within that service.

It should be noted that while there may be overlap between the sequence diagrams in section 8.3 and those within the GB Companion Specification, it is only those items shown within yellow notes boxes in the sequence diagrams that form part of the formal GB Companion Specification. For such items the GB Companion Specification takes precedence. This document represents the definitive specification for all other activities shown within the sequence diagrams included below.

This is fully consistent with the GB Companion Specification itself, which states that *“only those parts of the sequence diagrams within yellow notes boxes are within the scope of the GBCS. The steps outside such boxes are provided for context and, where mandated, are mandated through mechanisms outside the GBCS, for example the Smart Energy Code.”*

Embellishments to our sequence diagrams include:

- clarification of the use of XML Messaging between DCC Service User and the DCC;
- clarification that Signatures are required to be applied to the XML messages (see section 8.2 for details of keys that are used);
- confirmation that the DCC issues an Acknowledgement message in response to Service Request and Signed Pre Commands for all Asynchronous communications;
- clarification as to the specific DCC service with which a DCC Service User interacts where applicable, e.g. Send Command Service, Transform Service etc.;
- clarification as to the format of each DCC Service User to DCC Communication.

Note that all Service Responses and Alerts go via the Receive Response Service.

Where such use cases include Device communications we have generally included those communications and Device operations to provide context. We have simplified these where possible while retaining the essence of the use case flow.

8.1.1 Device KRP and URP

For a SMETS2 or later Device, where a Remote Party is known to a Device by way of that Remote Party's Security Credentials being stored on the Device, the Remote Party is referred to as a Known Remote Party (KRP). Otherwise, it is referred to as an Unknown Remote Party (URP). See GBCS for details.

For a SMETS1 Device, the Remote Party is KRP to a Device if the Relevant S1SP is required to hold either a current Notified Critical Supplier ID or a current Notified Critical Network

Operator ID (according to the Remote Party's Role) for the SMETS1 Device in question, and URP otherwise, which is equivalent to the distinction for SMETS2 or later Devices. See the SMETS1 Supporting Requirements Document for details.

SMETS 2 or later

In all cases where a User Role doesn't map to a Device KRP, but SEC states that the User Role has access to a Service Request, the User Role is a URP and the Command is sent to the Device by the Access Control Broker, i.e. the DSP Broker, and the Device Response is returned to the Access Control Broker.

Where a User Role is a URP the DCC shall create the associated Command to the Device on behalf of the User using the DSP Access Control Broker Security Credentials. The RequestID of the Command created by the DCC shall be different to that of the original Service Request received by the DCC. Where the Response to a Service Request Variant of this type requires encryption within the Service Response, the Service User is required to include an additional data item (KAPublicSecurityCredentials) within the body of the Service Request as defined within the Service Request Definitions in the Annex. This data item is added to the otherInformation field within the associated Commands GroupingHeader as defined by GBCS (added to Supplementary Remote Party Key Agreement Certificate).

SMETS1

Where a Service User sends a Service Request targeted at a SMETS1 Devices, whether the Service User has a KRP or URP relationship to the Device, the DCC Data Systems shall pass the whole Service Request to the S1SP. This means that for URP cases, where the S1SP responds to the originator of the request it targets the response directly at the Service User, rather than to the Access Control Broker as in the corresponding SMETS2 or later case. See section 4.19.1.

The following table summarises (as defined in GBCS) which User Roles are Known Remote Parties to which SMETS2 or later Devices:

Known Remote Party				Device Type					
User Role	Remote Party Role	Key Usage	Cell Usage	ESME	GSME	CHF	GPF	HCALCS	PPMID
EIS	Supplier	Digital Signature	Management	✓				✓	
EIS	Supplier	Key Agreement	Management	✓					
EIS	Supplier	Key Agreement	Pre Payment Top Up	✓					
GIS	Supplier	Digital Signature	Management		✓		✓		
GIS	Supplier	Key Agreement	Management		✓		✓		
GIS	Supplier	Key Agreement	Pre Payment Top Up		✓				
ENO	Network Operator	Digital Signature	Management	✓					
ENO	Network Operator	Key Agreement	Management	✓					
GNO	Network Operator	Digital Signature	Management				✓		
GNO	Network Operator	Key Agreement	Management				✓		
N/A	Access Control Broker	Digital Signature	Management			✓			✓

Known Remote Party				Device Type					
User Role	Remote Party Role	Key Usage	Cell Usage	ESME	GSME	CHF	GPF	HCALCS	PPMID
N/A	Access Control Broker	Key Agreement	Management	✓	✓	✓	✓	✓	✓
N/A	WAN Provider	Digital Signature	Management			✓			
N/A	Transitional CoS	Digital Signature	Management	✓	✓		✓	✓	
N/A	Root	Key Certificate Signing	Management	✓	✓		✓	✓	
N/A	Load Controller ²	Digital Signature	Management	✓ ¹					
N/A	Load Controller ²	Key Agreement	Management	✓ ¹					

Table 16 User Roles and Device KRPs

¹ GBCS v4.0 or later

² In this version of the interface, these may be updated only by a Supplier since there is no regulatory support enabling SMKI Organisation Certificates to be issued with the Load Controller SMKI Remote Party Role.

8.2 Key Cryptographic Operations

The following Cryptographic operations protect all DUIS XML format messages that are sent and received by DCC Service Users across the DCC User Interface and are in addition to those specified within the GB Companion Specification which are used to Digitally Sign Commands.

The DCC and each DCC Service User shall Digitally Sign all DUIS XML format messages using the following method for each of the DUIS signing activity listed below. All these DUIS signing activities shall be signed with an organisational P-256 bit Elliptic Curve Digital Signature Algorithm (ECDSA) key generated under the auspices of the Smart Meter Key Infrastructure (SMKI). This signature should be generated in accordance with NSA Suite B.

8.2.1 DUIS XML Service Request Signing

Each DCC Service User shall Digitally Sign every XML format Service Request and Signed Pre-Command using an XML User Role Signing Private Key. For clarity, this is a separate dedicated key pair that shall not be used for communication with Devices.

A separate XML User Role Signing Private Key must be used per User Id in use for each DCC Service User.

Each DCC Service User may use the same XML User Role Signing Private Key for Service Requests and SMETS1 Service Requests.

The DCC shall check that the DCC Service User has used an XML User Role Signing Private Key to Digitally Sign each Service Request and Signed Pre-Command, and shall cease processing the communication and notify the DCC Service User if this is not the case.

See section 7.3 for additional details.

8.2.2 Transform Service Response Signature Validation

The DCC shall Digitally Sign all XML format Service Responses containing Pre-Commands sent to DCC Service Users using an XML DSP Role Signing Private Key. This is a separate dedicated key pair that shall not be used for communication with Devices.

The DCC Service User shall verify the Digital Signature of Pre-Commands sent by the DCC (this includes Certificate status checking and Certificate Path Validation of the Public Key Certificate of the DCC Transform Service).

8.2.3 DCC Signed Service Responses

The DCC shall Digitally Sign the following XML format Service Responses sent to DCC Service Users, using an XML DSP Role Signing Private Key. This is a separate dedicated key pair that shall not be used for communication with Devices

- all DCC Alert messages, originating from the DCC, including DCC Alerts containing S1SP Alerts (see section 3.13.1);
- all Service Responses to DCC Only Service Requests that return data;
- all Service Responses returning Command(s) for Local Delivery;
- all Service Responses to Commands created by a DSP Schedule;
- For SMETS2 or later, all Service Responses to Commands from an Unknown Remote Party. Also applicable to Service Requests 6.21 (Request Handover Of DCC Controlled Device), 6.23 (Update Security Credentials (CoS)), 6.24.1 (Retrieve Device Security Credentials (KRP)), 8.5 (Service Opt Out), 8.9 (Read Device Log) where the Target Device Type is HCALCS and 8.12.2 (Restore GPF Device Log)
- All SMETS1 Response and SMETS1 Alert Messages (see section 3.13.1)

The DCC shall use the same XML DSP Role Signing Private Key for each of the XML format Service Responses sent to DCC Service Users defined above regardless of SMETS device type,

The DCC Service User shall verify the Digital Signature of such DCC Signed Service Responses. This shall include Certificate status checking and Certificate Path Validation of the Public Key Certificate of the DCC Access Control Broker Service.

To support graceful transition when approaching certificate expiry (or graceful non-emergency certificate revocation) the XML Digital Signature element `KeyInfo` is included in the digital signature of signed responses and it defines the certificate used to sign the request using a single `X509IssuerSerial` element (in a single `X509Data` element). DCC Service Users must support overlapping certificates for a period of time during a certificate transition.

8.2.4 XML Digital Signatures

The DUIS XML is signed with a Digital Signature (XMLDSig), there are a number of parameters that are required as part of the algorithm, these parameters define the transform, signing, canonicalization and digest algorithms to be used, as well as the XML node which is signed. Note that the Reference URI is defined as "", which indicates that signature applies from the root of the document;

Parameter	Value
Reference URI	""
Transform Algorithm	http://www.w3.org/2000/09/xmlsig#enveloped-signature
CanonicalizationMethod Algorithm	http://www.w3.org/2001/10/xml-exc-c14n#

Parameter	Value
SignatureMethod Algorithm	http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256
DigestMethod Algorithm	http://www.w3.org/2001/04/xmlenc#sha256

8.3 Sequence Diagrams

The sequence diagrams in the figures in this section 8 illustrate the generic processing stages and common processing requirements, where a Device is operated via the DCC.

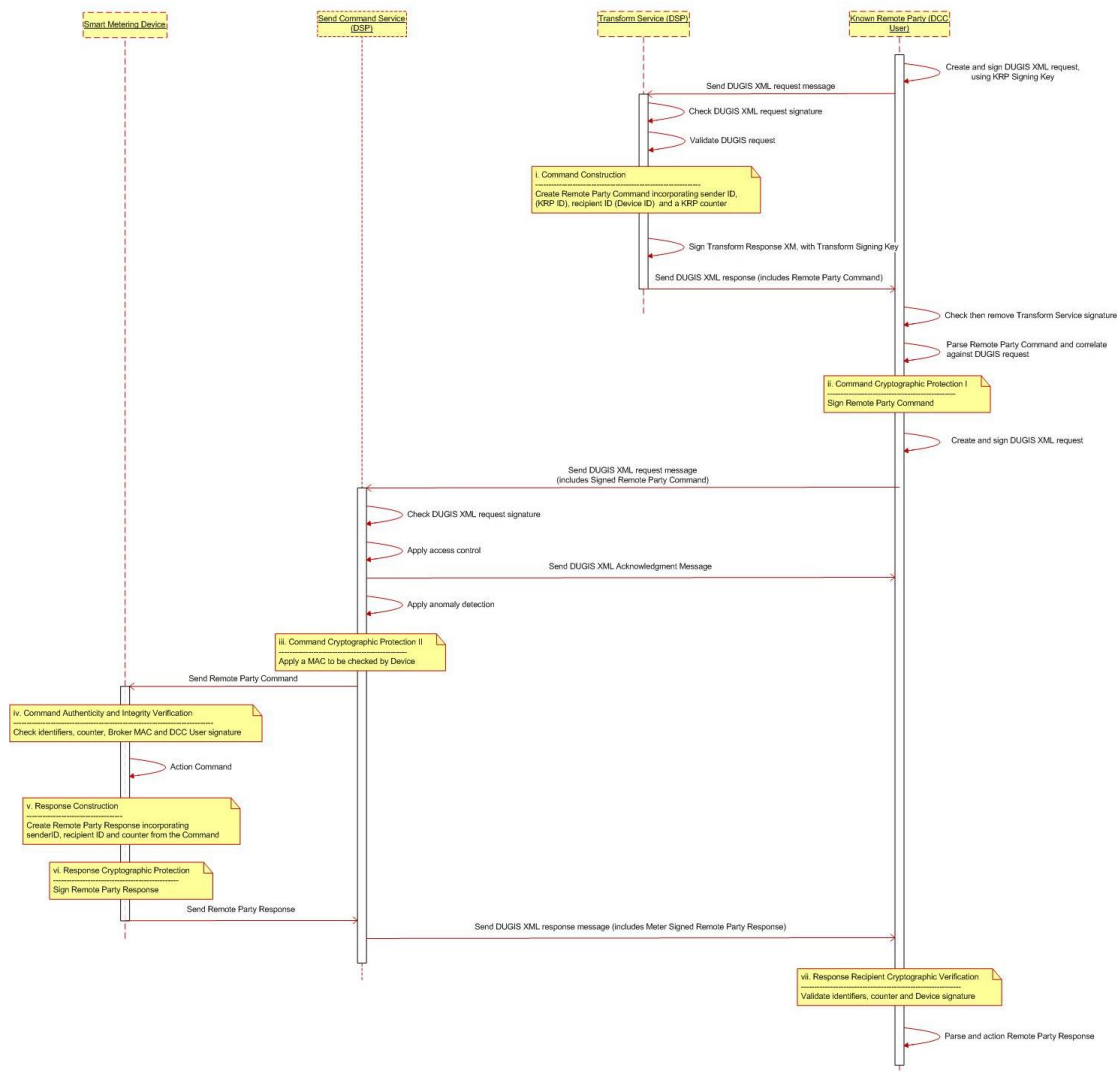
Note that those parts of the sequence diagrams within yellow notes boxes are within the scope of the GBCS. The steps outside such boxes are mandated via this Design Specification.

For readability, these diagrams use the term “DSP Broker” to refer to the DCC Access Control Broker.

These sequence diagrams are applicable only to SMETS2 or later Devices.

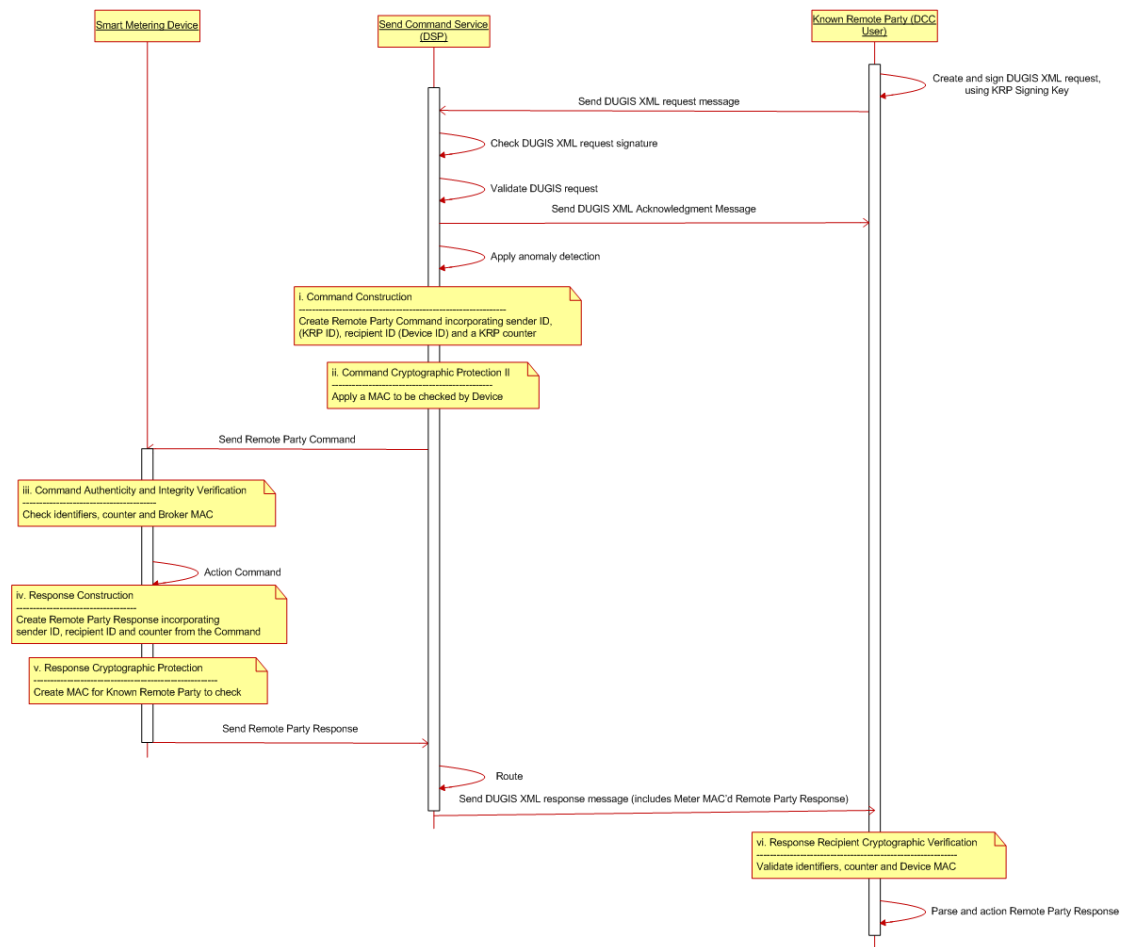
8.3.1 SME.C.C – Critical Command from Known Remote Party (KRP)

This service request follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1.



8.3.2 SME.C.NC.KRP – Non-Critical Command from Known Remote Party (KRP)

This command follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1.



Note: If the Response contains sensitive data then the Device will additionally encrypt the sensitive data for the KRP to decrypt.

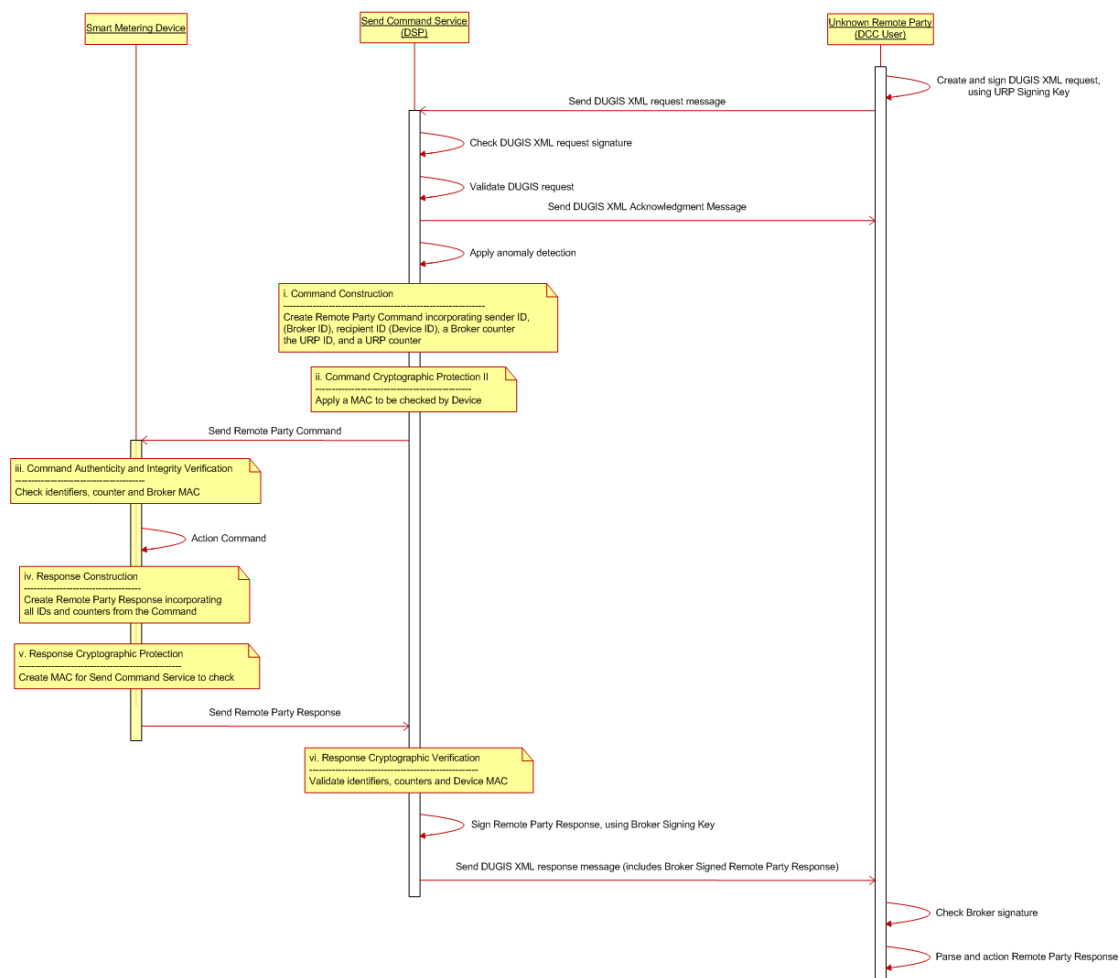
8.3.3 SME.C.NC.URP – Non-Critical Command from Unknown Remote Party (URP)

This command follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1.

It varies from SME.C.NC.KRP in that the Device is not aware of the Unknown Remote Party, its associated keys, etc. and hence has to relay the response through the Send Command Service.

To support this the Send Command Service has to apply its own message counter to the outbound command to enable the Device to generate a response GMAC'd for the Send

Command Service which then has to validate this GMAC and sign the XML message to the Unknown Remote Party.



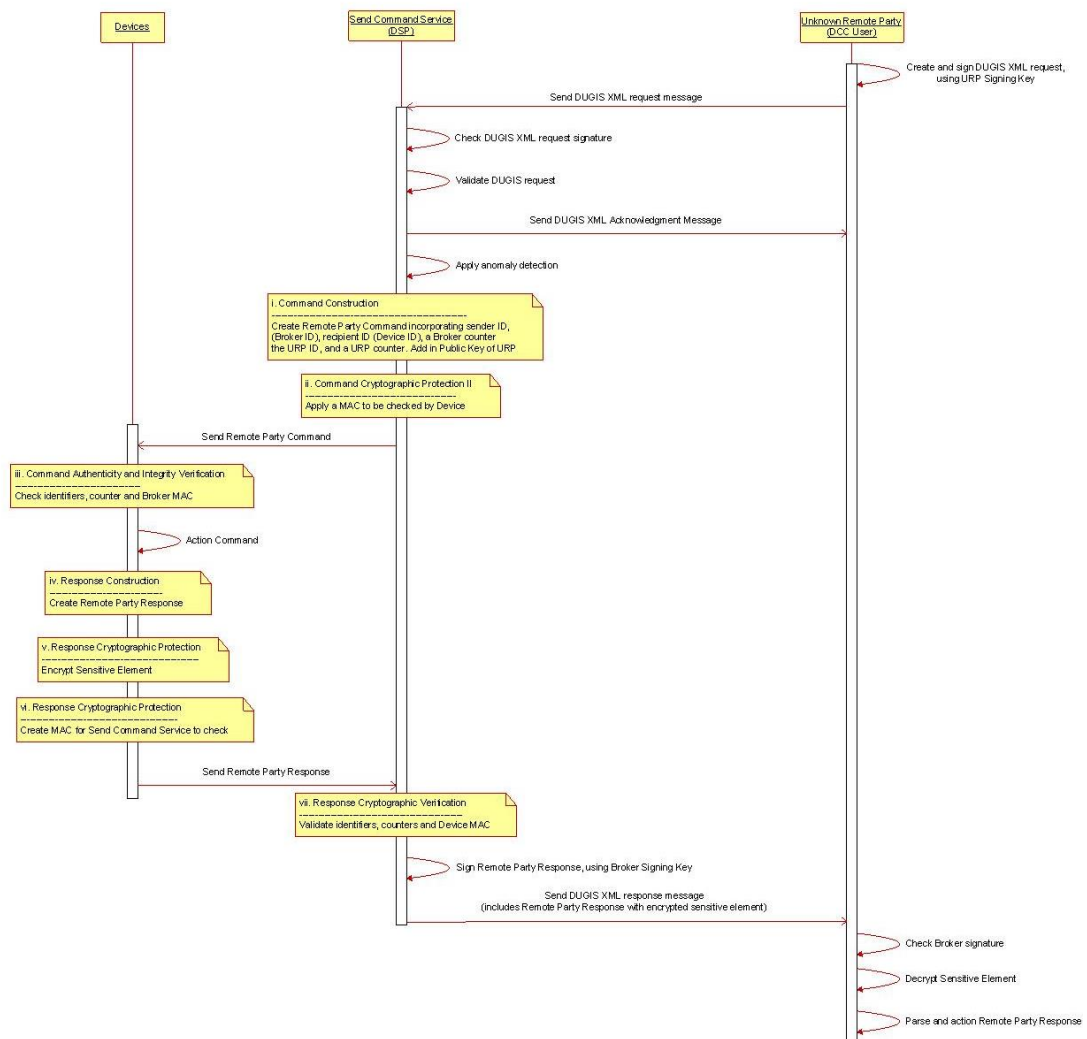
8.3.4 SME.C.NC.URP.SEN – Non-Critical Command from Unknown Remote Party (Sensitive Response)

This Service Request follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1.

It builds on and varies from SME.C.NC.KRP in that the Device has to encrypt the sensitive element of the response message, such that the sensitive element cannot be read by anyone other than the Unknown Remote Party (URP).

To support this the Send Command Service has to apply both its own counter and add the public key of the URP to the outbound command to enable the Device to generate a response GMAC'd for the Send Command Service and encrypt the sensitive element for the URP.

The Send Command Service then has to validate this GMAC on the service response and Sign the XML message to the URP. The URP is able to decrypt the sensitive element through generation of the Device shared Secret, generated via Elliptic Curve Diffie Helman (ECDH) based on the URP and Device key agreement keys.

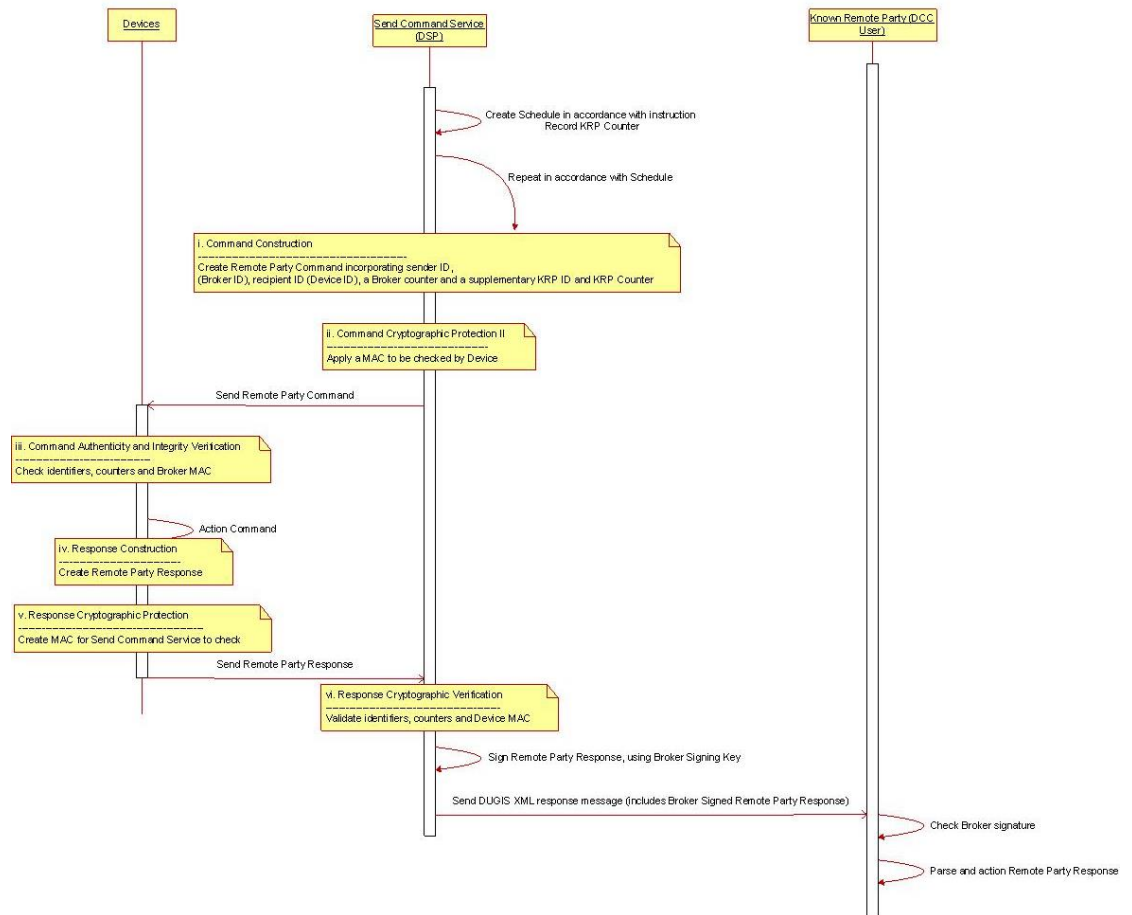


8.3.5 SME.C.NC.KRP.SCH – Non-Critical Command from Known Remote Party (DSP Scheduled)

This Service Request follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1.

It builds on and varies from SME.C.NC.KRP, through the addition of a Send Command Service scheduling function. Note that we have not reiterated in this diagram how the Send Command Service receives the schedule in the first place which is no different from how it receives any other Non-Critical Command.

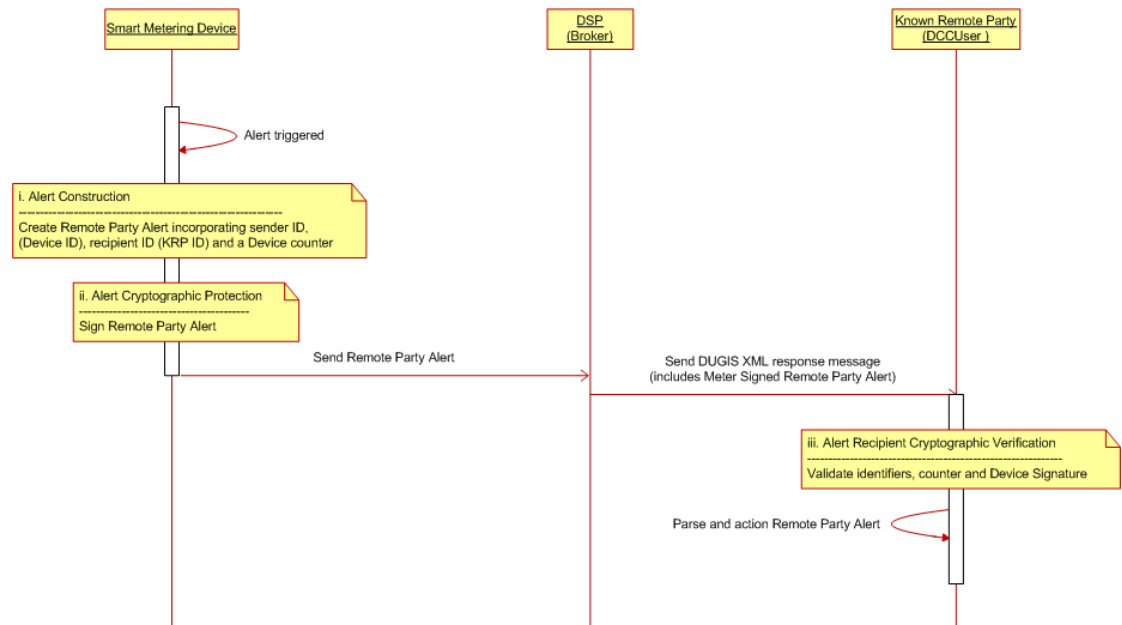
To support this the Send Command Service has to apply its own message counter to the outbound command to enable the Device to generate a response GMAC'd for the Send Command Service which then has to validate this GMAC and sign the XML message to the Known Remote Party.



Note: If the Response contains sensitive data then the Device will additionally encrypt the sensitive data for the KRP to decrypt,

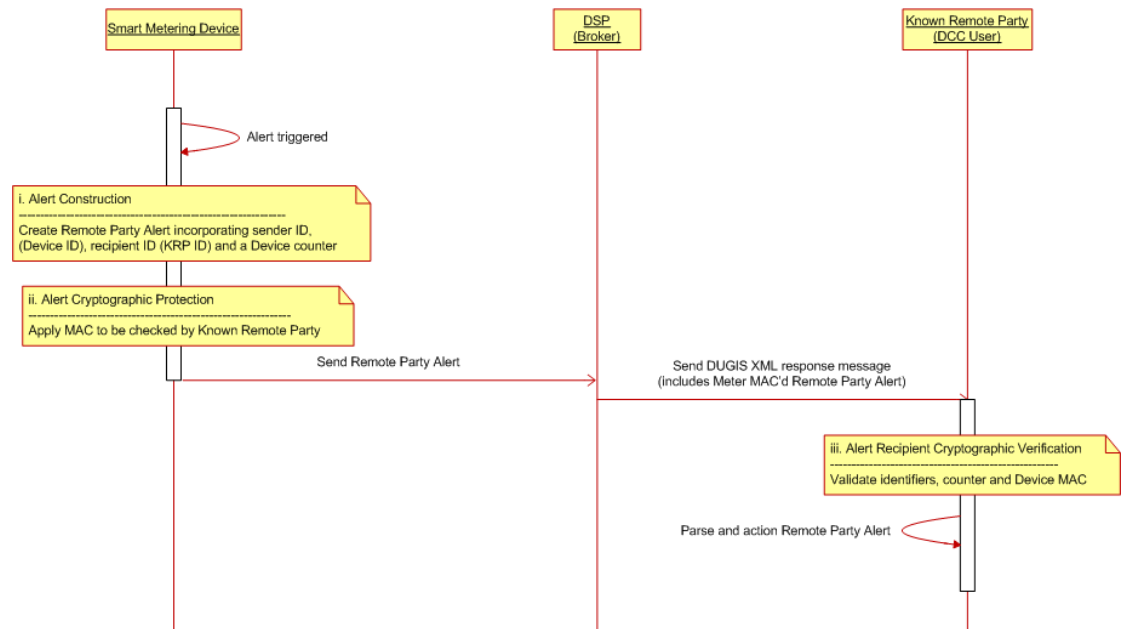
8.3.6 SME.A.C – Critical Alert to Known Remote Party

This command follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1.



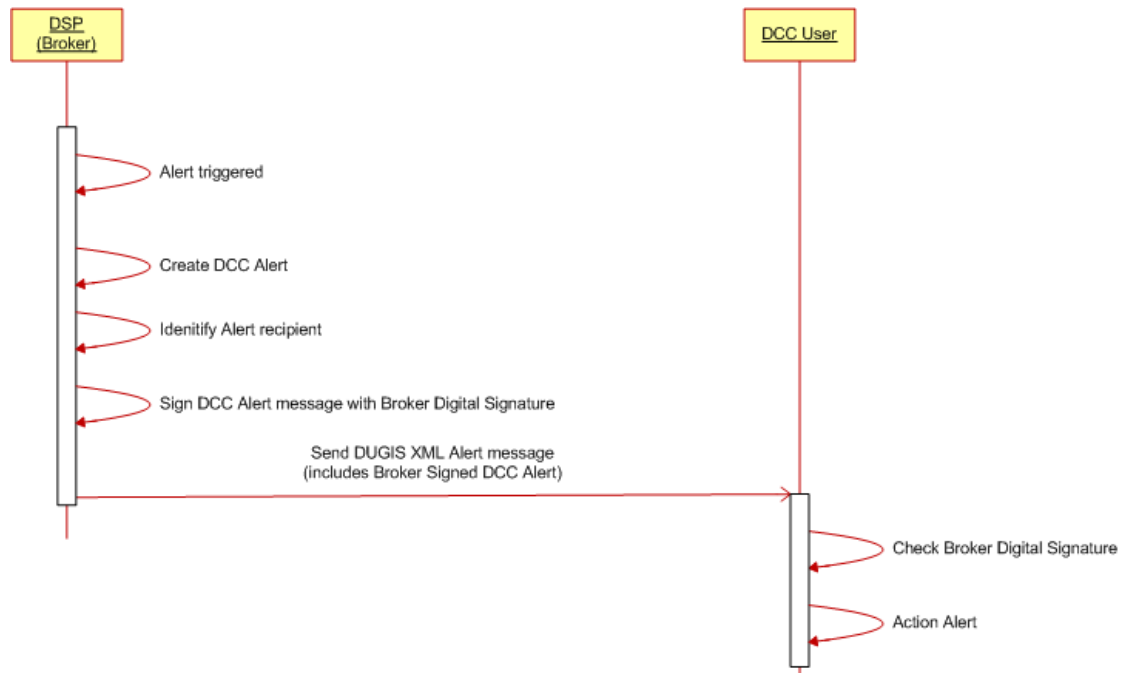
8.3.7 SME.A.NC – Non-Critical Alert to Known Remote Party

This command follows the pattern of that specified in GB Companion Specification subject to the above clarifications described in section 8.1. Note that all Alerts go via the Receive Response Service.



8.3.8 DCC.A – Alert from DSP to DCC Service User

This Alert represents a DCC to DCC Service User interaction that falls outside of the Scope of the GB Companion Specification described in section 8.1. Note that all Alerts go via the Receive Response Service.

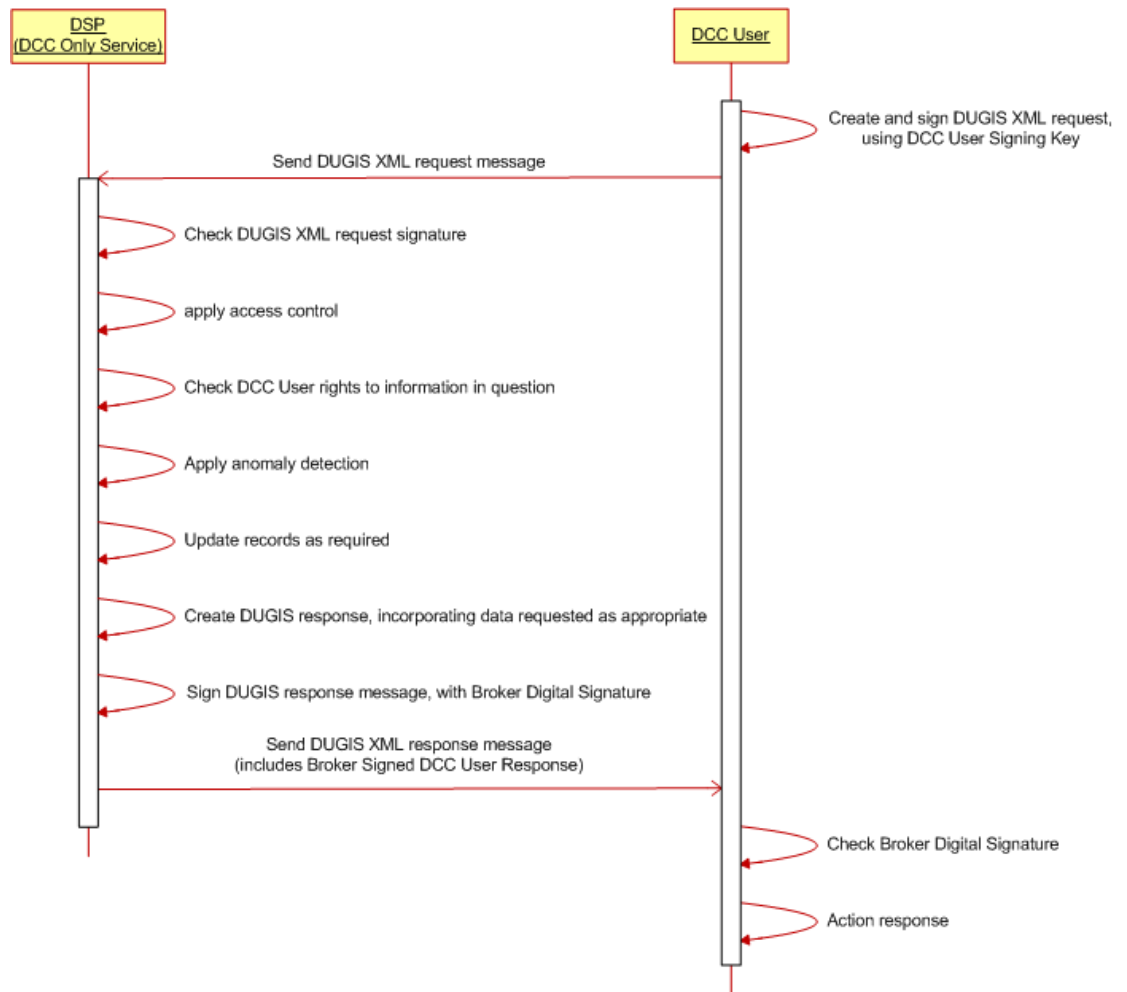


8.3.9 DCC.C – Command from DCC Service User to DCC

This command represents a DCC to DCC Service User interaction that falls outside of the scope of the GB Companion Specification.

It shows how a DCC Service User issues a Service Request via XML to the DCC Only Service; what steps the DCC Only Service takes in terms of its processing, from a security perspective;

and the form of the response. Note that communications in both directions are via XML messages signed using the digital signing key of the sending party.



9 Request and Response Definitions

This section defines the Request and Response Formats and their Header and Common Data Items. The more detailed data attributes associated with each Service Request, Service Response, Device Alert and DCC Alert are contained within the Annex – Service Request Definitions document (Annex).

The DCC User Interface has been designed to be a single common interface to enable communications between DCC and Service Users for all SMETS Devices and so the following Request and Response Definitions are common for all communications regardless of the SMETS version of the Device, except where indicated otherwise.

This documentation set uses the data types defined in XML (prefixed with xs:) and data types defined in this documentation set (prefixed with sr:).

9.1 Request and Response XSD Diagrams

The XSD diagrams in the following 2 sections and in the Annex consist of the following components, described in this example diagram:

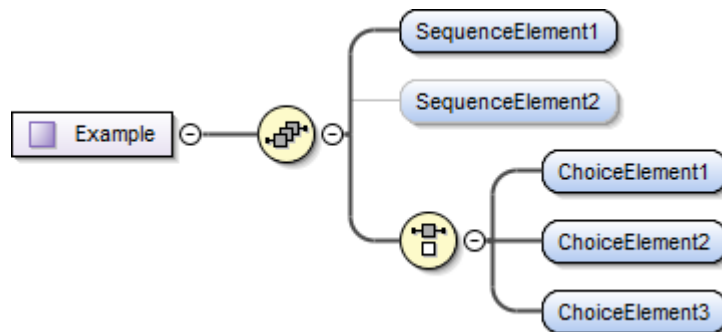


Figure 47 XSD Diagram Components

Example is a complex element consisting of:

- A sequence of
 - Mandatory SequenceElement1
 - Optional SequenceElement2
 - A mandatory choice of one of
 - ChoiceElement1
 - ChoiceElement2
 - ChoiceElement3

Note that all diagrams include the Schema version attribute for the top level element – see section 9.5 for a description of how versions are used.

9.2 Request Format

The Request format is defined in the Request XML element of the XSD (see DUIS XML Schema).

Note that the Request format is common to the DCC User Interface at versions 1.0, 2.0, 3.x, 4.0 and 5.x.

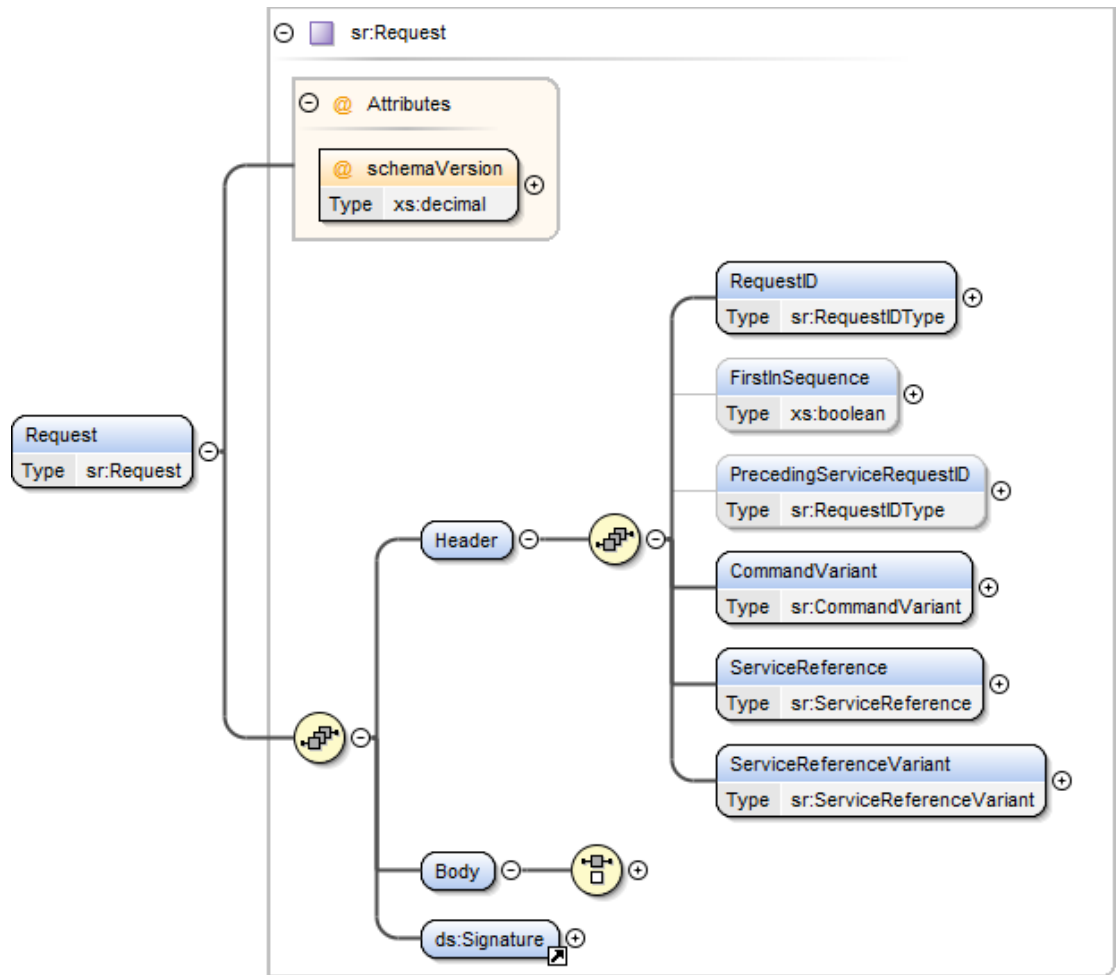


Figure 48 Request Structure

The above diagram is to be read as:

- A Request is a sequence of
 - A mandatory Header. It contains the Request Header Data Items. See Table 17
 - A mandatory Body. It contains the choice of Service Request Variants and Signed Pre-command. See section 9.2.1
 - A mandatory Digital Signature (defined in a separate schema). See XMLDSIG XSD for details on the signature schema. It contains the DCC Service User SMKI digital signature of the XML message. See section 8.2.

The following table details the data items in the Header:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	Concatenation of BusinessOriginatorID, BusinessTargetID and OriginatorCounter as defined in GBCS, separated by “:”. See section 4 for usage	sr:RequestIDType (see Annex section 17)	Yes	None	N/A	Non-Sensitive
FirstInSequence	Flag to indicate that a Request is the first in a sequence. See section 6 Valid set: <ul style="list-style-type: none"> true. (Yes) false. (No) 	xs:boolean The User shall add to the first Request in a sequence when using sequencing functionality	No	None	N/A	Non-Sensitive
PrecedingServiceRequestID	The unique identifier (RequestID) of a preceding Request when this particular Request is intended to be executed specifically after the preceding Request. See section 6	sr:RequestIDType (see Annex section 17) The User shall add to a Request in a sequence (other the first) when using sequencing functionality	No	None	N/A	Non-Sensitive
CommandVariant	Value to indicate to the DCC Data Systems if a Request has to be: <ul style="list-style-type: none"> transformed to a GBCS command or sent via the CSP network, returned to the DCC Service User to be locally applied (via a Hand Held Terminal or in some cases via the customer entering a code on the device or PPMID) or both or executed by DCC See section 3 Possible Values <ol style="list-style-type: none"> Send (Non-Critical) Return for local delivery (Non-Critical) Send and Return for local delivery (Non-Critical) Transform Send (Critical) Return for local delivery (Critical) Send and Return for local delivery (Critical) DCC Only Request 	sr:CommandVariant (see Annex section 17)	Yes	None	N/A	Non-Sensitive
ServiceReference	Identifier that signals the particular type of Request to DCC (and is driven from the DCC Service User's selection of Request) See 'Service Reference' column in Table 36	sr:ServiceReference (see Annex section 17)	Yes	None	N/A	Non-Sensitive
ServiceReferenceVariant	Identifier that signals the particular Request Variant to DCC (and is driven from the DCC Service User's selection of Request) See 'Service Reference Variant' column in Table 36	sr:ServiceReferenceVariant (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 17 Request Header Data Items

9.2.1 Request Body Format

The Request Body includes the list (as a choice) of all the Service Request Variants and the Signed Pre-command. This list can be sub-divided as follows:

- “Device” Service Requests. For the full list please see Table 36 where “DCC Only ” is “No”.
- “Non-Device” Service Requests. For the full list please see Table 36 where “DCC Only ” is “Yes”.
- Signed Pre-command. Applicable to those Service Request Variants in Table 36 where “DCC Only ” is “No” and “Critical” is “Yes”.

In all cases the Request Body has to include the XML element specific to that request.

For Service Requests that include data items the XML element will include the Service Request Name and the data items.

For Service Requests that don’t include data items, the XML element will only contain the name in one of 2 ways:

```
<ServiceRequestName1></ServiceRequestName1>
Or
<ServiceRequestName1/>
```

9.2.1.1 “Device” Service Requests Format

The “Device” format is applicable to all Service Requests where the Business Target ID is a Device ID. For Critical Service Requests, this is the Service Request sent to the Transform Service. See section 3.

The Service Request specific XML section depends on the actual Service Request. It can either contain plain text (non-Sensitive) or a combination of plain text (non-Sensitive) and encrypted data (Sensitive). See Annex for details of each “Device” Request.

Figure 49 includes a ‘choice’ of “Device” Service Requests (Service Reference Variants). For readability reasons, this ‘choice’ includes only a subset of “Device” Service Requests. For the full list please see Table 36 where “DCC Only ” is “No”.

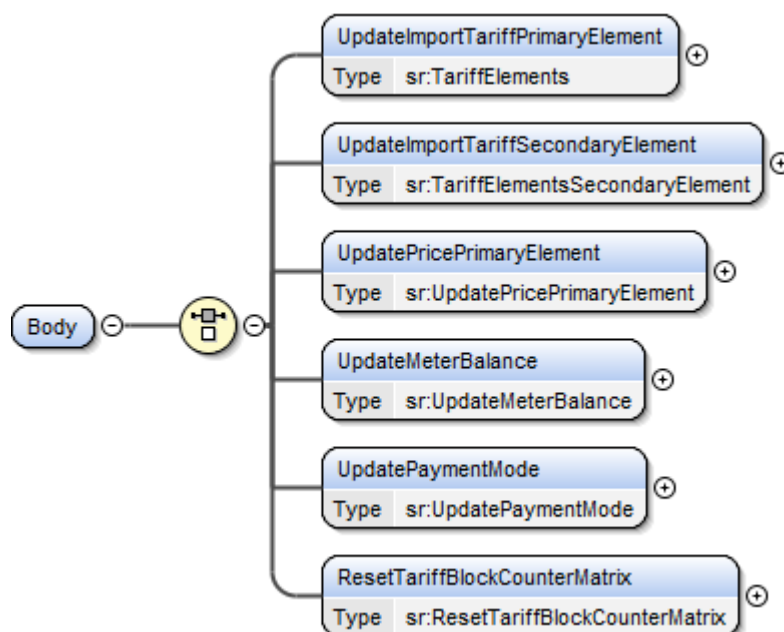


Figure 49 Request Body Structure (“Device” Service Requests subset)

9.2.1.1.1 Non-Critical “Device” Service Requests – Applicable Command Variant Values

The Command Variant values applicable to Non-Critical “Device” Service Requests are (see section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 18 Non-Critical “Device” Service Requests Command Variant Values

9.2.1.1.2 Critical “Device” Service Requests – Applicable Command Variant Values

The Command Variant values applicable to Critical “Device” Service Requests (Transform Requests) are (see section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	No	No	No	No

Table 19 Critical “Device” Service Requests Command Variant Values

9.2.1.2 “Non-Device” Service Requests Format

The “Non-Device” format is applicable to all Service Requests where the Business Target ID is the DSP Access Control Broker ID.

The Service Request specific XML section depends on the actual Service Request. See Annex for details of each “DCC Only” Request.

Figure 50 includes the ‘choice’ of “Non-Device” Service Requests (Service Reference Variants). Please see Table 36 where “DCC Only” is “Yes”.

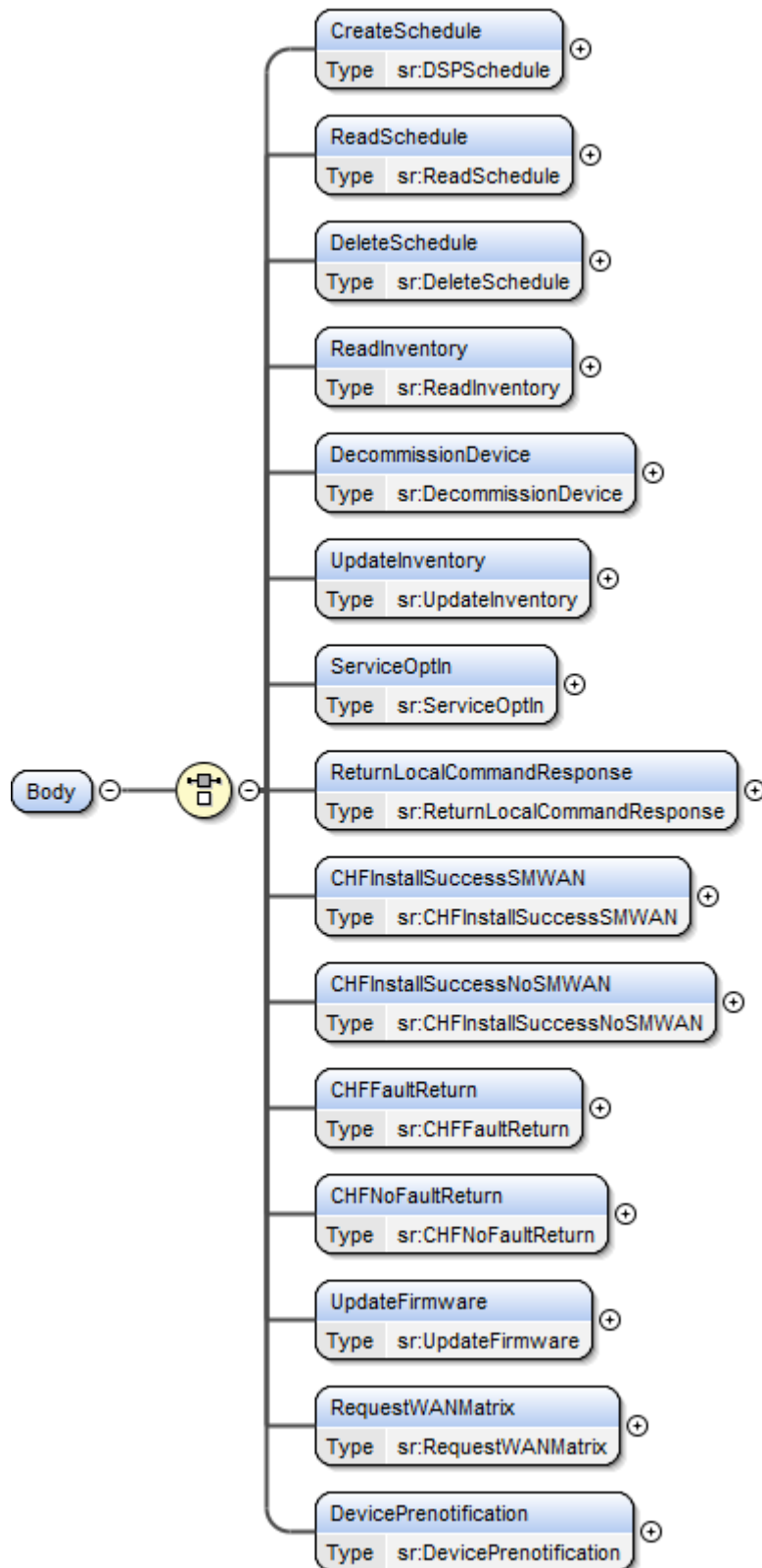


Figure 50 Service Request Body Structure (‘Non-Device’ Service Requests)

9.2.1.2.1 ‘Non-Device’ Service Requests – Applicable Command Variant Values

The Command Variant values applicable to ‘Non-Device’ Service Requests are (see section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 20 “Non-Device” Service Requests Command Variant Values

9.2.1.3 Signed Pre-command Format

The Signed Pre-command is applicable to those Service Request Variants in Table 36 where “DCC Only” is “No” and “Critical” is “Yes”. See section 3.

The Signed Pre-command XML section contains the GBCSPayload which is the transformed Command signed by the DCC Service User. It may also contain a Future Dated Execution date/time (see section 5.1).

Figure 51 includes a ‘choice’ of Signed Pre-command.

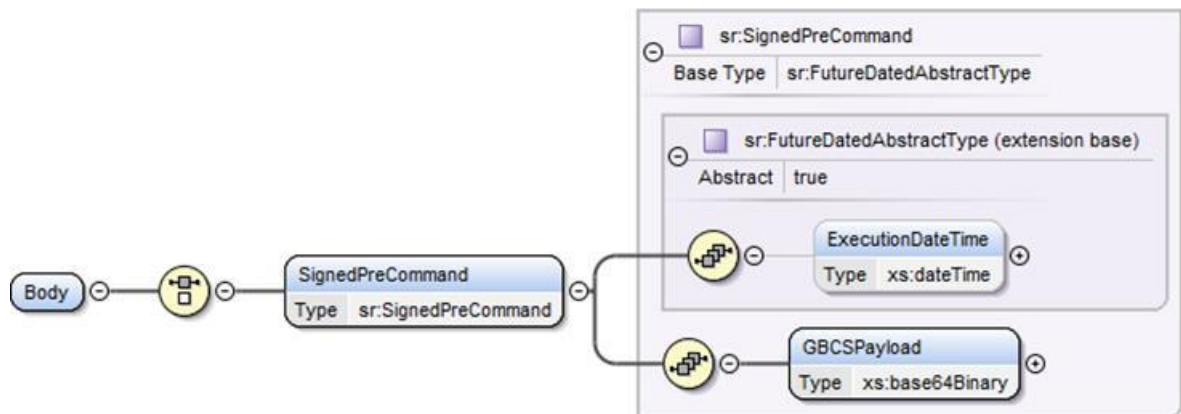


Figure 51 Request Body Structure (Signed Pre-command subset)

The additional data items included alongside the GBCSPayload are as follows.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	For Future Dated requests, the UTC date and time the DCC Service User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	Future Dated requests: Yes Otherwise: N/A	None	UTC Date-Time	Non-Sensitive

Table 21 Signed Pre-Command Additional Data Items

9.2.1.3.1 Signed Pre-command – Applicable Command Variant Values

The Command Variant values applicable to Signed Pre-commands are (see section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	Yes	Yes	Yes	No

Table 22 Signed Pre-command Command Variant Values

9.3 Response Format

A Response is composed of an XML document, identifying (where applicable) the original Service Request, the Device, the DCC Service User and the data (XML or GBCS) and / or response code for the request.

The Response format is defined in the Response XML element of the XSD (see DUIS XML Schema).

Note that the SMETS1ResponseMessage definition which includes SMETS1 Responses and SMETS1 Alerts was added to the Response format in version 3.0.

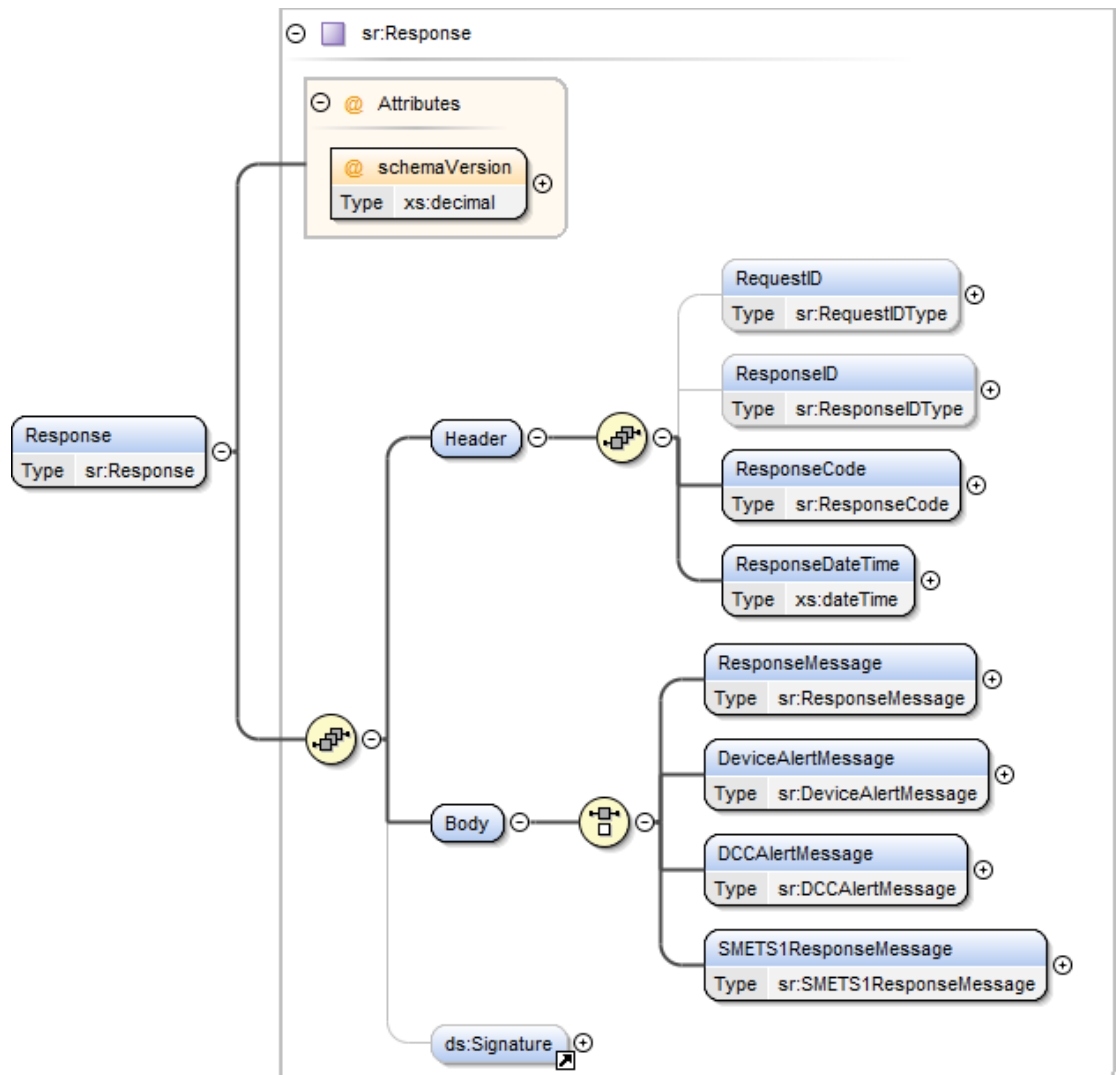


Figure 52 Response Structure

The above diagram is to be read as:

- A Response is a sequence of
 - A mandatory Header. It contains the Request Header Data Items. See Table 23
 - A mandatory Body. It contains a choice of Response Message, Device Alert, DCC Alert and SMETS1 Response Message. See section 9.3.1, 9.3.2, 9.3.3 and 9.3.4.

- An optional Digital Signature (defined in a separate schema). See XMLDSIG XSD for details on the signature schema. See section 8.2 for details of which signatures are used on which Responses.

The following table details the data items in the Header:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	Concatenation of BusinessOriginatorID, BusinessTargetID and OriginatorCounter as defined in GBCS, separated by ":". See section 4 for usage	sr:RequestIDType (see Annex section 17)	solicited response from DCC: Yes solicited response from Device: Yes unsolicited response (Device or DCC Alert): N/A	None	N/A	Non-Sensitive
ResponseID	Concatenation of Response BusinessOriginatorID, BusinessTargetID and OriginatorCounter as defined in GBCS, separated by ":". See section 4 for usage	sr:ResponseIDType (see Annex section 17)	solicited response from DCC: N/A solicited response from Device: Yes unsolicited response (Device or DCC Alert): Yes	None	N/A	Non-Sensitive
ResponseCode	Code indicating the success or exceptions generated by the original request. These codes are listed in this document or at a Service Request level where there is a specific response code for that request. For Device responses, the Response Code will always be success. Any error codes will be included in the GBCS response form the device Valid set: See section 12.3, Annex section 15 and Annex 1 to Annex 16 validation sections.	Sr:ResponseCode (see Annex section 17)	Yes	None	N/A	Non-Sensitive
ResponseDateTime	Date and time extracted from Device Response, if available, or added to the response by DCC when sending message to the DCC Service User Valid set: <ul style="list-style-type: none"> Valid date-time 	xs:dateTime	Yes	None	UTC date-time	Non-Sensitive

Table 23 Response Header Data Items

The Response Types defined in the following sections are:

SMETS version Applicability	Response Type	Response Delivery Pattern
All	Acknowledgement	Synchronous
All	Service Response from DCC (DCC Only)	Synchronous
SMETS2 or later	Pre-command	Synchronous
SMETS2 or later	Command for Local Delivery	Synchronous / Asynchronous
SMETS2 or later	Service Response (from Device)	Asynchronous
SMETS2 or later	Device Alert	Asynchronous
All	DCC Alert	Asynchronous
SMETS1	SMETS1 Response	Asynchronous
SMETS2 or later	Parse Output	Asynchronous

Table 24 Response Types and Response Delivery Pattern

The initial response to a DCC Service User Request is returned to the DCC Service User synchronously. All other responses (solicited and unsolicited) are returned asynchronously.

9.3.1 Response – ResponseMessage Formats

The ResponseMessage format is used for all solicited Responses related to SMETS2 Requests and for Acknowledgement and “Service Response from DCC (DCC Only)” related to Requests for SMETS1 Devices.

There are several different types of Response which use this format, but they all include the Service Reference from the original Request. The following table details the common data items in the ResponseMessage format:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ServiceReference	Identifier that signals the particular Request to DCC (and is driven from the DCC Service User's selection of Request) See 'Service Reference' column in Table 36	sr:ServiceReference (see Annex section 17)	Yes	None	N/A	Non-Sensitive
ServiceReferenceVariant	Identifier that signals the particular Request Variant to DCC (and is driven from the DCC Service User's selection of Request) See 'Service Reference Variant' column in Table 36	sr:ServiceReferenceVariant (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 25 Response – ResponseMessage Common Data Items

Note: For DSP Scheduled responses, the ServiceReference and ServiceReferenceVariant are those of the ServiceReferenceVariant being scheduled, e.g. if SR 5.1 Create Schedule includes DSPScheduledServiceReference = 4.8 and DSPScheduledServiceReferenceVariant = 4.8.1, each activation instance response will include ServiceReference = 4.8 and ServiceReferenceVariant = 4.8.1

The following ResponseMessage formats do not apply to Service Responses associated with SMETS1 Devices:

- PreCommand Format
- LocalCommand Format

- GBCSPayload Format
- CINMessage Format
- DSPScheduledMessage Format
- FutureDatedDeviceAlertMessage Format

9.3.1.1 Acknowledgement Message Format

The Acknowledgement Message format is applicable to:

- All “Device” Service Requests that are to be delivered over the SM WAN
- all Service Responses to DCC Only Service Requests that don’t return data
- All Service Requests that fail Access Control
- All Signed Pre-Commands that are to be delivered over the SM WAN

The only items included in the response are the common data items that are included in all Responses. For the avoidance of doubt there is no further payload in an Acknowledgement message.

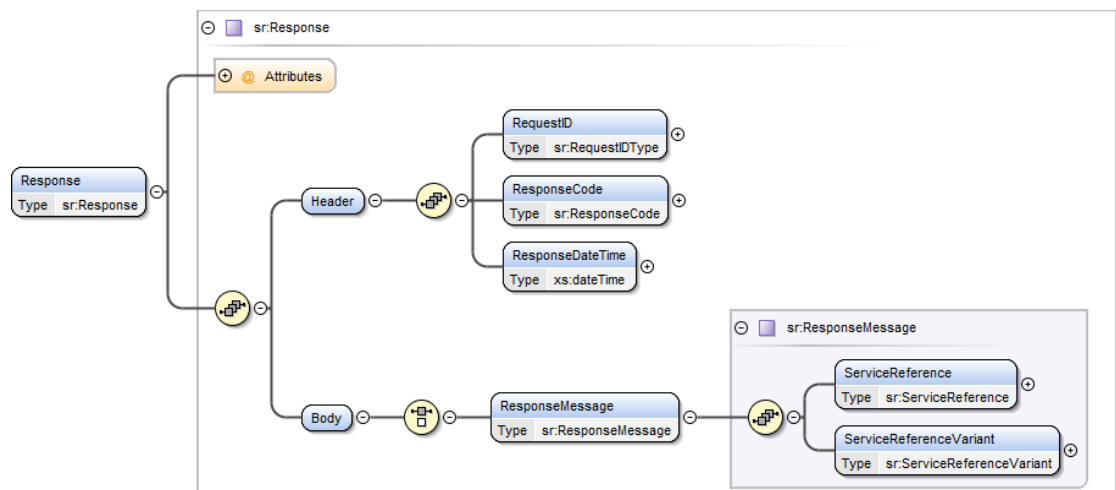


Figure 53 Response – Acknowledgement Message Structure

9.3.1.2 Service Response (from DCC) – DCCOnly Format

The DCCOnly format is applicable to Service Responses to DCC Only Service Requests.

The Service Response specific XML section depends on the actual Service Request. Where the Service Request requires data items to be returned in the response then it will contain a

Service Response specific element containing that data. See Annex for details of each such “DCC Only” Service Response.

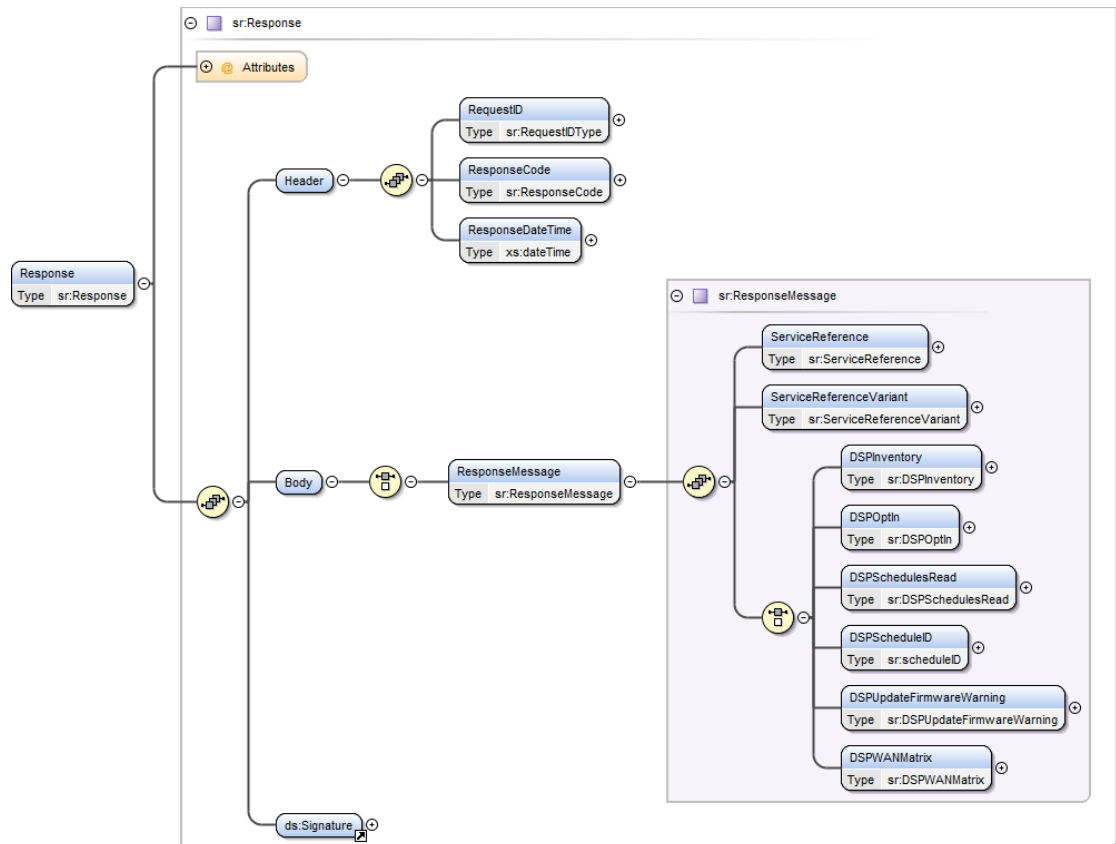


Figure 54 Response – Service Response – “DCC Only” Structure

Where the Service Request requires no data to be returned then an Acknowledgement Message is returned (see section 9.3.1.1), i.e. there is no Service Response specific element and the Response simply contains the Service Reference and Service Reference variant in the Body and the common items in the Header (including ResponseCode to indicate success (ResponseCode = 199) or failure).

9.3.1.3 Pre-command – PreCommand Format

The PreCommand format is applicable to responses to Service Requests that instruct the DCC to transform the request into a Pre-command.

The Service Response contains the GBCSPayload within the PreCommand i (see GBCS for details of how the GBCSPayload is constructed) and the version of the GBCS Use Case used to create the GBCSPayload (see section 9.5 for details on managing versions). Note that the GBCSPayload within the Pre-Command is a binary object which has been Base64 encoded and the binary object does not include a Message Authentication Code in either the MAC Header or ACB-SMD MAC as defined by GBCS Command structure. The binary object is constructed as per GBCS, and has the following structure;

Grouping Header || Command Payload || 0x00

Note that the 0x00 represents (in the DLMS COSEM ASN.1 schema) a signature of zero length.

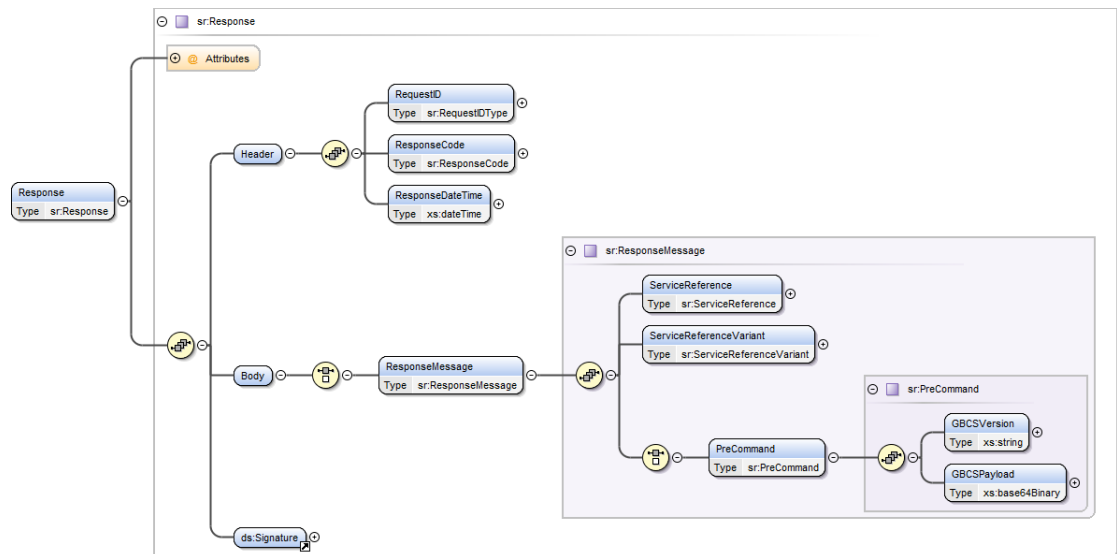


Figure 55 Response – Service Response – PreCommand Structure

The table below shows the data items returned.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GBCSVersion	GBCS version number associated with the GBCS payload being returned. This is provided to allow the Correlate software to determine which version of GBCS command it should be checking. (See also section 9.5). The version number format will align with the CPL For example 1.0, 2.0	xs:string	Yes	None	N/A	Non-Sensitive
GBCSPayload	See GB Companion Specification for Details GBCSPayload is a binary object which has been Base64 encoded. The binary object is constructed as per GBCS, and has the following structure; Grouping Header Command Payload 0x00	xs:base64Binary	Yes	None	N/A	N/A

Table 26 Response – Pre-Command Data Items

9.3.1.4 Command for Local Delivery – LocalCommand Format

The LocalCommand format is applicable to responses to Service Requests or Signed Pre-Commands for which Local Command Services have been requested. A MAC is added to the associated Command generated by Transform and the Command is returned to the DCC Service User for Local Delivery (see section 3). Its structure is similar to that of the PreCommand (see section 9.3.1.3), but the LocalCommand GBCSPayload includes the DSP

Access Control Broker MAC within the MAC Header and ACB-SMD MAC parts of the GBCS Payload.

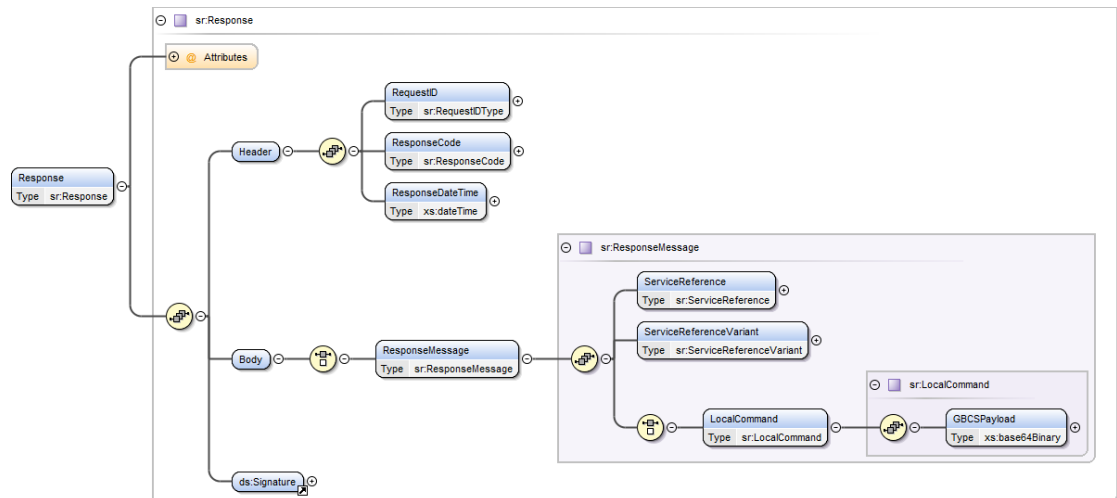


Figure 56 Response – Service Response – LocalCommand Structure

The table below shows the data items returned.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GBCSPayload	See GB Companion Specification for Details GBCSPayload is a binary object which has been Base64 encoded. The binary object is constructed as per GBCS, and has the following structure; For Critical Commands: MAC Header Grouping Header Command Payload 0x40 KRP Signature ACB-SMD MAC For Non-Critical Commands MAC Header Grouping Header Command Payload 0x00 ACB-SMD MAC	xs:base64Binary	Yes	None	N/A	N/A

Table 27 Response – LocalCommand Data Items

9.3.1.5 Service Response (from Device) – GBCSPayload Format

The GBCSPayload format is applicable to Service Responses from the Device to the DCC Service User. See Annex for details on the different Device Service Responses.

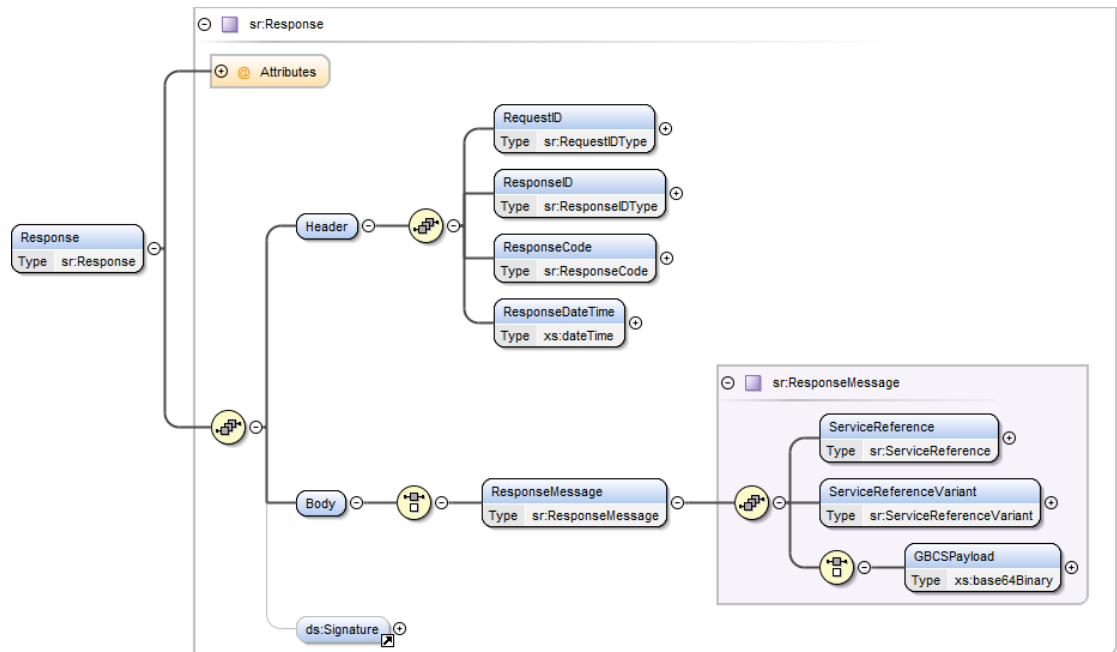


Figure 57 Response – Service Response – GBCSPayload Structure

The table below shows the data items returned.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GBCSPayload	See GB Companion Specification for Details For Critical Responses: Grouping Header Response Payload 0x40 SMD Signature For non-critical Responses: MAC Header Grouping Header Response Payload 0x00 SMD-KRP MAC	xs:base64Binary	Yes	None	N/A	N/A

Table 28 Response – GBCSPayload Data Items

9.3.1.6 Service Response (from Device) – CINMessage Format

The CINMessage format is applicable to successful Service Responses from the Device to the DCC Service User for which the DSP Access Control Broker has to add the CIN to the Device response, i.e. Service Request 9.1 Request Customer Identification Number. This message combines the GBCSPayload received from the Device with the Customer Identification Number generated by the DCC Data Systems. See Annex for details.

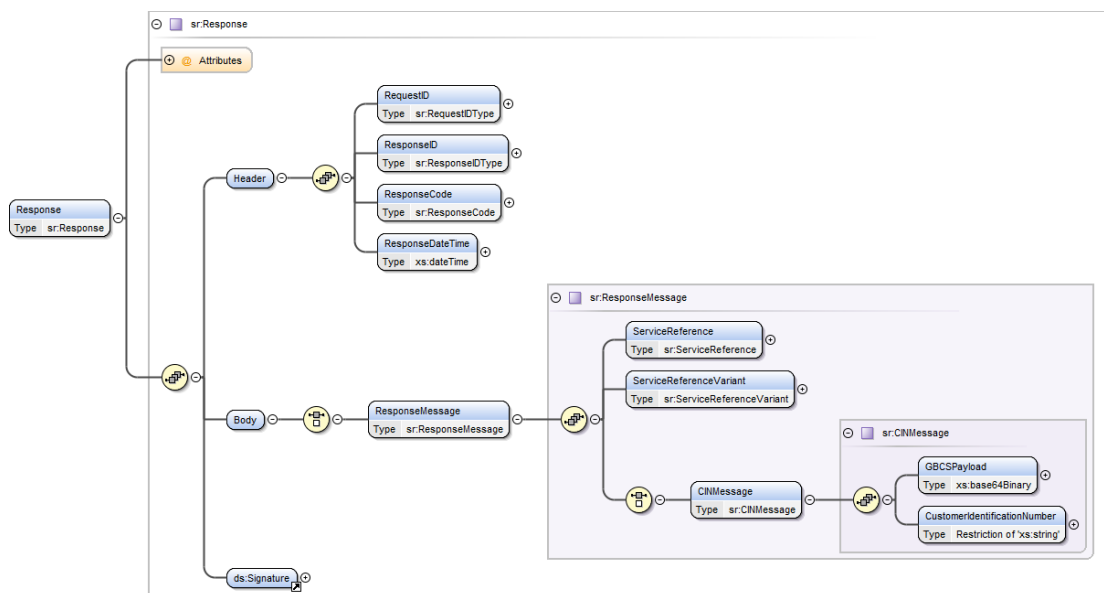


Figure 58 Response – Service Response – CINMessage Structure

The table below shows the data items returned.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GBCSPayload	See GB Companion Specification for Details For non-critical Responses: MAC Header Grouping Header Response Payload 0x00 SMD-KRP MAC	xs:base64Binary	Yes	None	N/A	N/A
CustomerIdentificationNumber	A number issued to Electricity Smart Meter / Gas Smart Meter for display on the User Interface	Restriction of xs:string (length = 4 pattern = "[0-9]{4}")	Yes	None	N/A	N/A

Table 29 Response – CINMessage Data Items

9.3.1.7 Service Response (from Device) – DSPScheduledMessage Format

For SMETS2 or later Devices, the DSPScheduledMessage format is applicable to Service Responses from the Device to the DCC Service User for which the DSP Access Control Broker has to add the DSP Schedule ID to the Device response, i.e. DSP Scheduled Device responses. This message combines the GBCSPayload received from the Device with the DSP Schedule ID. See Annex for details.

Note: For DSP Scheduled responses, the ServiceReference and ServiceReferenceVariant are those of the ServiceReferenceVariant being scheduled, e.g. if SR 5.1 Create Schedule includes DSPScheduledServiceReference = 4.8 and DSPScheduledServiceReferenceVariant = 4.8.1, each activation instance response will include ServiceReference = 4.8 and ServiceReferenceVariant = 4.8.1

For SMETS1 Devices, the format described in this section is not used, and responses corresponding to scheduled messages will be returned in the SMETS1ResponseMessage format described in section 9.3.4. Note that the DSP schedule ID included in the DSPScheduledMessage format for SMETS2 or later Devices is instead included in the SMETS1ResponseMessage format for SMETS1 Devices.

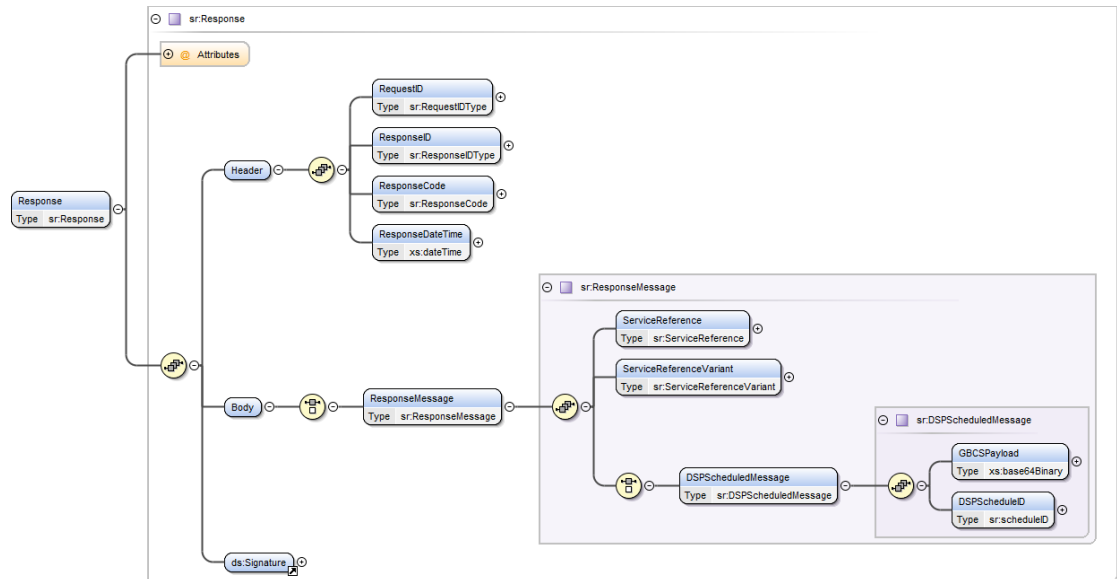


Figure 59 Response – Service Response – DSPScheduledMessage Structure

The table below shows the data items returned.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GBCSPayload	See GB Companion Specification for Details For non-critical Responses: MAC Header Grouping Header Response Payload 0x00 SMD-KRP MAC Note that for all DSP Scheduled Responses the Known Remote Party will be the ACB (not the DCC Service User)	xs:base64Binary	Yes	None	N/A	N/A
DSPScheduleID	Schedule ID generated by the DCC Data Systems Valid Set: >= 0 and <= 1000000000000	sr:scheduleID (Restriction of xs:nonNegativeInteger) See Annex 17	Yes	None	N/A	N/A

Table 30 Response – DSPScheduledMessage Data Items

9.3.1.8 Service Response (from Device) – FutureDatedDeviceAlertMessage Format

The FutureDatedDeviceAlertMessage format is applicable to Alerts from the Device to the DCC Service User for Future Dated Command execution. This message structure is very similar to that of the Service Response GBCS Payload (see section 9.3.1.5), but in this case the GBCS Payload is actually an Alert (rather than a Response) and the Request ID, Service Reference and Service Reference Variant are those of the Request for which the Device Alert is the Response. The following is also added to the XML Response:

- FutureDatedAlertCode of the Device Alert
- InstructionNumber. Only relevant for multiple instruction Commands. Set to 1 for single instruction Commands
- TotalCommandInstructions. Only relevant for multiple instruction Commands. Set to 1 for single instruction Commands

For multiple instruction commands, the InstructionNumber in any given Response is simply a count of how many Alerts have been received so far by the DCC to indicate execution of the Command. The TotalCommandInstructions is always set to the total number of Alerts expected for the specific Command being executed (as defined in the relevant Annex and summarised in Annex 15 section 15.4.4.5). The two attributes thus provide a means to track the Responses as, for example, 1 of 3, 2 of 3 and finally 3 of 3 when all expected Device Alerts have been received.

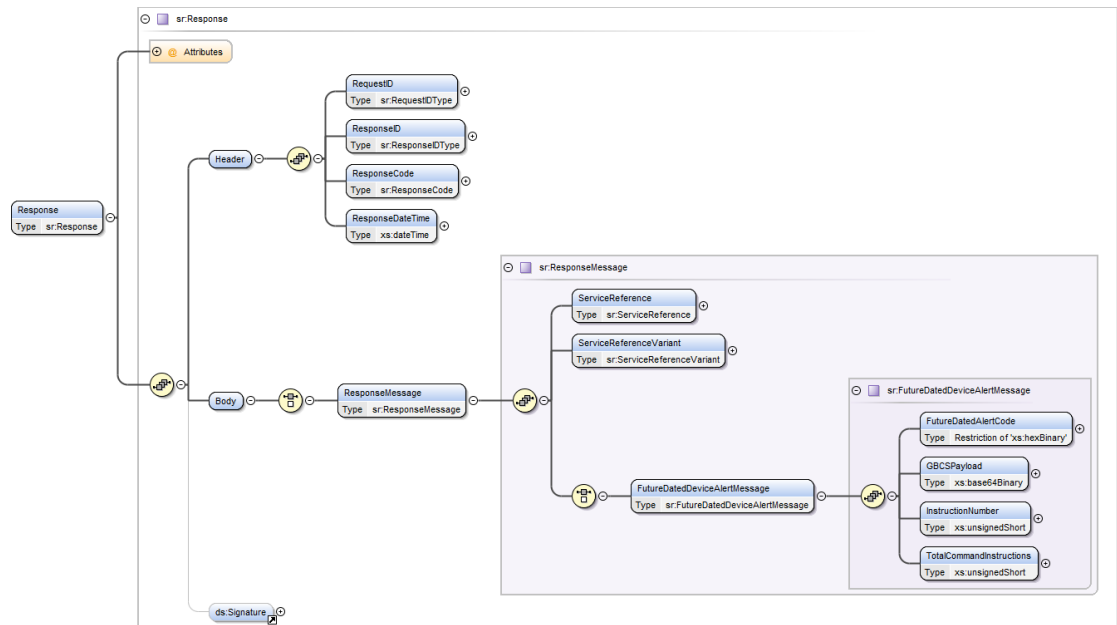


Figure 60 Response – Service Response – FutureDatedDeviceAlertMessage Structure

The following table details the data items in the Future Dated Device Alert Message:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FutureDatedAlertCode	Code indicating the alert or reason for the alert to be generated Valid set: The FutureDatedAlertCode can only have a value of 8F66 for success and 8F67 for failure. See GBCS	xs:hexBinary	Yes	None	N/A	Non-Sensitive
GBCSPayload	See GB Companion Specification for Details For Critical Device Alerts: Grouping Header Alert Payload 0x40 SMD Signature	xs:base64Binary	Yes	None	N/A	N/A

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
InstructionNumber	Indicates the number of Alerts received by the DCC (ie the number of activation date-time instructions executed) so far in respect of the Command for which the Future Dated Device Alert is a Response. Valid set: <ul style="list-style-type: none"> 1. Single activation date-time Instruction Command >= 1 and <= TotalCommandInstructions (as defined in the relevant Annex and summarised in Annex 15 section 15.4.4.5). Multiple activation date-time instruction Command 	xs:unsignedShort	Yes	None	N/A	Non-Sensitive
TotalCommandInstructions	Indicates the total number of activation date-time instructions in the Command for which the Future Dated Device Alert is a Response. Valid set: <ul style="list-style-type: none"> 1. Single activation date-time Instruction Command m (GBCS Use Case dependent. See relevant Annex). Multiple activation date-time instruction Command 	xs:unsignedShort	Yes	None	N/A	Non-Sensitive

Table 31 Response – Future Dated Device Alert Data Items

9.3.2 Device Alert – DeviceAlertMessage Format

The DeviceAlertMessage format is applicable to SMETS2 or later Device Alerts. This message combines the GBCSPayload received from the Device with the Alert Code extracted from the GBCSPayload.

If an Alert Code is subject to throttling, two optional data elements are included to show the count of consolidated Alerts and the sequence number of the passed through Alert.

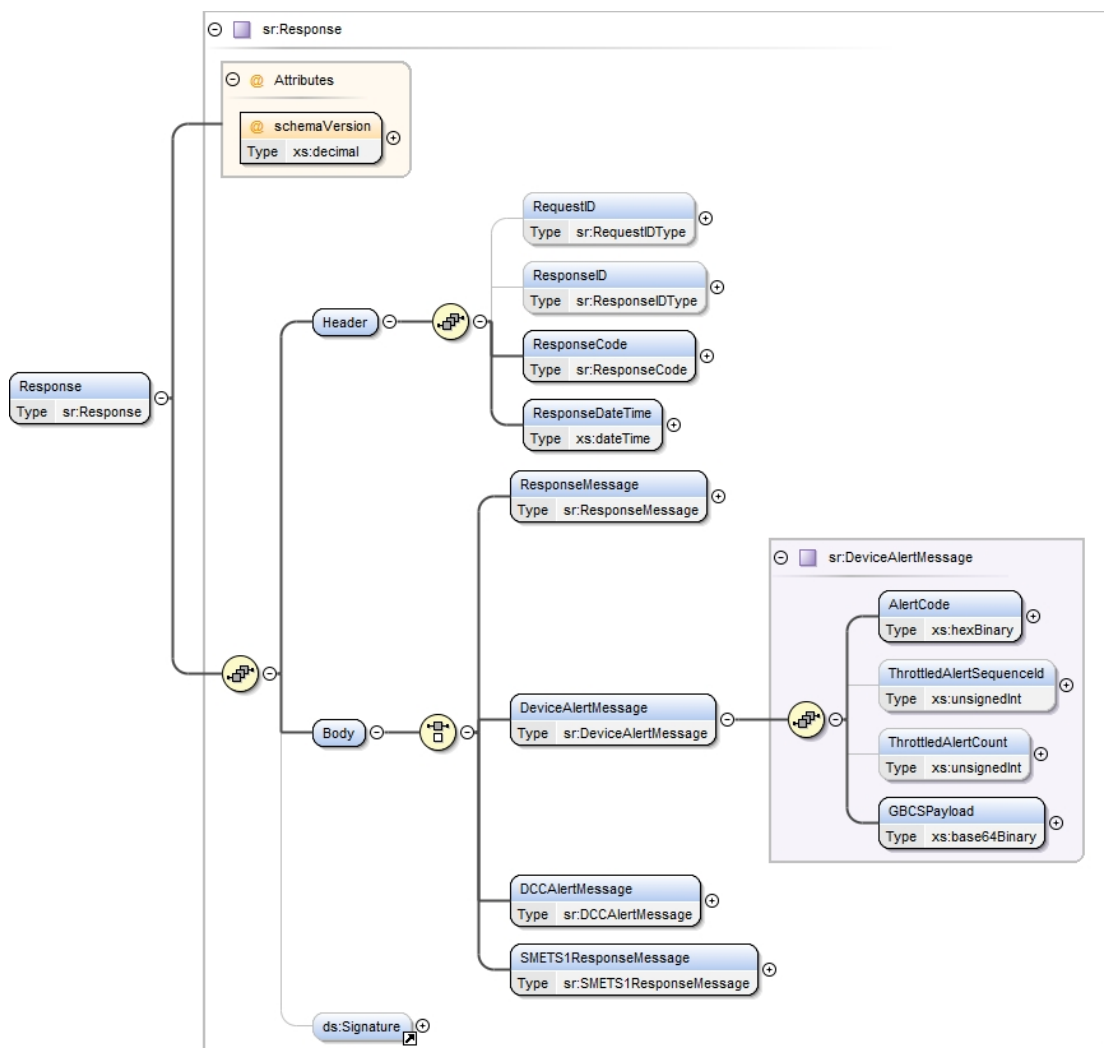


Figure 61 Response – DeviceAlertMessage Structure

The following table details the data items in the Device Alert Message:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AlertCode	Code indicating the alert or reason for the alert to be generated GBCS includes '0x' at the start of such codes. This definition uses a hexBinary representation for valid values. Valid set: See GBCS for base list and apply hexBinary representation of these GBCS defined values	xs:hexBinary	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ThrottledAlertSequenceID	An optional data item that identifies that this Alert Code is currently subject to throttling by the DCC Data Systems. If this attribute is included in the Alert then it indicates the sequence number for this Alert message since Alert throttling began.	xs:unsignedInt	No	None	N/A	Non-Sensitive
ThrottledAlertCount	An optional data item used to indicate the number of Alerts that have been consolidated by DCC Data Systems since the last Alert was forwarded to the Service User.	xs:unsignedInt	No	None	N/A	Non-Sensitive
GBCSPayload	See GB Companion Specification for Details for message construction. For Critical Device Alerts: Grouping Header Alert Payload 0x40 SMD Signature For Non-Critical Device Alerts: MAC Header Grouping Header Alert Payload 0x00 SMD-KRP MAC	xs:base64Binary	Yes	None	N/A	N/A

Table 32 Response – Device Alert Data Items

9.3.3 DCC Alert – DCCAlertMessage Format

The DCCAlertMessage format is applicable to DCC Alerts. This message is generated by the DCC Data Systems as a result of a trigger event. For DCC Alert details see Table 49 and Annex section 16.

If an Alert Code is subject to throttling, two optional data elements are included to show the count of consolidated Alerts and the sequence number of the passed through Alert.

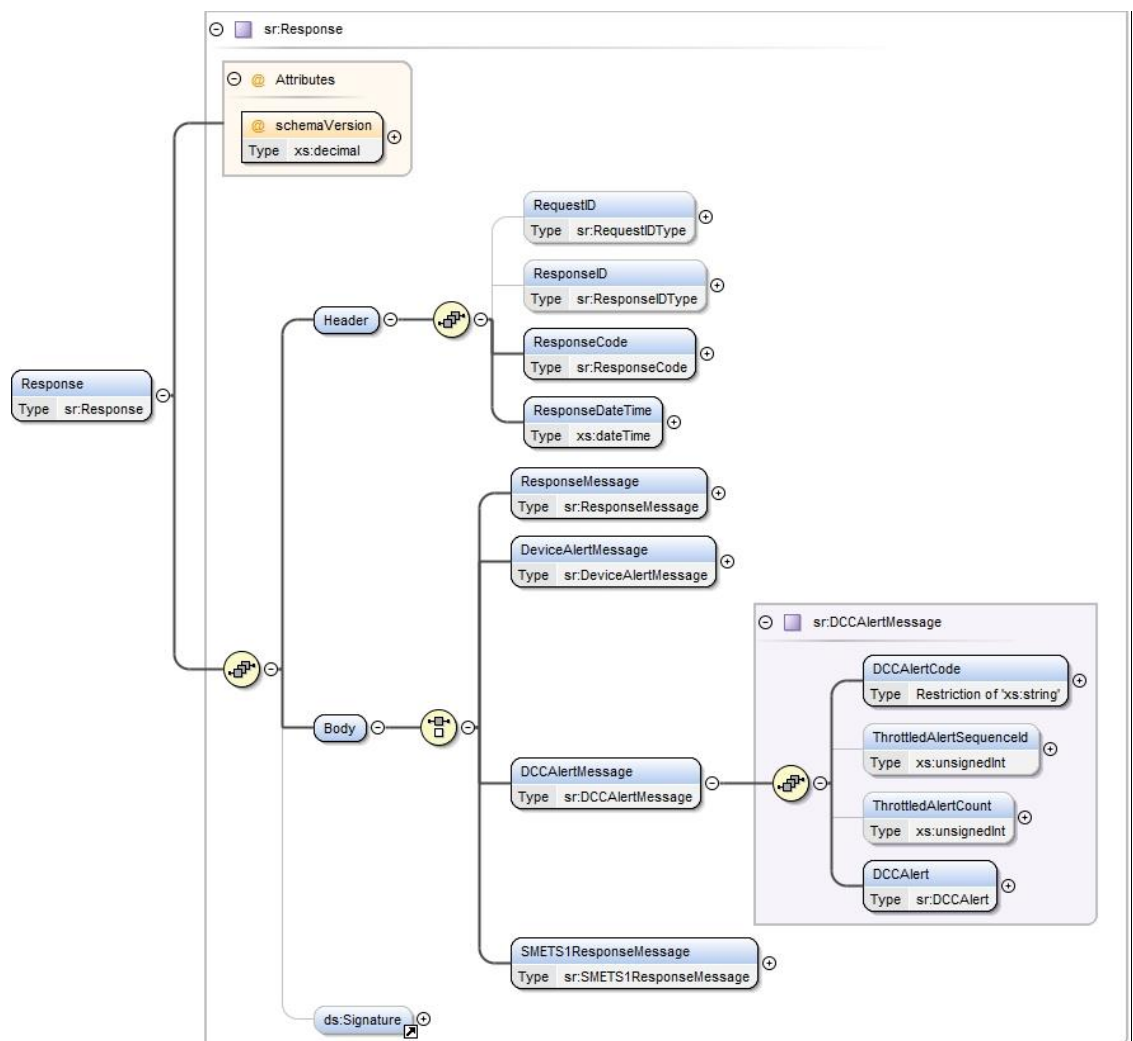


Figure 62 Response – DCCAlertMessage Structure

The following table details the data items in the DCC Alert Message:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DCCAlertCode	Code indicating the Alert or reason for the Alert to be generated by DCC Valid set: See Table 49	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ThrottledAlertSequenceID	An optional data item that identifies that this Alert Code is currently subject to throttling by the DCC Data Systems. If this attribute is included in the Alert then it indicates the sequence number for this Alert message since Alert throttling began.	xs:unsignedInt	No	None	N/A	Non-Sensitive
ThrottledAlertCount	An optional data item used to indicate the number of Alerts that have been consolidated by DCC Data Systems since the last Alert was forwarded to the Service User.	xs:unsignedInt	No	None	N/A	Non-Sensitive
DCCAlert	This is body specific content dependent on the DCCAlertCode being sent. See section 13 and Annex 16 for body specific format.	Sr:DCCAlert See section 13 and Annex 16	Yes	None	N/A	N/A

Table 33 Response – DCC Alert Data Items

9.3.4 Response – SMETS1 Response Message Format

The DUIS XML SMETS1ResponseMessage format defines:

- SMETS1 Responses from S1SPs, which when wrapped and signed by the DCC Data Systems become Countersigned SMETS1 Responses; and
- SMETS1 Alerts from S1SPs, which when wrapped and signed by the DCC Data Systems become Countersigned SMETS1 Alerts.

Annex section 19 describes the use of the DUIS XML Schema SMETS1 Response Message format. Schema fragments for individual SMETS1 Responses are described in sub-sections within the Service Request descriptions in the Service Request Definition annexes. Schema fragments for those SMETS1 Alerts that include specific payload are described in Annex 15.

Note that for SMETS1 Devices, scheduled requests do not have a dedicated response format, unlike for SMETS2 or later Devices; instead they are conveyed in Countersigned SMETS1 Responses and are indicated by the population of the DSP schedule ID within the message format.

9.3.5 Parse Output Format

The Parse Output format defines the output of the Parse function which is used to translate GBCS format device responses into a more accessible format. This format will use the DCC Service User Message Mapping Catalogue XML schema, which is very similar to the XML schema used for the other DCC responses.

Annex section 18 describes the use of the Message Mapping Catalogue XML Schema. Schema fragments for individual Service Responses are described in sub-sections within the Service Request descriptions in the Service Request Definition annexes.

9.3.6 Response Types and Command Variant Values

The following table describes the Response Types applicable to each Command Variant value:

CV	Response Type (SMETS2 or later)	Response Type (SMETS1)
1	Acknowledgement	Acknowledgement
	Service Response (from Device) ²	SMETS1 Response ²

CV	Response Type (SMETS2 or later)	Response Type (SMETS1)
	Parse Output	
2	Command for Local Delivery (synch)	Acknowledgement ³
		DCC Alert containing the UTRN ³
3	Acknowledgement	Acknowledgement ³
	Service Response (from Device) ²	SMETS1 Response ³
	Command for Local Delivery (asynch) ²	DCC Alert containing the UTRN ³
	Parse Output	
4	Pre-command	Acknowledgement
		SMETS1 Response ²
5	Acknowledgement	N/A
	Service Response (from Device) ²	
	Parse Output	
6	Command for Local Delivery (synch)	N/A
7	Acknowledgement	N/A
	Service Response (from Device) ²	
	Command for Local Delivery (asynch) ²	
	Parse Output	
8	Service Response (from DCC)	Service Response (from DCC)
N/A	Device Alert ²	SMETS1 Alert ²
	Parse Output	
N/A	DCC Alert ²	DCC Alert ² (including S1SP Alerts)
9 ¹	Service Response (from Device) ²	SMETS1 Response ²
	Parse Output	

Table 34 Response Types and Command Variant Values

¹ DSP Scheduled Command Response (CV is internal use only)

² Requires Ack to be returned to the DCC Data Systems (see Receive Response Service in Figure 9)

³ Only applicable to SRV2.2 for SMETS1 Devices

9.3.7 Device Responses and Future Dating

Where a Device is capable of Future Dating a Command at the Device, the message type(s) returned by the Device depend on whether the Command has been executed immediately, has been stored for future execution, has been executed at a future date or has been cancelled. This can be summarised as follows, where the possible values of 'n' (instructions in the Command) and 'm' (activation date-time instructions in the Command) are defined in the corresponding Service Request Responses in the Annexes (in some cases 'n' and 'm' are fixed values and in others variable between a minimum and a maximum value. The value(s) of 'n' and 'm' can be the same or different for Electricity and Gas):

1. Service Response (from Device) – GBCSPayload. See section 9.3.1.5

- a. On Demand
 - i. One Device Response (Command execution outcome)
 - ii. The GBCSPayload includes 'n' results corresponding to the execution of each of the 'n' instructions in the Command
 - b. Future Dated (Device) received by the Device before the required ExecutionDateTime
 - i. One Device Response (Command storage outcome)
 - ii. The GBCSPayload includes 'n' results corresponding to the storing of each of the 'n' instructions in the Command
 - c. Future Dated (Device) received by the Device on or after the required ExecutionDateTime
 - i. The Command is executed immediately, i.e. it is treated as if its Mode of Operation was "On Demand"
 - ii. One Device Response (Command execution outcome)
 - iii. The GBCSPayload includes 'n' results corresponding to the execution of each of the 'n' instructions in the Command
 - d. Future Dated (Device) Cancellation
 - i. One Device Response (Command execution outcome, which is the cancellation of a previously stored but not yet executed Command)
 - ii. The GBCSPayload includes 'm' results corresponding to the cancellation of each of the 'm' activation date-time instructions in the Command
2. Service Response (from Device) – FutureDatedDeviceAlertMessage. See section 9.3.1.8
- a. Future Dated (Device)
 - i. 'm' Device Alerts (Command activation date-time instructions execution outcome). These Device Alerts are delivered wrapped as responses rather than as device alerts, since they are execution outcomes. See section 9.3.1.8
 - ii. The GBCSPayload of each Future Dated Device Alert includes 1 of the 'm' results corresponding to the execution of each of the 'm' activation date-time instructions in the Command previously stored on the Device

9.4 Service Request Matrix

This section defines the list of Service References supported by the DCC User Gateway.

In some cases Service Reference has been divided into Service Reference Variants to align to GBCS Use Cases.

For each of the Service Requests supported by the DCC User Gateway, this section details:

- the Service Reference, e.g. 1.2
- the Service Reference Variant

- identical to the Service Reference where there is no Service Reference Variant, e.g. 1.2
- required to align to GBCS Use Cases. There is one Service Reference Variant per GBCS Use Case
- the Service Name, e.g. Update Price
- the security classification:
 - Critical – is the Service Request identified as a Critical Service Request.
 - For SMETS2 or later Devices this means the Service Request requires DCC Service User signing of the GBCS Command. (Note that some Critical Commands are signed by the Access Control Broker.)
 - For SMETS1 Devices there is no equivalent of GBCS signature so the Service Request will be subject to additional checks by the DCC Data Systems and S1SP, as defined in the Service Request Processing Document
 - Sensitive – does the Service Response contain sensitive data (see GBCS for sensitive data encryption details for SMETS2 or later Devices)
 - Protection Against Replay – does the Service Request require Protection Against Replay (see section 4.18 for an overview and GBCS for full details for SMETS2 or later Devices, and section 4.19.4 and SMETS1 Supporting Requirements Document for SMETS1 Devices)
- the Modes Of Operation applicable. See section 2.3
- the Eligible User Role(s) applicable:

DUIS User Role Reference	DUGIDS User Role Reference	User Role Description
IS	EIS	Electricity Import Supplier
ES	EES	Electricity Export Supplier
GS	GIS	Gas Import Supplier
RSA	SNA	Supplier Nominated Agent
ED	ENO	Electricity Network Operator
GT	GNO	Gas Network Operator
OU	OU	Other User

Table 35 DCC User Roles

- the Service Request's applicability to SMETS1, as defined in DUIS.

For those Service Requests that are applicable to SMETS1 please note the following differences:

- Security Classification
 - Critical. Critical Service Requests, though sent by the Service User with Command Variant 4, within DCC use the Non-Critical processing pattern, i.e. Command Variant 1
 - Sensitive. Sensitive Service Responses don't include encrypted data

- Protection Against Replay. Anti-Replay protection is performed by the DCC Data Systems (including S1SPs) rather than the Device.
- Modes of Operation. See section 2.3, but please note Modes of Operation Transform and Future Dated (Device) are N/A to SMETS1.
 - Mode of Operation Future Dated (DSP) applies to Service Requests that are otherwise Future Dated (Device) for SMETS2 or later.

This section should be read in conjunction with:

- section 9, which describes the general formatting and Common Data Items for all Service Requests and Service Responses
- the Annex
- the DUIS XML Schema
- the MMC XML Schema

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
1.1	1.1.1	Update Import Tariff (Primary Element)	Yes	No	Yes	Yes	Device	No	No	EIS GIS	Yes
1.1	1.1.2	Update Import Tariff (Secondary Element)	Yes	No	Yes	Yes	Device	No	No	EIS	No
1.2	1.2.1	Update Price (Primary Element)	Yes	No	Yes	Yes	Device	No	No	EIS GIS	Yes
1.2	1.2.2	Update Price (Secondary Element)	Yes	No	Yes	Yes	Device	No	No	EIS	No
1.5	1.5	Update Meter Balance	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
1.6	1.6	Update Payment Mode	Yes	No	Yes	Yes	Device	No	No	EIS GIS	Yes
1.7	1.7	Reset Tariff Block Counter Matrix	Yes	No	Yes	Yes	No	No	No	EIS	No
2.1	2.1	Update Prepay Configuration	Yes	No	Yes	Yes	Device	No	No	EIS GIS	Yes
2.2	2.2	Top Up Device	No	No	Yes	Yes	No	No	No	EIS GIS	Yes
2.3	2.3	Update Debt	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
2.5	2.5	Activate Emergency Credit	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
3.1	3.1	Display Message	No	No	No	Yes	DSP	No	No	EIS GIS	No
3.2	3.2	Restrict Access For Change Of Tenancy	No	No	No	Yes	DSP	No	No	EIS GIS	Yes
3.3	3.3	Clear Event Log	No	No	No	Yes	No	No	No	EIS GIS	Yes
3.4	3.4	Update Supplier Name	No	No	No	Yes	DSP	No	No	EIS GIS	No
3.5	3.5	Disable Privacy PIN	No	No	Yes	Yes	No	No	No	EIS GIS	No
4.1	4.1.1 ⁷	Read Instantaneous Import Registers	No	Yes	No	Yes	DSP	No	No	EIS GIS ENO GNO	Yes
4.1	4.1.2 ⁷	Read Instantaneous Import TOU Matrices	No	Yes	No	Yes	DSP	No	No	EIS GIS ENO GNO	Yes
4.1	4.1.3	Read Instantaneous Import TOU With Blocks Matrices	No	Yes	No	Yes	DSP	No	No	EIS ENO	Yes
4.1	4.1.4 ⁷	Read Instantaneous Import Block Counters	No	Yes	No	Yes	DSP	No	No	GIS	Yes
4.2	4.2	Read Instantaneous Export Registers	No	No	No	Yes	DSP	No	No	EES ENO	Yes
4.3	4.3 ⁷	Read Instantaneous Prepay Values	No	Yes	No	Yes	DSP	No	No	EIS GIS	Yes

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
4.4	4.4.2 ⁷	Retrieve Change Of Mode / Tariff Triggered Billing Data Log	No	Yes	No	Yes	DSP	No	No	EIS ⁵ GIS ⁵	Yes
4.4	4.4.3 ⁷	Retrieve Billing Calendar Triggered Billing Data Log	No	Yes	No	Yes	DSP	No	No	EIS ⁵ GIS ⁵	Yes
4.4	4.4.4	Retrieve Billing Data Log (Payment Based Debt Payments)	No	No	No	Yes	DSP	No	No	EIS ⁵ GIS ⁵	Yes
4.4	4.4.5	Retrieve Billing Data Log (Prepayment Credits)	No	No	No	Yes	DSP	No	No	EIS ⁵ GIS ⁵	Yes
4.6	4.6.1 ⁷	Retrieve Import Daily Read Log	No	Yes	No	Yes	DSP	Yes	No	EIS ⁵ GIS ⁵	Yes
4.6	4.6.2	Retrieve Export Daily Read Log	No	No	No	Yes	DSP	Yes	No	EES ⁵	No
4.8	4.8.1 ⁷	Read Active Import Profile Data	No	Yes	No	Yes	DSP	Yes	No	EIS ⁵ GIS ⁵ ENO GNO OU	Yes
4.8	4.8.2	Read Reactive Import Profile Data	No	No	No	Yes	DSP	Yes	No	EIS ⁵ ENO OU	Yes
4.8	4.8.3	Read Export Profile Data	No	No	No	Yes	DSP	Yes	No	EES ⁵ ENO OU	Yes
4.10	4.10 ⁷	Read Network Data	No	Elec No, Gas Yes	No	Yes	DSP	Yes	No	EIS GIS ENO GNO	Yes
4.11	4.11.1	Read Tariff (Primary Element)	No	No	No	Yes	No	No	No	EIS GIS OU	Yes
4.11	4.11.2	Read Tariff (Secondary Element)	No	No	No	Yes	No	No	No	EIS OU	No
4.12	4.12.1	Read Maximum Demand Import Registers	No	No	No	Yes	DSP	Yes	No	EIS ENO	No
4.12	4.12.2	Read Maximum Demand Export Registers	No	No	No	Yes	DSP	Yes	No	EES ENO	No
4.13	4.13	Read Prepayment Configuration	No	No	No	Yes	DSP	No	No	EIS GIS	Yes
4.14	4.14 ⁷	Read Prepayment Daily Read Log	No	Yes	No	Yes	DSP	Yes	No	EIS ⁵ GIS ⁵	No
4.15	4.15	Read Load Limit Data	No	No	No	Yes	DSP	Yes	No	EIS ENO	Yes
4.16	4.16	Read Active Power Import	No	No	No	Yes	No	Yes	No	EIS ENO	Yes
4.17	4.17 ⁷	Retrieve Daily Consumption Log	No	Yes	No	Yes	DSP	Yes	No	EIS ⁵ GIS ⁵ ENO GNO OU	No
4.18	4.18	Read Meter Balance	No	No	No	Yes	DSP	No	No	EIS GIS	Yes

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
5.1	5.1	Create Schedule	No	No	No	No	No	No	Yes	EIS EES GIS ENO GNO OU	Yes
5.2	5.2	Read Schedule	No	No	No	No	No	No	Yes	EIS EES GIS ENO GNO OU	Yes
5.3	5.3	Delete Schedule	No	No	No	No	No	No	Yes	EIS EES GIS ENO GNO OU	Yes
6.2	6.2.1	Read Device Configuration (Voltage)	No	No	No	Yes	No	No	No	EIS SNA ENO	Yes
6.2	6.2.2	Read Device Configuration (Randomisation)	No	No	No	Yes	No	No	No	EIS SNA ENO	No
6.2	6.2.3	Read Device Configuration (Billing Calendar)	No	No	No	Yes	No	No	No	EIS SNA GIS	Yes
6.2	6.2.4	Read Device Configuration (Identity Exc MPxN)	No	No	No	Yes	No	No	No	EIS EES GIS SNA ENO GNO OU	Yes
6.2	6.2.5	Read Device Configuration (Instantaneous Power Thresholds)	No	No	No	Yes	No	No	No	EIS SNA	Yes
6.2	6.2.7	Read Device Configuration (MPxN)	No	No	No	Yes	No	No	No	EIS EES GIS SNA ENO GNO OU	No
6.2	6.2.8	Read Device Configuration (Gas)	No	No	No	Yes	No	No	No	GIS SNA GNO	Yes
6.2	6.2.9	Read Device Configuration (Payment Mode)	No	No	No	Yes	No	No	No	EIS GIS SNA	Yes
6.2	6.2.10	Read Device Configuration (Event and Alert Behaviours)	No	No	No	Yes	No	No	No	EIS GIS ENO	No
6.4	6.4.1	Update Device Configuration (Load Limiting General Settings)	Yes	No	Yes	Yes	Device	No	No	EIS	Yes
6.4	6.4.2	Update Device Configuration (Load Limiting Counter Reset)	No	No	Yes ⁹	Yes	DSP	No	No	EIS	Yes
6.5	6.5	Update Device Configuration (Voltage)	No	No	Yes ⁹	Yes	DSP	No	No	ENO	Yes

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
6.6	6.6	Update Device Configuration (Gas Conversion)	Yes	No	Yes	Yes	No	No	No	GIS	Yes
6.7	6.7	Update Device Configuration (Gas Flow)	Yes	No	Yes	Yes	No	No	No	GIS	Yes
6.8	6.8	Update Device Configuration (Billing Calendar)	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
6.11	6.11	Synchronise Clock	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
6.12	6.12	Update Device Configuration (Instantaneous Power Threshold)	No	No	No	Yes	DSP	No	No	EIS	Yes
6.13	6.13	Read Event Or Security Log	No	No	No	Yes	No	No	No	EIS ⁵ GIS ⁵ ENO GNO SNA	Yes
6.14	6.14.1	Update Device Configuration (Auxiliary Load Control Description)	Yes	No	No	Yes	No	No	No	EIS	No
6.14	6.14.2	Update Device Configuration (Auxiliary Load Control Scheduler)	Yes	No	Yes	Yes	Device	No	No	EIS	No
6.14	6.14.3	Update Device Configuration (Auxiliary Controller Scheduler)	Yes	No	Yes	Yes	Device	No	No	EIS	No
6.15	6.15.1	Update Security Credentials (KRP)	Yes	No	Yes	Yes	Device	No	No	EIS GIS ENO GNO	Yes
6.15	6.15.2	Update Security Credentials (Device)	Yes	No	Yes	Yes	No	No	No	EIS GIS	No
6.17	6.17	Issue Security Credentials	Yes	No	Yes	Yes	No	No	No	EIS GIS	No
6.18	6.18.1	Set Maximum Demand Configurable Time Period	No	No	Yes	Yes	DSP	No	No	ENO	No
6.18	6.18.2	Reset Maximum Demand Registers	No	No	No	Yes	DSP	No	No	ENO	No
6.20	6.20.1	Set Device Configuration (Import MPxN)	No	No	Yes	Yes	DSP	No	No	EIS GIS	No
6.20	6.20.2	Set Device Configuration (Export MPAN)	No	No	Yes	Yes	DSP	No	No	EES	No
6.21	6.21	Request Handover Of DCC Controlled Device	No	No	Yes ⁹	Yes	DSP	No	No	EIS GIS	Yes
6.22	6.22	Configure Alert Behaviour	No	No	No	Yes	No	No	No	EIS GIS ENO	No
6.23	6.23	Update Security Credentials (CoS)	No	No	Yes	Yes	DSP + Device	No	No	EIS GIS	Yes
6.24	6.24.1	Retrieve Device Security Credentials (KRP)	No	No	No	Yes	No	No	No	EIS GIS ENO GNO	Yes
6.24	6.24.2	Retrieve Device Security Credentials (Device)	Yes	No	No	Yes	No	No	No	EIS GIS	No
6.25	6.25	Set Electricity Supply Tamper State	Yes	No	Yes	Yes	No	No	No	EIS	Yes
6.26	6.26	Update Device Configuration (daily resetting of Tariff Block Counter Matrix)	Yes	No	Yes	Yes	No	No	No	EIS	No

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
6.27	6.27	Update Device Configuration (RMS Voltage Counter Reset)	No	No	Yes ⁹	Yes	DSP	No	No	ENO	Yes
6.28	6.28	Set CHF Sub GHz Configuration	No	No	Yes	Yes	No	No	No	EIS GIS	No
6.29	6.29	Request CHF Sub GHz Channel Scan	No	No	Yes	Yes	No	No	No	EIS GIS	No
6.30	6.30	Read CHF Sub GHz Configuration	No	No	No	Yes	No	No	No	EIS GIS SNA	No
6.31	6.31	Read CHF Sub GHz Channel	No	No	No	Yes	No	No	No	EIS GIS SNA	No
6.32	6.32	Read CHF Sub GHz Channel Log	No	No	No	Yes	No	No	No	EIS GIS SNA	No
7.1	7.1	Enable Supply	Yes	No	Yes	Yes	No	No	No	EIS	Yes
7.2	7.2	Disable Supply	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
7.3	7.3	Arm Supply	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
7.4	7.4	Read Supply Status	No	No	No	Yes	No	No	No	EIS EES GIS SNA ENO GNO	Yes
7.5	7.5	Activate Auxiliary Load Control	Yes	No	Yes	Yes	No	No	No	EIS	No
7.6	7.6	Deactivate Auxiliary Load Control	Yes	No	Yes	Yes	No	No	No	EIS	No
7.7	7.7	Read Auxiliary Load Control Switch Data	No	No	No	Yes	DSP	No	No	EIS OU ENO	No
7.8	7.8	Reset Auxiliary Load	Yes	No	Yes	Yes	No	No	No	EIS	No
7.9	7.9	Add Auxiliary Load To Boost Button	No	No	Yes	Yes	DSP	No	No	EIS	No
7.10	7.10	Remove Auxiliary Load From Boost Button	No	No	Yes	Yes	DSP	No	No	EIS	No
7.11	7.11	Read Boost Button Details	No	No	No	Yes	DSP	No	No	EIS OU	No
7.12	7.12	Set Randomised Offset Limit	Yes	No	Yes	Yes	No	No	No	EIS	No
7.13	7.13	Set Auxiliary Controller State	Yes	No	Yes	Yes	No	No	No	EIS	No
7.14	7.14	Read Auxiliary Controller Configuration Data	No	No	No	Yes	DSP	No	No	EIS OU ENO	No
7.15	7.15	Read Auxiliary Controller Operational Data	No	No	No	Yes	DSP	No	No	EIS OU ENO	No
7.16	7.16	Limit APC Level	Yes	No	Yes	Yes	No	No	No	None	No
8.1	8.1.1	Commission Device	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
8.2	8.2	Read Inventory	No	No	No	No	No	No	Yes	EIS EES GIS SNA ENO GNO OU	Yes
8.3	8.3	Decommission Device	No	No	No	No	No	No	Yes	EIS GIS	Yes
8.4	8.4	Update Inventory	No	No	No	No	No	No	Yes	EIS EES GIS SNA ENO GNO OU	Yes
8.5	8.5	Service Opt Out	No	No	Yes	No	DSP	No	No	None	No
8.6	8.6	Service Opt In	No	No	No	No	No	No	Yes	None	No
8.7	8.7.1	Join Service (Critical)	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
8.7	8.7.2	Join Service (Non-Critical) ¹	No	No	Yes ⁹	Yes	No	No	No	EIS GIS OU	Yes
8.8	8.8.1	Unjoin Service (Critical)	Yes	No	Yes	Yes	No	No	No	EIS GIS	Yes
8.8	8.8.2	Unjoin Service (Non-Critical) ¹	No	No	Yes ⁹	Yes	No	No	No	EIS GIS OU	Yes
8.9	8.9	Read Device Log	No	No	No	Yes	DSP	No	No	EIS GIS OU	Yes
8.11	8.11	Update HAN Device Log ¹	No	No	Yes ⁹	Yes	DSP	No	No	EIS GIS OU	Yes
8.12	8.12.1	Restore HAN Device Log	No	No	Yes	Yes	No	No	No	EIS GIS	No
8.12	8.12.2	Restore GPF Device Log	No	No	Yes	Yes	No	No	No	EIS GIS	No
8.13	8.13	Return Local Command Response	No	No	No	No	No	No	Yes	EIS GIS	No
8.14	8.14.1	Communications Hub Status Update- Install Success	No	No	No	No	No	No	Yes	EIS GIS	No
8.14	8.14.2	Communications Hub Status Update – Install No SM WAN	No	No	No	No	No	No	Yes	EIS GIS	No
8.14	8.14.3	Communications Hub Status Update. – Fault Return	No	No	No	No	No	No	Yes	EIS GIS SNA	No
8.14	8.14.4	Communications Hub Status Update – No Fault Return	No	No	No	No	No	No	Yes	EIS GIS SNA	No
9.1	9.1	Request Customer Identification Number	No	No	Yes	Yes	No	No	No	OU	No
11.1	11.1	Update Firmware	No	No	No	No	No	No	Yes ²	EIS GIS	Yes

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role	SMETS1 Applicability
11.2	11.2	Read Firmware Version	No	No	No	Yes	DSP	No	No	EIS EES GIS SNA ENO GNO OU	Yes
11.3	11.3	Activate Firmware	Yes	No	No ⁸	Yes	Device	No	No	EIS GIS	Yes
11.4	11.4	Update PPMID Firmware	No	No	No	No	No	No	Yes ²	EIS GIS	No
12.1	12.1	Request WAN Matrix	No	No	No	No	No	No	Yes	EIS EES GIS SNA ENO GNO OU	No
12.2	12.2	Device Pre-notification	No	No	No	No	No	No	Yes	EIS EES GIS SNA ENO GNO OU	Yes
14.1	14.1	Record Network Data (GAS)	No	No	Yes	Yes	No	Yes	No	GNO	No

Table 36 Service Request Matrix

¹ Service Request available in relation to Type 2 Devices

² See section 2.3.10 for details on Firmware Distribution Mode of Operation

⁵ Service Request also available to the 'Old' Registered Supplier

⁷ Service Request can't be Sequenced for Gas, because the DCC can't read the encrypted status returned by the Device

⁸ Yes for SMETS1 Devices

⁹ No for SMETS1 Devices

9.4.1 Commands for Local Delivery

The Command Variant (see section 3) of a Request that sends a Command to a Device indicates if the Command is to be delivered via the SM WAN, returned to the DCC Service User for Local Delivery or both. A Command can be delivered locally:

- for all On Demand Requests available to DCC Service User Role EIS, EES or GIS, where Devices have a status in the Smart Metering Inventory of "Pending", "Installed Not Commissioned" or "Commissioned"
- and for all On Demand Requests available to the ENO, GNO, SNA or OU Service User Role where Devices have a status of "Installed Not Commissioned" or "Commissioned" in the Smart Metering Inventory

Please note that Service Request SR 8.1.1 – Commission Device cannot be requested for Local delivery to a Device as without SM WAN a Device cannot be Commissioned.

9.5 Managing Changes to Requests and Responses

It is inevitable that changes to Requests and Responses will be required in the future as a result of the introduction of new services or modifications to existing ones. This section describes the approach that will be used to allow the management of changes to the XML definitions supported on the DCC User Gateway.

9.5.1 DUIS XML Schema versions

When changes are made to the XML definitions a new version of the DUIS XML schema will be published. The schema version is identified by an additional attribute on the root elements, Request and Response, as shown below

```
<xs:element name="Request">  
  <xs:complexType>  
    ...  
    <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>  
  </xs:complexType>
```

The new schema will support new versions of individual Service Requests and Responses as required. This is described in section 9.5.2 and 9.5.3. New versions of Service Requests and Responses will be backwards compatible wherever possible with the previous versions.

In order to allow a phased transition to a new schema version across the DCC Service User community, the DCC Data Systems will support both the latest version of the DUIS XML schema and at least the immediately preceding version.

The principles of updates to schema versions, using 1.0 as an illustration but also applicable to later major versions, is as follows

- The schema version will be constructed of a major and minor version. In development of version 1.0, this schema version will always be 1.0 and a separate DUIS/MMC development version will be notified within the schema comments.
- Once version 1.0 is in use in the Production environment, the XML schema version will be updated with minor version increments (eg 1.1, 1.2 etc) for minor updates to the current baseline, whilst major version updates (eg 2.0) will be used for significant changes to the baseline.

9.5.1.1 Schema Versions in SMETS1 Responses and Alerts

As described in section 9.3.4, Responses and Alerts related to SMETS1 Devices carry embedded XML data from S1SPs, which is of XML type SMETS1SignedResponse (for Responses or SMETS1 Alerts) or S1SPAlert. The XML data signed by the S1SPs include a schema version, in addition to the schema version of the overall DUIS message.

SMETS1 Responses and Alerts were introduced in DUIS v3.0, and the schema version of the SMETS1SignedResponse XML data generated by S1SPs must be v3.0. If the DCC Service User is using a later version of the DUIS XML schema e.g. v3.1 or v4.0, then the SMETS1SignedResponse schema version generated by the S1SP will be different from the schema version of the outer Response XML structure.

9.5.2 Request versions

Where the change to the Request XML definition is driven solely by changes to the overall Request structure (eg changes to Header items) then these changes will be managed by use of the schema version only. That is, the new schema will contain the new definition of the Request, with an updated set of attributes as required. The previous definition will remain in the previous schema and will be supported if a DCC Service User is still using that schema, however once a DCC Service User moves to the new schema they will need to use the new definition.

Where a change to a Service Request specific XML definition is driven by a change to the underlying device protocol specification (eg a change to GBCS) then a different approach must be taken. This is necessary since in this case there is a dependency on the device firmware and the version of the device protocol specification supported by that device firmware. Since this is device specific and the DCC will need to support many variants of device firmware at any one time, the preferred approach to managing these changes will be to extend the Service Request XML definition so that it can support variations of the underlying GBCS Use Cases.

For example, if a change to GBCS required a change in the Update Supplier Name Service Request (SR 3.4) to provide an additional attribute then the UpdateSupplierName XML element definition would be extended to include this additional attribute as shown below.

```
DUIS Schema x.0
<xs:element name="UpdateSupplierName">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="SupplierName" type="xs:string"/>
      <xs:element name="SupplierTelephoneNumber" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

DUIS Schema y.0
<xs:element name="UpdateSupplierName">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="SupplierName" type="xs:string"/>
      <xs:element name="SupplierTelephoneNumber" type="xs:string"/>
      <xs:element name="webURL" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

In this particular example, a DCC Service User using the earlier schema version (DUIS Schema x.0) can continue to send SR3.4 with the original attributes whilst a DCC Service User using the later schema (DUIS Schema y.0) can now use the extra attribute. The DCC Data Systems

will determine which GBCS Use Case to construct based on the Firmware Version (and hence GBCS version) supported by the target device as recorded within the DCC Data Systems Smart Metering Inventory.

As well as the above scenario of modifications to existing Service Request definitions there are a couple of other change scenarios to consider.

The first scenario is the simple case of adding a brand new Service Request. This is relatively straightforward and will result in a new XML definition being added to the new schema. This new Service Request will, of course, have a new Service Reference associated with it.

The second scenario is where there is a change to the underlying device protocol specification but this change does *not* affect the Service Request XML definition. In this case the DCC Transform Service will simply create the correct version of the underlying GBCS Command based on its knowledge of the device firmware for the device being addressed. Where this scenario occurs for a Critical Service Request then the Pre-Command returned by the Transform Service to the User will include a version indicator so that the Parse and Correlate software can determine which version of the GBCS Command it should be checking against.

The above scenarios are just examples of how a particular change to GBCS may be handled in later versions of the schema. The specifics of individual changes will be dependent on the precise nature of the change to the GBCS Specification and in particular to the level of backwards compatibility provided in the updated GBCS Use Cases. A mapping of GBCS Use Cases to Service Requests for all DUIS and MMC Schema versions is provided later in this document in Appendix 10. Specific details of any validation rules or backwards compatibility constraints are contained in the individual Service Request definitions in the relevant Annex.

Finally, consideration must be given to DCC Only Service Requests and how to manage changes to these Requests. For consistency, these will be handled in the same way as device based Service Requests, ie the Service Request XML element will be updated to contain additional attributes wherever possible otherwise a brand new Service Request will be created.

9.5.3 Response versions

The handling of changes to Response XML definitions needs to be applied to both the DUIS XML Schema and the MMC XML Schema.

For the DUIS XML Schema the approach is similar to that applied for Requests and is described below. For the MMC XML Schema the approach is described in Annex 18.

For the DUIS XML schema, where the change to the Response XML definition is driven solely by changes to the overall Response structure (eg changes to Header items) then these changes will be managed by use of the schema version only. That is, the new schema will contain the new definition of the Response, with an updated set of attributes as required. The previous definition will remain in the previous schema and will be supported if a DCC Service User is still using that schema, however once a DCC Service User moves to the new schema they will need to use the new definition. The DCC Data Systems will determine which version of the Response to return to the DCC Service User based on the schema version used in the corresponding Request.

Where a change to a DCC Only Service Response specific XML definition is driven by a change to the specific data items of that Service Response then a similar approach will be taken, ie the XML element definition will be updated in later versions of the schema whilst the previous definition will remain in the previous schema. The DCC Data Systems will determine which version of the Service Response to return to the DCC Service User based on the schema version used in the corresponding Service Request.

Where a change to the underlying device protocol changes the content of the GBCS Response then this has no impact on the DUIS XML Schema definition, but it will be handled by the MMC XML schema (see Annex 18).

9.5.4 Supported DUIS XML schema versions

For this version 5.2 of DUGIDS, the DCC Data Systems is expected to support the following XML Schema Versions:

- DCC User Interface Specification (DUIS) V5.2
 - DUIS XML Schema Version - Request - 5.2
 - DUIS XML Schema Version - Response - 5.2
 - DUIS XML Schema Version - SMETS1SignedResponse - 3.0
 - DUIS XML Schema Version – S1SPAAlert - 3.0
- Message Mapping Catalogue (MMC) V5.2
 - MMC XML Schema Version – GBCSResponse – 5.2

The DCC Data Systems will also support previous Schema Versions as follows:

- DCC User Interface Specification (DUIS) V5.1
 - DUIS XML Schema Version - Request - 5.1
 - DUIS XML Schema Version - Response - 5.1
 - DUIS XML Schema Version - SMETS1SignedResponse - 3.0
 - DUIS XML Schema Version – S1SPAAlert - 3.0
- Message Mapping Catalogue (MMC) V5.1
 - MMC XML Schema Version – GBCSResponse – 5.1
- DCC User Interface Specification (DUIS) V5.0
 - DUIS XML Schema Version - Request - 5.0
 - DUIS XML Schema Version - Response - 5.0
 - DUIS XML Schema Version - SMETS1SignedResponse - 3.0
 - DUIS XML Schema Version – S1SPAAlert - 3.0
- Message Mapping Catalogue (MMC) V5.0
 - MMC XML Schema Version – GBCSResponse – 5.0
- DCC User Interface Specification (DUIS) V4.0
 - DUIS XML Schema Version - Request - 4.0
 - DUIS XML Schema Version - Response - 4.0
 - DUIS XML Schema Version - SMETS1SignedResponse - 3.0
 - DUIS XML Schema Version – S1SPAAlert - 3.0

- Message Mapping Catalogue (MMC) V4.0
 - MMC XML Schema Version – GBCSResponse - 4.0

- DCC User Interface Specification (DUIS) V3.1
 - DUIS XML Schema Version - Request - 3.1
 - DUIS XML Schema Version - Response -3.1
 - DUIS XML Schema Version - SMETS1SignedResponse - 3.0
 - DUIS XML Schema Version – S1SPAlert - 3.0

- Message Mapping Catalogue (MMC) V3.1
 - MMC XML Schema Version – GBCSResponse - 3.1

- DCC User Interface Specification (DUIS) V3.0
 - DUIS XML Schema Version - Request - 3.0
 - DUIS XML Schema Version - Response -3.0
 - DUIS XML Schema Version - SMETS1SignedResponse -3.0
 - DUIS XML Schema Version – S1SPAlert -3.0

- Message Mapping Catalogue (MMC) V3.0
 - MMC XML Schema Version – GBCSResponse - 3.0

DUIS v1.0 and v2.0 will not be supported by DCC from November 2021 onwards. The URLs for versions v1.0 and v2.0 have not been removed, so it is still possible to send Service Requests to them, but Users should recognise that these are no longer supported versions. DCC Users are recommended to ensure that they use DUIS v3.0 or later.

- DCC User Interface Specification (DUIS) V2.0
 - DUIS XML Schema Version - Request - 2.0
 - DUIS XML Schema Version - Response - 2.0

- Message Mapping Catalogue (MMC) V2.0
 - MMC XML Schema Version – GBCSResponse - 2.0

- SEC APPENDIX AD - DCC User Interface Specification (DUIS) – Version AD 1.1
 - DUIS XML Schema Version - Request - 1.0
 - DUIS XML Schema Version - Response - 1.0

- SEC APPENDIX AF – Message Mapping Catalogue (MMC) – Version AF 1.0

- MMC XML Schema Version – GBCSResponse - 1.0

Details on how to access different versions of the interface are provided in section 10.2.

10 Web Services Implementation

10.1 Technical Implementation

The technical implementation of the DCC User Interface is provided by using “web services” to allow Requests and Responses to be sent between the DCC Data Systems and the systems of the DCC Service Users.

The DCC User Gateway accepts Service Requests or Signed Pre-Commands as XML documents submitted using an HTTP POST command. (Note this should not be confused with a SOAP based web service). Similarly, when data is pushed from the DCC User Gateway to a DCC Service User, the DCC Service User needs to provide a web server to accept POSTed data. The content of this POST command will be either a Service Response (from Device), a Command for Local Delivery (asynchronous), a Device Alert or a DCC Alert message.

The POST command is an HTTP protocol method to request that the addressed web server accepts the data enclosed in the message’s body for processing. The web server responds with an HTTP response, which may also include data in the message body.

The contents of all the POSTed commands and any HTTP response data is XML, and is defined by the DUIS XML schema. The interface utilises HTTP status codes within the HTTP response to communicate the success or failure of the call.

To process Requests, there are three services provided by the DCC Data Systems as follows:

- Transform Service – a synchronous communication mechanism for transformation of Critical Service Requests into GBCS Format and the returning of a Pre-Command to the DCC Service User.
- DCC Only Service – a synchronous communication mechanism to process DCC Only Service Requests or a request for a Command to be returned by the DCC to the DCC Service User to be locally applied (via a Hand Held Terminal).
- Send Command Service – an asynchronous communication mechanism to which a DCC Service User must send any Non-Critical Service Request or Signed Pre-Command where the DCC Service User wishes the DCC only to send the associated Command to the Device specified in the message.

The Transform and DCC Only web services follow a synchronous processing pattern and return Service Response data to DCC Service Users within the HTTP response.

The Send Command web service also completes synchronously and returns an HTTP response, but this response simply provides an Acknowledgement to indicate acceptance of the Service Request by the DCC.

Figure 63 illustrates the synchronous pattern. Note that the submitted request is defined by the XML object Request, The DCC Data Systems synchronously responds to the submission with an appropriate HTTP Status Code and XML Response content. The content of the synchronous Response is an Acknowledgement, a Pre-Command, a Command for Local Delivery or a Service Response (from DCC) as defined in section 9.3.1.



Figure 63 Service Request from Service User to the DCC

To receive asynchronous Service Responses and Alerts, the DCC Service User system must implement a web service as follows:

Receive Response Service – a service to receive Service Responses and Alerts from the DCC Data Systems.

To implement this service, the Service User is required to provide a URL for a web server that will accept the HTTP POSTed XML (HTTP version 1.1) from the DCC Data Systems. The URL details are to be defined by the Service User and provided to the DCC as described in the Code of Connection for the DCC User Interface. It is the Service User's responsibility to ensure that this URL is available to receive data from the DCC Data Systems.

Figure 64 illustrates the asynchronous pattern. The structure of the POST command is defined by the Response XML object. The content of the asynchronous Response is a Service Response (from Device), a Command for Local Delivery, a Device Alert or a DCC Alert as defined in section 9.3.1. The Service User responds back to the DCC with an HTTP response containing the appropriate HTTP status code to indicate whether the call was successful or not. Failure to receive an HTTP response will invoke the DCC retry behaviour as described in section 11.6.

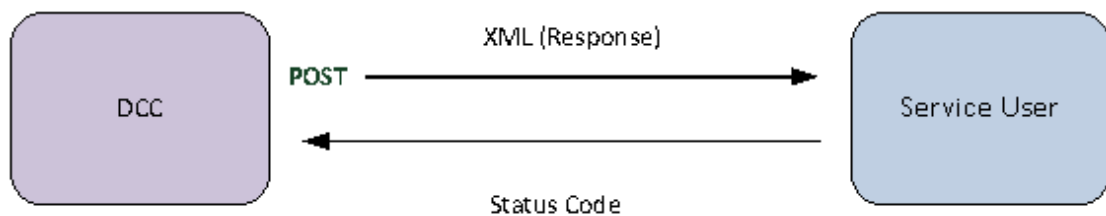


Figure 64 Service Response from the DCC to the Service User

10.2 URL Naming and API Versioning

URL names will be provided to DCC Service Users as part of the process of obtaining a connection to the DCC User Gateway.

Names used in this section are examples to help show the principles of API versioning. For the avoidance of doubt, the domain name used within the examples for api.mycorp.com is not a valid value and will be replaced with an actual value for service delivery as advised as part of the process of obtaining a connection to the DCC User Gateway.

The DCC User Interface provides a capability to manage the transition from one version of the interface definition to the next. DCC Service Users can choose to upgrade at a later date than at the point when the User Gateway components are cut over to a new version of the published API. Support for the old version of the API and for the new version will continue until customers have completed their upgrade and cut-over tasks.

The endpoints for the service are named as follows:

Web Service	URL for Message Gateway Request	Comment
DCC Only Service	http://api.mycorp.com/serviceD/	For services only requiring interaction with DCC Data Systems
Transform Service	http://api.mycorp.com/ServiceT/	For transformation of Critical Service Requests to Pre-commands

Web Service	URL for Message Gateway Request	Comment
		or for sending SMETS1 Critical Service Requests to SMETS1 devices via the SMETS1 Service provider
Send Command Service	http://api.mycorp.com/serviceS/	For sending a non-critical Service Request or signed Pre-command (for Critical Service Requests) to the device or for sending non-Critical SMETS1 Service Requests to SMETS1 devices via the SMETS1 Service provider

Table 37 URL Naming

The Message Gateway services are identified with a separate document root/sub-domain “api” because this approach allows digital certificates to be managed separately to those used for other parts of the DCC domain, and because it is compatible with recommendations on service design in the [Government Service Design Manual](#).

To support the introduction of new versions of the DCC User Interface and to allow multiple versions to be supported, each major new version of the API will be given a new set of URLs that identify the web services to be called to access that version of the interface. Minor version changes will continue to use the same URLs as the previous major release, e.g. version 3.1 of the API uses the same URLs as version 3.0.

The URLs for versions v1.0 and v2.0 have not been removed, so it is still possible to send Service Requests to them, but Users should recognise that these are no longer supported versions. DCC Users are recommended to ensure that they use DUIS v3.0 or later.

```

http://api.mycorp.com/serviceD/ // The original v1.0 API
http://api.mycorp.com/serviceT/ // The original v1.0 API
http://api.mycorp.com/serviceS/ // The original v1.0 API
http://api.mycorp.com/serviceD/2.0/ // The previous v2.0 API
http://api.mycorp.com/serviceT/2.0/ // The previous v2.0 API
http://api.mycorp.com/serviceS/2.0/ // The previous v2.0 API
http://api.mycorp.com/serviceD/3.0/ // The v3.0 and v3.1 API
http://api.mycorp.com/serviceT/3.0/ // The v3.0 and v3.1 API
http://api.mycorp.com/serviceS/3.0/ // The v3.0 and v3.1 API
http://api.mycorp.com/serviceD/4.x/ // The v4.0 API
http://api.mycorp.com/serviceT/4.x/ // The v4.0 API
http://api.mycorp.com/serviceS/4.x/ // The v4.0 API
http://api.mycorp.com/serviceD/5.x // The v5.0, v5.1 and 5.2 API
http://api.mycorp.com/serviceT/5.x/ // The v5.0, v5.1 and 5.2 API
http://api.mycorp.com/serviceS/5.x/ // The v5.0, v5.1 and 5.2 API

```

It is assumed that a DCC Service User will only use one version of the interface at any point in time.

11 Error Handling

A submitted Service Request or Signed Pre-command may not be successfully processed by the DCC Data Systems due to a number of reasons. From the point that the Service Request or Signed Pre-command is accepted by the DCC Data Systems, the DCC Data Systems are responsible for (as applicable depending on its Command Variant – see section 3):

SMETS2 or later:

- sending the Command to the CSP
- returning the Command to the DCC Service User for Local Delivery
- returning the Pre-command to the DCC Service User
- returning the Service Response to the DCC Service User

SMETS1:

- sending the Service Request to the S1SP, which will (as appropriate) send SMETS1 format commands to the Device
- returning the Service Response to the DCC Service User
- sending an S1SP Alert related to the Service Request, where applicable

This section describes the Error Handling and Retry Strategy implemented in the DCC User Gateway. It shall be interpreted as applying to SMETS1 Devices (with appropriate terminology adjustments even if not explicitly stated) as well as SMETS2 or later Devices, unless indicated otherwise.

11.1 Error Handling

Errors encountered when processing a Service Request or Signed Pre-command, which cannot be resolved by the retry strategy, are passed back to the original DCC Service User who requested the service.

Errors may be caused by an incomplete or invalid Service Request or Signed Pre-command (see section 7), due to failure to deliver the GBCS message to the Device, or failures to process a request within the DCC Data System processing

The Response Code contained in the Acknowledgement or Service Response message will indicate the failure type. See section 12.3 for more details on DCC Data Systems Response Codes.

For SMETS1 Devices there may also be error conditions within the S1SP. Since S1SP processing takes place after initial validation and acknowledgement of Service Requests by the DCC Data Systems, a new type of error handling has been introduced. The new message type S1SP Alert enables an S1SP to generate a message to be sent to the Service User via the DCC Data Systems, e.g. to indicate that a Service Request failed validation checks within the S1SP.

Note that S1SP Alerts include S1SP Alert Codes used for other purposes, so S1SP Alerts do not always indicate error conditions.

11.2 Retry Strategy

For those Commands that are to be delivered to a Device via the CSP, the DCC Data Systems will at the point of execution attempt to deliver the GBCS Command to the device's communications hub via the appointed CSP provider.

Should it not be possible to deliver the Command (i.e. if there is an error reported during the delivery processing), then the DCC Data Systems shall attempt to redeliver the message at a

later time. The redelivery is controlled by an algorithm with a “back-off” period and a maximum number of retries before eventually failing. Should the delivery fail after the final attempt, then a failure message is returned to the DCC Service User via a DCC Alert with an appropriate Response Code as defined in section 12.3.

In a similar fashion, if the Command is delivered (i.e. there are no errors reported during delivery processing) but no response is received within a configurable timeout period then the DCC Data Systems will attempt to redeliver the message at a later time. Again, the redelivery is controlled by an algorithm with a “back-off” period and a maximum number of retries before eventually failing and returning a failure message to the DCC Service User via a DCC Alert with an appropriate Response Code as defined in section 12.3.

The retry approach for different Modes of Operation are described further in section 11.6.

Note that in all cases, the DCC Data Systems will re-send the Command with the same Request ID. This ensures that in the event that the Command is actually received by the Device then the anti-replay features of the GBCS will ensure that the Command is not executed twice.

11.3 Unfulfilled Requests

The DCC Data Systems shall monitor Service Requests and Signed Pre-Commands to ensure that a Service Response is received by DCC Service Users as expected.

For “On Demand” Service Requests or Signed Pre-Commands, if no response is received after a configurable period, a DCC Alert with an appropriate response code and the original Request ID for which there was no response from the device will be returned to the DCC Service User.

For “Future Dated (Device)” Service Requests or Signed Pre-Commands, if no response is received after a configurable period beyond the Execution Date Time, a DCC Alert with an appropriate response code and the original Request ID for which there was no response from the device will be returned to the DCC Service User.

For “Future Dated (DSP)” Service Requests, where a response to the future dated request is not received, then the retry strategy will be initiated. If there is no response after the retries, a DCC Alert with an appropriate response code and the original Request ID for which there was no response from the device will be returned to the DCC Service User.

For “DSP Scheduled” Service Requests, where a response to the scheduled request is not received, then the retry strategy will be initiated. If there is no response after the retries, a DCC Alert with an appropriate response code and the Schedule ID for which there was no response from the device will be returned to the DCC Service User. The lack of response to a “DSP Scheduled” Service Request doesn’t affect the DSP Schedule, which will continue to run until its defined End Date or until it is deleted.

For the avoidance of doubt, no DCC Alerts with timeout response codes will be issued by the DCC Data Systems for “Transform” or “DCC Only” where the DCC Service User is expected to ensure that a Service Response is received from the DCC and take any appropriate remedial action required.

11.4 Failure to deliver Responses to DCC Service Users

If the DCC Data Systems has received a Service Response or Alert from a Device or generated a DCC Alert, but is unable to deliver that Service Response, Device Alert or DCC Alert to the DCC Service User (e.g. due to unavailability of the Service User’s systems) then the DCC Data Systems will attempt to redeliver the message at a later time. The redelivery is controlled by an algorithm with a “back-off” period and a maximum number of retries before eventually failing.

Note that in this case the retry configuration will be such that the DCC Data Systems will retry for a significant period of time before ultimately recording a failure to deliver in the Service Audit Log.

11.5 Web Services Error Handling

All web service interactions between DCC Service Users and the DCC Data Systems follow a synchronous processing pattern for the individual web service call.

For the “Transform Service” and “DCC Only Service” web services, the synchronous completion of the web service call returns the Service Response to the DCC Service User. This Service Response will contain a response code (error code) if there have been any errors in processing the request.

For the “Send Command Service” web service, the synchronous completion of the web service call returns an Acknowledgement to the DCC Service User. This Acknowledgement will contain a response code (error code) if there have been any errors in processing the request (e.g. access control failure).

In a similar fashion the synchronous completion of the “Receive Response Service” web service call returns an http “acknowledgement” to the DCC Data Systems. This http acknowledgement will contain a response code (error code) if there have been any errors in processing the request (e.g. a data or validation failure).

In all cases, the web service client implementation should utilise an appropriate timeout to handle any failure to complete the service call.

See section 12 for more details on response codes returned by individual web services.

11.6 Service Request and Response Error Handling

The following sections describe the error handling and retry behaviour for each mode of operation of Service Request/Response processing (see section 2.3)

Note that all retry periods and timeout values are configurable items and may be subject to change as part of an agreed Service Management process. Some values are dependent on Mode of Operation and Target Response Times. These are described in Table 38. Other values are fixed in all cases and these have initial proposed values in square brackets within the following sections.

Mode of Operation	Initial Retry Period	Back-off period	Final Retry Period
On Demand	Configurable period based on the following factors: DCC Target Response Time HAN transfer time Device processing time Device wakeup time ¹	n/a	n/a
Future Dated (Device)	2 hours	2 hours	Future Dated (Device) Target Response Time + 60 mins
Future Dated (DSP)	2 hours	2 hours	Future Dated (DSP) Target Response Time + 60 mins
DSP Scheduled	2 hours	2 hours	DSP Scheduled Target Response Time + 60 mins

Table 38 Retry Periods

¹ Note that if a Command is sent to a Target ID that identifies the Gas Smart Meter (rather than the Gas Proxy Function), then the On Demand initial retry period will be extended by 30 minutes to allow time for the Gas Smart Meter to wake up and receive the Command

11.6.1 Transform and DCC Only

Error Scenario	Behaviour
DCC Service unavailable	<p>The DCC shall notify DCC Service Users if the DCC Data Systems are unavailable using a HTTP Response Code of 503 – Service Unavailable (as defined in section 12.1). This notification may be before the DCC Service User notices that this is the case.</p> <p>In the absence of any such notification, where a DCC Service User is unable to access the DCC Services, the DCC Service User shall check connectivity of their own systems, check for known issues, and for notifications on the Self Service Interface (SSI) before investigation into DCC Data Systems is performed.</p> <p>If DCC Data Systems are persistently unavailable, the DCC Service User may raise an Incident with the DCC.</p>
Invalid request or Access Control failure	Acknowledgement returned on synchronous web service completion with appropriate Response Code (reason for error). See section 12.3

Table 39 Error Handling – Transform and DCC Only

11.6.2 On Demand

Error Scenario	Behaviour
DCC Service unavailable	<p>The DCC shall notify DCC Service Users if the DCC Data Systems are unavailable using a HTTP Response Code of 503 – Service Unavailable (as defined in section 12.1). This notification may be before the DCC Service User notices that this is the case.</p> <p>In the absence of any such notification, where a DCC Service User is unable to access the DCC Services, the DCC Service User shall check connectivity of their own systems, check for known issues, and for notifications on the Self Service Interface (SSI) before investigation into DCC Data Systems is performed.</p> <p>If DCC Data Systems are persistently unavailable, the DCC Service User may raise an Incident with the DCC.</p>
Invalid request or Access Control failure	Acknowledgement returned on synchronous web service completion with appropriate Response Code (reason for error). See section 12.3
Failure to send command over SM WAN	DCC retry at least once within initial retry period (see Table 38)

Error Scenario	Behaviour
	If failed after further retries and expiry of initial retry period (see Table 38) then return DCC Alert N12 with appropriate Response code to requesting DCC Service User
Failure to receive response over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38)</p> <p>If nothing received after further retries and expiry of initial retry period (see Table 38) mark as failed and return DCC Alert N13 with appropriate Response code to requesting DCC Service User,</p> <p>If the response is received after the failure notification, it will be flagged as anomalous (since there is no outstanding request against it) and recorded within the DCC Data Systems Service Audit Trail and Event Log.</p>
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on "failed" queue for re-delivery once DCC Service User connection restored.</p> <p>Failed responses will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 40 Error Handling – On Demand

11.6.3 Future Dated (Device)

N/A to SMETS1 Devices.

Error Scenario	Behaviour
DCC Service unavailable	<p>The DCC shall notify DCC Service Users if the DCC Data Systems are unavailable using a HTTP Response Code of 503 – Service Unavailable (as defined in section 12.1). This notification may be before the DCC Service User notices that this is the case.</p> <p>In the absence of any such notification, where a DCC Service User is unable to access the DCC Services, the DCC Service User shall check connectivity of their own systems, check for known issues, and for notifications on the Self Service Interface (SSI) before investigation into DCC Data Systems is performed.</p> <p>If DCC Data Systems are persistently unavailable, the DCC Service User may raise an Incident with the DCC.</p>

Error Scenario	Behaviour
Invalid request or Access Control failure	Acknowledgement returned on synchronous web service completion with appropriate Response code to requesting DCC Service User.
Failure to send command over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38).</p> <p>If failed after further retries and expiry of initial retry period then place on "redelivery" queue for subsequent re-send after back-off period (see Table 38).</p> <p>If failed after multiple re-delivery attempts up to expiry of final retry period (see Table 38) then return DCC Alert N12 with appropriate Response code to requesting DCC Service User.</p>
Failure to receive Command Acknowledgement response over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38).</p> <p>If nothing received after further retries and expiry of initial retry period place on "redelivery" queue for subsequent re-send after back-off period (see Table 38).</p> <p>If failed after multiple re-delivery attempts up to expiry of final retry period (see Table 38) then return DCC Alert N13 with appropriate Response code to requesting DCC Service User.</p>
No Future Service Response received from Device	<p>For all future dated commands acknowledged by the Device, if no response received from the specified Device within the Target Response Time after the execution date and time contained within the original Service Request then DCC to return DCC Alert N10 to the DCC Service User with a "Timeout" Response Code.</p> <p>If the response is received after the Timeout, it will be flagged as anomalous (since there is no outstanding request against it) and recorded within the DCC Data Systems Service Audit Trail and Event Log.</p>

Error Scenario	Behaviour
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on “failed” queue for re-delivery once DCC Service User connection restored.</p> <p>Failed responses will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 41 Error Handling – Future Dated (Device)

11.6.4 Future Dated (DSP)

Error Scenario	Behaviour
DCC Service unavailable	<p>The DCC shall notify DCC Service Users if the DCC Data Systems are unavailable using a HTTP Response Code of 503 – Service Unavailable (as defined in section 12.1). This notification may be before the DCC Service User notices that this is the case.</p> <p>In the absence of any such notification, where a DCC Service User is unable to access the DCC Services, the DCC Service User shall check connectivity of their own systems, check for known issues, and for notifications on the Self Service Interface (SSI) before investigation into DCC Data Systems is performed.</p> <p>If DCC Data Systems are persistently unavailable, the DCC Service User may raise an Incident with the DCC.</p>
Invalid request or Access Control failure	Acknowledgement returned on synchronous web service completion with appropriate Response code to requesting DCC Service User.
Access Control failure at Future Dated execution time	DCC Alert N7 returned with appropriate Response Code.
Failure to send Request over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38) from first delivery attempt .</p> <p>If failed after further retries and expiry of initial retry period then place on “redelivery” queue for subsequent re-send after back-off period (see Table 38).</p> <p>If failed after multiple re-delivery attempts up to expiry of final retry period (see Table 38) from requested execution time then return DCC Alert N11 to the DCC Service User with a “Timeout” Response Code.</p>

Error Scenario	Behaviour
Failure to receive response over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38) from first delivery attempt.</p> <p>If nothing received after further retries and expiry of initial retry period place on “redelivery” queue for subsequent re-send after back-off period (see Table 38).</p> <p>If failed after multiple re-delivery attempts up to expiry of final retry period (see Table 38) from requested execution time then return DCC Alert N11 to the DCC Service User with a “Timeout” Response Code.</p> <p>If the response is received after the Timeout, it will be flagged as anomalous (since there is no outstanding request against it) and recorded within the DCC Data Systems Service Audit Trail and Event Log.</p>
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on “failed” queue for re-delivery once Service User connection restored.</p> <p>Failed responses will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 42 Error Handling – Future Dated (DSP)

11.6.5 DSP Scheduled

Error Scenario	Behaviour
Validation or Access Control failure at Scheduled execution time	DCC Alert N7 returned with appropriate Response Code.
Failure to send Request over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38) from first delivery attempt .</p> <p>If failed after further retries and expiry of initial retry period then place on “redelivery” queue for subsequent re-send after back-off period (see Table 38).</p> <p>If failed after multiple re-delivery attempts up to expiry of final retry period (see Table 38) from requested execution time then return DCC Alert N11 to the DCC Service User with a “Timeout” Response Code.</p>

Error Scenario	Behaviour
Failure to receive response over SM WAN	<p>DCC retry at least once within initial retry period (see Table 38) from first delivery attempt ..</p> <p>If nothing received after further retries and expiry of initial retry period place on “redelivery” queue for subsequent re-send after back-off period (see Table 38).</p> <p>If failed after multiple re-delivery attempts up to expiry of final retry period (see Table 38) from requested execution time then return DCC Alert N11 to the DCC Service User with a “Timeout” Response Code.</p> <p>If the response is received after the Timeout, it will be flagged as anomalous (since there is no outstanding request against it) and recorded within the DCC Data Systems Service Audit Trail and Event Log.</p>
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on “failed” queue for re-delivery once Service User connection restored.</p> <p>Failed responses will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 43 Error Handling – DSP Scheduled

11.6.6 Meter Scheduled

N/A to SMETS1 Devices.

Error Scenario	Behaviour
DCC Service User fails to receive response from DCC at scheduled time	<p>This is a DCC Service User Responsibility.</p> <p>Suggestion – If nothing received after [24 hours] from expected receipt time DCC Service User to initiate Service Request to retrieve Billing Data OR initiate Service Request to read Smart Meter Device log</p>

Error Scenario	Behaviour
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on “failed” queue for re-delivery once DCC Service User connection restored.</p> <p>Failed responses will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 44 Error Handling – Meter Scheduled

11.6.7 Device Alert

Error Scenario	Behaviour
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on “failed” queue for re-delivery once DCC Service User connection restored.</p> <p>Failed Alerts will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 45 Error Handling – Device Alert

11.6.8 DCC Alert

Error Scenario	Behaviour
Unable to deliver response to Service User	<p>DCC retry at regular intervals.</p> <p>If failed after [300 secs] from first DCC attempt to deliver response to Service User then place on “failed” queue for re-delivery once DCC Service User connection restored.</p> <p>Failed Alerts will be held for [2 days] for re-sending once DCC Service User Connectivity is restored.</p> <p>The Service Management Framework will define the processes to be followed for long term unavailability of Service User connectivity, including how long data can be held for.</p>

Table 46 Error Handling – DCC Alert

12 Response and Status Codes

This section defines the Response Codes and the HTTP status codes (see <http://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html>) returned by the DCC Data Systems to the DCC Service User Systems in response to a Transform Service, DCC Only Service or Send Command Service web service call, and those to be returned by the DCC Service User Systems to the DCC Data Systems in response to a Receive Response web service call.

12.1 DCC Data Systems Web Service Status Codes

When the DCC Service Users call the DCC Data Systems web services, the DCC Data Systems return a response. Note that the DCC Data System utilises HTTP as a transport rather than application protocol, therefore all application related data is passed with a status code of 200.

HTTP status codes are used to indicate success or failure of the web service call:

200: OK – The request has been accepted by the DCC. An XML response object is returned to the Service User, this contains a Response Code that indicates whether the request has passed or failed the business rules for the Service Request. See section 9.3.1.1 for the construction of this XML. Note that it is possible for a request to be syntactically correct, but fail business level validation. Successful Service Requests will return a Response Code with the prefix “I” (Information) or “W” (Warning). Failed Service Requests will return a Response Code with the prefix “E” (Error).

300: Multiple Choices – The recipient requires that the client redirect its request to the alternative URL provided in the Location header field.

400: Bad Request – Indicates that the syntax of the request is invalid and the DCC Data Systems are unable to parse the request.

500: Internal Server Error – Indicates that the DCC Data Systems are malfunctioning. The Service User should contact the DCC Helpdesk if this occurs.

503: Service Unavailable – The DCC Data Systems server is currently unavailable (because it is overloaded or down for maintenance). This is typically returned when there are no resources (routes, queues, etc.) to service the request. It is advised to wait for a period before resubmitting the request.

12.2 DCC Service User Web Service Status Codes

When DCC calls the DCC Service Users Receive Response web service, the DCC Service User returns an acknowledgement response. HTTP status codes are used to indicate success or failure of the web service call:

200: OK – The DCC Service User has accepted the message.

300: Multiple Choices – The recipient requires that the client redirect its request to the alternative URL provided in the Location header field.

400: Bad Request – Indicates that the syntax of the message is invalid and the DCC Service User system is unable to parse the message.

500: Internal Server Error – Indicates that a DCC Service User system is malfunctioning. The DCC shall contact the Service User’s Helpdesk should this occur.

503: Service Unavailable – The DCC Service User server is currently unavailable (because it is overloaded or down for maintenance). The DCC system shall wait for a configurable period (initially set to 15 minutes) before resubmitting the response.

12.3 DCC Data Systems Response Codes

This section specifies the meaning associated with the DCC Data Systems generic Response Codes within the response message. The Service Request specific Response Codes are included in the Annex.

All responses to the DCC Service User include a Response Code.

Error Response Codes are the result of:

- Access Control Second Step Authentication failures
- Access Control Authorisation failures
- Access Control Validation failures
- Failure to send a command to a Device or receive a response from it
- “Future Dated” and “DSP Scheduled” command time-outs
- Sequencing Failures

All Device Responses will include an ‘I0’ (success) Response Code, meaning that the DCC Data Systems have received a response from the Device. The error code (success / failure) of each GBCS Command in the Device response will be included in the GBCS payload message. These GBCS error codes are not documented here but they are documented in the GBCS itself.

A Response Code consists of a letter prefix (defining the type) followed by a number. Response Code Types:

- Information. Prefix ‘I’
- Error. Prefix ‘E’
- Warning. Prefix ‘W’

Please see Error Handling Strategy for details of the Error Handling Strategy Procedure.

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types	Error Handling Strategy Procedure
I0	Success	Information	Request has had a successful outcome	All except Acknowledgement	N/A
I99	Acknowledgement	Information	Request received for sending to Device has been accepted and is correct Or DCC Only Service Request that doesn't return data has had a successful outcome	Acknowledgement	N/A
E1	Failed Authorisation – Invalid User / User Role	Error	DCC Service User / User Role combination is not a valid SEC party / User Role	Acknowledgement and DCC Alerts	V2 Z1
E2	Failed Authorisation – Invalid User Role / Service Reference	Error	DCC Service User Role not allowed to call Service Reference	Acknowledgement	V4 Z1

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types	Error Handling Strategy Procedure
E3	Failed Authorisation – Invalid User Status	Error	DCC Service User Status not allowed to call Service Reference	Acknowledgement and DCC Alerts	V3 Z1
E4	Failed Authorisation – Invalid User / User Role for Device	Error	DCC Service User Role not authorised party for Device and required date & time	Acknowledgement and DCC Alerts	V1 Z1
E5	Failed Authorisation – Invalid Device Status	Error	Device status incompatible with Service Reference	Acknowledgement and DCC Alerts	W6 Z1
E11 ¹	Failed Validation – Invalid Service Request / device type combination	Error	Service Reference not compatible with the specified device	Acknowledgement	W7 Z1
E12	Failed Validation – Invalid Request / Command Variant combination	Error	Command Variant not applicable to the Request type	Acknowledgement	W1 Z1
E13	Failed Validation – Invalid Request Type for URL	Error	Request Type not valid for the URL, e.g. a “DCC Only” Service Request sent to the “Transform” URL	Acknowledgement	W2 Z1
E17	Failed Authorisation – Invalid DCC User Role / Device for locally delivered Commands	Error	DCC User Role / Device status combination doesn't allow Request of Command for local delivery	Acknowledgement	W6 Z1
E19	Failed Authorisation – Device doesn't exist ³	Error	Device ID invalid	Acknowledgement and DCC Alerts	W3 Z1
E20	Communications Failure – Unable to Communicate with Device	Error	DCC Data Systems cannot establish communications with Device	DCC Alerts	X1
E21	Communications Failure – No Response Received from Device	Error	No response received from Device for an “On Demand” Command or a “Future Dated” Command Acknowledgement	DCC Alerts	X1
E30	Time-out – “Future Dated” Command	Error	DCC Data Systems don't get response from Device on the expected date for “Future Dated” command	DCC Alerts	X2 X3
E31	Time-out – “DSP Schedule” / “Future Dated (DSP) Command	Error	DCC Data Systems cannot establish communications with or get response from Device for “DSP Scheduled” or “Future Dated (DSP) command	DCC Alerts	X2 X3
E40	Failed Sequenced Command – Invalid First Request	Error	DCC Data Systems fail sequenced Request because it includes the First In Sequence flag set to true and the Preceding RequestID is populated	Acknowledgement	Y1 Z1

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types	Error Handling Strategy Procedure
E41	Failed Sequenced Command – Invalid Preceding Request ID	Error	DCC Data Systems fail sequenced Request, because its Preceding Request ID is also the Preceding RequestID of another Request in the same sequence	Acknowledgement	Y1 Z1
E42	Failed Sequenced Command – Circular Reference	Error	DCC Data Systems fail sequenced Request, because its Request ID is the same as its Preceding Request ID or the Preceding RequestID of its preceding request or of one of its preceding requests, e.g. request id 1 has request 2 as its preceding request and request 2 has request 1 as its preceding request	Acknowledgement	Y1 Z1
E43	Failed Sequenced Command – Previous Request(s) Failure	Error	DCC Data Systems fail sequenced Request, because previous Request (s) in the sequence failed	Acknowledgement and DCC Alerts	Y2 Z1
E44	Failed Sequenced Command – Previous Request(s) not received	Error	DCC Data Systems fail sequenced Request, because previous Request(s) in the sequence not received during "Wait Period"	Acknowledgement and DCC Alerts	Y2 Z1
E45	Failed Sequenced Command – Invalid Command Variant	Error	DCC Data Systems fail sequenced Request, because its Command Variant is not applicable to a sequenced Request	Acknowledgement	Y2 Z1
E46	Failed Sequenced Command – Request after Last In Sequence	Error	DCC Data Systems fail sequenced Request, because it is dependent on the Last In Sequence	Acknowledgement and DCC Alerts	Y2 Z1
E47	Failed Sequenced Command – Request failed because no response to "On Demand" Command received from device	Error	DCC Data Systems fail sequenced Request, because no response received from device to previous Command	Acknowledgement and DCC Alerts	Y2 Z1
E48	Failed Validation – Service Request Reference and Variant mismatch	Error	Invalid combination of Service Reference and Service Reference Variant	Acknowledgement	W4 Z1
E49	Failed Validation – Service Request Format and Service Reference Variant mismatch	Error	The Service Request format doesn't match the Service Reference Variant in the message header	Acknowledgement	W5 Z1
E50	Local Command Services Not Returned	Error	The Service Request requesting a Command for Local Delivery has not returned a Command	Acknowledgement	W8 Z1

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types	Error Handling Strategy Procedure
E51	Failed Validation – Signed Pre-Command Message Code and Service Reference Variant mismatch	Error	The GBCS Message Code in the Signed Pre-Command GBCS Payload doesn't map to the Service Reference Variant in the Signed Pre-Command XML header	Acknowledgement	W5 Z1
E52	Failed Validation – Unable to cancel Future Dated (DSP) Service Request	Error	The Service Request to cancel Future Dated (DSP) Service Request of the same type can't find a Service Request to cancel	Acknowledgement	Y1 Z1
E53	Failed Sequenced Command – Future Dated (DSP) not first in Sequence	Error	The sequenced Service Request is Future Dated (DSP) is not the first Request in the Sequence	Acknowledgement	Y2 Z1
E54	Failed Sequenced Command – Gas Service Request returns encrypted data	Error	The sequenced Gas Service Request returns encrypted data	Acknowledgement	Y2 Z1
E55	Failed Validation – Duplicate Request ID	Error	The Request's Request ID is the duplicate of another Request which is currently being processed by the DCC Data Systems	Acknowledgement	W5 Z1
E56	Failed Validation – Service Request no longer supported	Error	The requested Service Request is no longer supported by the DCC Data Systems. This error will only occur if a Service Request which exists in an older version of the DUIS schema can no longer be accepted by the DCC Data Systems on that version of the interface.	Acknowledgement and DCC Alerts	W9 Z1
E57 ¹	Failed Validation – Invalid Service Request / GBCS version combination	Error	The Service Request is not compatible with the specified Device Firmware Version	Acknowledgement and DCC Alerts	W10 Z1
E58	Communications Failure – Command not delivered to ESME	Error	<p>The CHF was unable to deliver the Command to the ESME</p> <p>The creation of this DCC Alert is in direct response to the receipt by the DCC of a Device Alert 0x8F84 - Failure to Deliver Remote Party Message to ESME (as defined by GBCS) from the CHF</p>	DCC Alerts	X4 Z1

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types	Error Handling Strategy Procedure
E59	Communications Failure – Dual Band CHF Sub GHz error	Error	<p>The CHF sends one of the following Device Alerts to the DSP Access Control Broker to indicate a communications failure in the Sub GHz frequency range:</p> <p>Device Alerts without specific payload:</p> <ul style="list-style-type: none"> 0x8F22 - Critical Duty Cycle Action Taken 0x8F24 - Regulated Duty Cycle Action Taken 0x8F29 - Three Lost GSME Searches Failed 0x8F2B - Sub GHz Channel not changed due to Frequency Agility Parameters <p>Device Alerts with specific payload:</p> <ul style="list-style-type: none"> 0x8F20 - Limited Duty Cycle Action Taken 0x8F2C - Message Discarded Due to Duty Cycle Management 0x8F2D - No More Sub GHz Device Capacity <p>The DCC Alert includes the Device Alert Code and, for those that contain specific payload, it also includes the corresponding information</p>	DCC Alerts	X5 Z1
E60	Failed Validation – Invalid Service Request for SMETS1	Error	The Service Request is not applicable to SMETS1	Acknowledgement	W11 Z1
E61	Failed Validation – Invalid Command Variant for SMETS1 Service Request	Error	The Command Variant is N/A to SMETS1 Service Requests	Acknowledgement	W11 Z1
E62	Failed Validation – Service Request failed S1SP Validation	Error	The Service Request failed the S1SP validation	DCC Alerts	W12 Z1
E63	Failed Validation - DCC Data Systems anti-Replay Intercept	Error	Protection against Replay mechanisms within the DCC have rejected a SMETS1 Service Request.	Acknowledgement and DCC Alerts	W13 Z1

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types	Error Handling Strategy Procedure
E64	Failed Validation – Originator ID is not the Notified Critical Supplier or Notified Critical Network Operator ID	Error	The SMETS1 Service Request was not originated by the Notified Critical Supplier or Notified Critical Network Operator	Acknowledgement	W13 Z1
E65 ²	Failed Validation – Invalid Certificate Role	Error	The Service Request is not signed using an XML Signing Certificate (Remote Party Role 'XMLSign')	Acknowledgement	U1
E66 ^{3, 4}	Failed delivery – Unable to deliver to CoS Party	Error	DCC Data Systems cannot establish communications with the CoS Party	DCC Alerts	X6 Z1
E67 ^{3, 4}	Timeout – No response received from CoS Party	Error	No response received from the CoS Party within the timeout period.	DCC Alerts	X6 Z1
E68 ^{3, 4}	Failed Validation – Service Request failed CoS Party Validation	Error	The Service Request failed validation checks performed by the CoS Party	DCC Alerts	W14 Z1
E69 ^{3, 4}	Failed Validation – CoS Service Request failed anti-replay checks	Error	Protection against Replay mechanisms within the DCC have rejected the Service Request.	DCC Alerts	W15 Z1
E70 ³	Failed Validation – CoS Anomaly Detection Threshold Breach	Error	A CoS-specific Anomaly Detection volume threshold has been exceeded	DCC Alerts	W16 Z1
E71 ^{3, 4}	Failed Validation – Invalid Authorisation response from CoS Party	Error	Authorisation payload or Signed Pre-Command from the CoS Party is not consistent with the original Service Request	DCC Alerts	W17 Z1
E100	Failed Authentication	Error	Request failed Authentication (as per checks in section 7.3)	Acknowledgement	U1 Z1

Table 47 DCC Data Systems Response Codes

¹ Because E57 is not supported by DUIS Schema 1.0, if a Service Request received via DUIS Schema 1.0 is to be rejected and E57 returned to the DCC Service User, E11 will be returned instead

² Because E65 is not supported prior to DUIS Schema 5.1, if a Service Request received via a DUIS Schema prior to 5.1 is to be rejected and E65 returned to the DCC Service User, E100 will be returned instead.

³ Applicable only to SRV6.23. Because these Response Codes are not supported prior to DUIS Schema 5.1, if a Service Request received via a DUIS Schema version prior to 5.1 is to be rejected and E66 – E71 included in a DCC Alert, E19 will be included instead

⁴ Applicable only where request is passed to ECoS Party for authorisation.

12.4 S1SP Alert Codes

S1SP Alerts are generated by S1SPs and may be used by the DSP to determine behaviour.

S1SP Alerts which are sent to DCC Service Users will be in a DCC Alert which contains an S1SPAlert.

S1SP Alert Codes shall be defined in a document to be published by DCC that is not part of SEC and is subject to change.

The following categories of S1SP Alert Code shall be sent to the Service User which sent the corresponding Service Request:

- a code meaning the delivery of a pre-payment top-up UTRN generated by an S1SP;
- a code meaning that the S1SP will not process the request further. The DSP will close processing of the request accordingly and send the S1SP Alert to the Service User;
- a code meaning that the S1SP is delivering a notification to the Service User.

The following table summarises how the DCC Data Systems respond to S1SP Alert Codes that have been identified at the time of writing this document.

S1SP Alert Code	Error or Notification	Error or Notification Description	DCC Alert Code	Response Code
S1UT	UTRN delivery	Delivery of a prepayment top up UTRN, generated by an S1SP, to the Supplier which requested it	N56	I0
Any code indicating an unrecoverable error condition	Unrecoverable error condition	The S1SP cannot process the request and it will not be completed successfully	N55	E62
Any code indicating a notification	Notification	The S1SP is delivering a notification, e.g. indicating that a SMETS1 Smart Meter has been commissioned within the DCC by the Commissioning Party	N55	I0

Table 48 S1SP Alert Codes Delivered in DCC Alerts

12.5 ECoS Alert Codes

The ECoS Party can send messages to DSP for forwarding alerts/notifications to a specific Service User. The DSP will send them to the Service User as a DCC Alert of type ECoSAlert with the DCC Alert Code N63 and containing the ECoS Alert Code provided by the ECoS Party.

Where the Service User is using a version of DUIS prior to 5.1 then any ECoS Alert will be delivered using DCC Alert N999.

ECoS Alert Codes are as per the table below:

ECoS Alert Code	Meaning
N/A ¹	

¹ No ECoS Alert Codes are currently defined for the ECoS service. This table is retained as a placeholder in case the need arises in future

13 DCC Alerts

The list of DCC Alerts is as follows:

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
AD1	Power Outage Event	Power Outage Event received from CSP	CSP notification of loss of mains power as detected at the Communications Hub in the Consumer Premises for a time equal to or greater than three (3) minutes	Registered EIS ¹ Registered ENO ¹ Registered GIS ² Registered GNO ²	SMETS2 or later
N1	Electricity Smart Meter Decommission or withdrawal	Decommissioning or withdrawal of an Electricity Smart Meter Device	Upon successful completion of Service Request: <ul style="list-style-type: none"> 8.3 Decommission Device Or 8.5 Service Opt Out for an Electricity Smart Meter Device 	Registered ENO and, if applicable, registered EES	All
N2	Gas Smart Meter Decommission or withdrawal	Decommissioning or withdrawal of Gas Smart Meter Device	Upon successful completion of Service Request: <ul style="list-style-type: none"> 8.3 Decommission Device Or 8.5 Service Opt Out for a Gas Smart Meter Device 	Registered GNO	All
N3	Cancellation of "Future Dated (DSP)" requests because of CoT	Cancellation of "Other User" "Future Dated (DSP)" Services not yet submitted to the Devices in the Electricity or Gas Smart Metering System	Upon successful completion of Service Request 3.2 Restrict Access for Change of Tenancy	All applicable Future Dated (DSP) Request senders	All
N4	Schedule removal because of CoT	Removal of "Other User" "DSP Scheduled" schedules for Devices in the Electricity or Gas Smart Metering System	Upon successful completion of Service Request 3.2 Restrict Access for Change of Tenancy	All applicable Schedule "owners"	All
N5	Schedule removal because of Device withdrawal	"DSP Scheduled" schedule removal ⁶	Upon successful completion of Service Request 8.5 Service Opt Out for a Device	All applicable Schedule "owners"	SMETS2 or later
N6	Schedule removal because of Device decommission	"DSP Scheduled" schedule removal	Upon successful completion of Service Request 8.3 Decommission Device for a Device	All applicable Schedule "owners"	All
N7	"DSP Scheduled" / "Future Dated (DSP)" access control failure	"DSP Scheduled" / "Future Dated (DSP)" access control failure (Authorisation, Device status, GBCS compatibility check)	"DSP Scheduled" / "Future Dated (DSP)" Command generation access control failure	Schedule "owner" / "Future Dated (DSP)" request sender	All
N8	Device removed from Inventory- Pending Status expired	Removal of Device from Inventory	Device in a status of 'pending' for > 36 months	Original DCC Service User that requested addition of the Device to the DCC Inventory	All
N9	Communications Hub Decommission	Decommission of Communications Hub	Upon successful completion of Service Request 8.3 Decommission Device for a Communications Hub	All Responsible Import Suppliers for that CH function, other than the Responsible EIS / GIS that instigated the Decommissioning Registered ENO Registered GNO	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N10	"Future Dated (Device)" command time-out	"Future Dated(Device)" command time-out	"Future Dated (Device)" command response not received from the device within the Target Response Time from the ExecutionDateTime	"Future Dated (Device)" request sender	SMETS2 or later
N11	"DSP Scheduled" / "Future Dated (DSP)" command time-out	"DSP Scheduled" / "Future Dated (DSP)" command time-out	"DSP Scheduled" Schedule instance / "Future Dated (DSP)" command not sent to or response not received from the Device within the Target Response Time from the ExecutionDateTime	Schedule "owner" / "Future Dated (DSP)" request sender	All
N12	Failure to deliver command to Device	Failure to deliver command to Device	Failure to receive an acknowledgement notification from a CSP / S1SP via the SM WAN for an "On Demand" or "Future Dated" Command	Request sender	All
N13	Failure to receive response from Device	Failure to receive response from Device	Failure to receive a response from a Device for an "On Demand" Command or "Future Dated" Command Acknowledgement	Request sender	All
N14	Sequenced Request Failure	Sequenced Request Failure	Previous Command in sequence failed or timed-out	Request sender	All
N15	Sequenced Request received Out of Order	Sequenced Request received Out of Order	Preceding Request not received during "Wait Period"	Request sender	All
N16	Device Identity Confirmation	Device Identity Confirmation by Registered Energy Supplier – either first setting or update to previous setting	Upon successful receipt of Service Response Code I0 from Service Request 8.11 Update HAN Device Log (initial setting) OR Upon successful processing of a Service Request 8.4 Update Inventory - Update MPxN	Registered ENO Registered GNO	All
N17	Schedule removal because of CoS	Previously registered Supplier "DSP Scheduled" schedule removal	Upon successful completion of Service Request 6.23 Update Security Credentials (CoS)	Previously registered EIS Previously registered GIS	All
N18	Firmware Version / Hash mismatch	Firmware Version / Hash mismatch	Firmware Hash calculated by CSP/S1SP doesn't match Firmware Version DSP raises this Alert based on the response from CSP or S1SP.	Update Firmware request sender	All
N19	Firmware Distribution Device ID identification failure	Firmware Distribution Device ID identification failure	CSP/S1SP unable to identify Communications Hub or Meter Device Id a Firmware Image is to be sent to DSP raises this Alert based on the response from CSP or S1SP.	Update Firmware request sender	All
N20	Firmware image provided is too large	Firmware image provided is too large	CSP/S1SP unable to process request, because the Firmware Image is too large for the SMETS version of the target Device DSP raises this Alert based on the response from CSP or S1SP.	Update Firmware request sender	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N21	Unknown Firmware Version	Unknown Firmware Version	CSP/S1SP unable to process request, because it doesn't recognise the Firmware Version DSP raises this Alert based on the response from CSP or S1SP.	Update Firmware request sender	All
N22	Failure to deliver Update Firmware Command to CSP / S1SP	Failure to deliver Update Firmware command to CSP / S1SP	Failure to receive an acknowledgement notification from a CSP / S1SP via the SM WAN for an Update Firmware Command	Update Firmware request sender	All
N23	Failure to receive Update Firmware Command Validation response from CSP / S1SP	Failure to receive Update Firmware Command Validation response from CSP / S1SP	Failure to receive Update Firmware Command Validation response from CSP / S1SP	Update Firmware request sender	All
N24	Successful Communications Hub Function Whitelist Update	Communications Hub Function Whitelist Update	The DSP has received positive confirmation that the requested addition to the Communications Hub Functions whitelist resulted in establishing communications with the Device See Service Request 8.11 Narrative for more details on when this Alert is generated	Update HAN Device Log request sender	All
N25	Potentially Unsuccessful Communications Hub Function Whitelist Update	Communications Hub Function Whitelist Update	The DSP has not received positive confirmation that the requested addition to the Communications Hub Functions whitelist resulted in establishing communications with the Device See Service Request 8.11 Narrative for more details on when this Alert is generated	Update HAN Device Log request sender	SMETS2 or later
N26	Update Security Credentials (CoS) – access control failure	Update Security Credentials (CoS) – access control failure	Request has failed CoS Party Access Control, processing within CoS Party, CoS specific anti-replay checks, CoS specific ADT checks or, for Future Dated Requests, DSP Access Control at the point the Request is to be sent to the CoS Party / S1SP	Update Security Credentials (CoS) request sender	All
N27	Device CoS	New Import Supplier for Device	Upon successful completion of Service Request 6.23 Update Security Credentials (CoS)	Previously registered EIS Previously registered GIS	All
N28	Device Suspended	Device Suspended	Suspension of Device	Registered EIS Registered GIS Registered ENO ³ Registered GNO ⁴	All
N29	Device Restored from Suspension	Device Restored from Suspension	Restoration of Device following Previous Suspension	Registered EIS Registered GIS Registered ENO ³ Registered GNO ⁴	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N30	CHF Device Log Restored	CHF Device Log Restored	Upon successful completion of Service Request 8.12.1 Restore HAN Device Log	All Responsible Import Suppliers for that CHF, other than the Responsible EIS / GIS that submitted the Request ⁵	SMETS2 or later
N31	GPF Device Log Restored	GPF Device Log Restored	Upon successful completion of Service Request 8.12.2 Restore GPF Device Log ⁵	All Responsible Import Suppliers for that CHF, other than the Responsible EIS / GIS that submitted the Request ⁵	SMETS2 or later
N33	Cancellation of "Future Dated (DSP)" requests because of Device Decommission	Cancellation of all "Future Dated (DSP)" Services not yet submitted to the Device	Upon successful completion of Service Request 8.3 Decommission Device for a Device	All applicable Future Dated (DSP) Request senders	All
N34	Cancellation of "Future Dated (DSP)" requests because of CHF Decommission	Cancellation of all "Future Dated (DSP)" Services not yet submitted to the CHF and its associated GPF	Upon successful completion of Service Request 8.3 Decommission Device for a Device	All applicable Future Dated (DSP) Request senders	All
N35	Cancellation of "Future Dated (DSP)" requests because of Device Withdrawal	Cancellation of all "Future Dated (DSP)" Services not yet submitted to the Device ⁶	Upon successful completion of Service Request 8.5 Service Opt Out for a Device	All applicable Future Dated (DSP) Request senders	SMETS2 or later
N36	Cancellation of "Future Dated (DSP)" requests because of CHF Withdrawal	Cancellation of all "Future Dated (DSP)" Services not yet submitted to the CHF and Devices in its Whitelist	Upon successful completion of Service Request 8.4 Update Inventory for a CHF Withdrawal	All applicable Future Dated (DSP) Request senders	SMETS2 or later
N37	Schedule removal because of CHF withdrawal	"DSP Scheduled" schedule removal for ESME, GSME and GPF in the Whitelist	Upon successful completion of Service Request 8.4 Update Inventory for a CHF Withdrawal	All applicable Schedule "owners"	SMETS2 or later
N38	Cancellation of "Future Dated (DSP)" requests because of CoS	Cancellation of all "Future Dated (DSP)" Services not yet submitted to the Device from the previously registered Supplier	Upon successful completion of Service Request 6.23 Update Security Credentials (CoS)	Previously registered EIS Previously registered GIS	All
N39	PPMID Alert	A PPMID Device generates a Device Alert as defined by GBCS	PPMID Device Alert received by the DSP Access Control Broker	Registered EIS ⁷ Registered GIS ⁷	SMETS2 or later
N40	Schedule removal because of Device suspension	"DSP Scheduled" schedule removal	Suspension of Device	All applicable Schedule "owners"	All
N41	Cancellation of "Future Dated (DSP)" requests because of Device suspension	Cancellation of all "Future Dated (DSP)" Services not yet submitted to the Device	Suspension of Device	All applicable Future Dated (DSP) Request senders	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N42	Security Credentials updated on device	Security Credentials updated on Device by Service Request 6.15.1 or 6.21	Success Response from Update Security Credentials where the Remote Party whose certificate has been placed on the Device (or certificate information stored in the S1SP for a Request for a SMETS1 Device) is not the sender of the Service Request	The Remote Party whose certificate has been placed on the Device	All
N43	PPMID Removal	A PPMID Device has been removed from the HAN via Service Request 8.11	Success Response from Update HAN Device Log (Remove) where the removed Device Type is a PPMID	All Responsible Import Suppliers for that CHF, other than the Responsible EIS / GIS that submitted the Request ⁸	SMETS2 or later
N44 ¹⁰	SMKI Recovery Procedure Complete (Placing ACB Credentials on the Device) ⁹	SMKI Recovery Procedure is complete - at least one of the KRP Certificates on the Device has been replaced with an ACB Certificate	SMKI Recovery Procedure is complete - all requested KRP Certificate(s) on the Device have been set to those of the ACB by the SMKI Recovery Process	Registered EIS Registered GIS	SMETS2 or later
N45 ¹⁰	SMKI Recovery Procedure Complete	SMKI Recovery Procedure is complete - all required Certificates on the Device have been recovered	SMKI Recovery Procedure is complete – all requested certificate(s) on the Device have been replaced by the SMKI Recovery Process	Registered EIS Registered GIS Registered ENO ³ Registered GNO ⁴	SMETS2 or later
N46	Quarantined Request – Anomaly Detection User Threshold Breach	An Anomaly Detection User-specific volume threshold has been breached	Request quarantined, because an Anomaly Detection User-specific volume threshold has been breached	Request sender	All
N47	Quarantined Request – Anomaly Detection DCC Threshold Breach	An Anomaly Detection DCC system-wide volume threshold has been breached	Request quarantined, because an Anomaly Detection DCC system-wide volume threshold has been breached	Request sender	All
N48	Quarantined Request – Anomaly Detection Attribute Limits Breach	An Anomaly Detection Attribute Limit has been breached	Request quarantined, because an Anomaly Detection Attribute Limit has been breached	Request sender	SMETS2 or later
N49	Firmware Version Updated in the Smart Metering Inventory N49 is introduced in DUIS Version 2.0	Device's Firmware Version updated in the Smart Metering Inventory	Upon successful completion of Service Request 11.2 Read Firmware Version where the target Device is ESME, GSME, CHF, PPMID or HCALCS and the Firmware Version returned by the Device is different from that in the SMI and it matches an entry on the CPL with a status of "Current"	Responsible EIS ¹¹ Responsible GIS ¹¹	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N50	Firmware Version no longer valid on the CPL N50 is introduced in DUIS Version 2.0	Device's Firmware Version updated in the Smart Metering Inventory, but Device Status not set to 'Suspended'	<p>Upon successful completion of Service Request 11.2 Read Firmware Version where the target Device is ESME, GSME, HCALCS, PPMID or CHF and the Firmware Version returned by the Device is different from that in the SMI and it matches an entry on the CPL with a status of "Removed"</p> <p>OR</p> <p>Upon completion of Service Request 11.3 Activate Firmware where the Firmware Version returned by the Device is different from that in the SMI and it matches an entry on the CPL with a status of "Removed"</p> <p>OR</p> <p>Future Dated Firmware Activation Alert (Alert Code 0x8F66 or 0x8F67 and Message Code 0x00CA) received by the DCC Data Systems where the Firmware Version returned by the Device is different from that in the SMI and it matches an entry on the CPL with a status of "Removed"</p> <p>OR</p> <p>PPMID Firmware Activation Alert (Device Alert Code 0x8F8B) received by the DCC Systems where the Firmware Version returned by the Device is different from that in the SMI and it matches an entry on the CPL with a status of "Removed"</p>	Responsible EIS Responsible GIS	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N51	Invalid Firmware Version N51 is introduced in DUIS Version 2.0	Device's Firmware Version is unknown (not in the CPL) Device's Firmware Version not updated in the Smart Metering Inventory	Upon successful completion of Service Request 11.2 Read Firmware Version where the target Device is ESME, GSME, HCALCS, PPMID or CHF and the Firmware Version returned by the Device is different from that in the SMI and it doesn't match an entry on the CPL OR Upon completion of Service Request 11.3 Activate Firmware where the Firmware Version returned by the Device is different from that in the SMI and it doesn't match an entry on the CPL OR Future Dated Firmware Activation Alert (Alert Code 0x8F66 or 0x8F67 and Message Code 0x00CA) received by the DCC Data Systems where the Firmware Version returned by the Device is different from that in the SMI and it doesn't match an entry on the CPL OR PPMID Firmware Activation Alert (Device Alert Code 0x8F8B) received by the DCC Systems where the Firmware Version returned by the Device is different from that in the SMI and it doesn't match an entry on the CPL	Responsible EIS Responsible GIS	All
N52	GSME Firmware Version Mismatch N52 is introduced in DUIS Version 2.0	GSME's Firmware Version returned by the GPF is different from that in the Smart Metering Inventory GSME's Firmware Version not updated in the Smart Metering Inventory	Upon successful completion of Service Request 11.2 Read Firmware Version where the target Device is GPF and the GSME Firmware Version returned by the GPF is different from that in the SMI	Responsible GIS	All
N53 ¹²	Command not delivered to ESME N53 is introduced in DUIS Version 2.0	CHF unable to deliver Command to ESME The creation of this DCC Alert is in direct response to the receipt by the DCC of a Device Alert 0x8F84 - Failure to Deliver Remote Party Message to ESME (as defined by GBCS) from the CHF	Failure to Deliver Command to ESME Alert (Alert Code 0x8F84, Message Code 0x00D5 and Request Id of the Command) received by the DCC Data Systems	Request sender	SMETS2 or later

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N54	Dual Band CH Alert N54 is introduced in DUIS Version 2.0	A Dual Band CH Device generates a Device Alert as defined by GBCS	Dual Band CH Device Alert received by the DSP Access Control Broker as defined by GBCS section 16.1, being one of: <ul style="list-style-type: none"> Alert Type 1: <ul style="list-style-type: none"> 0x8F21 (Duty Cycle fallen below Normal-Limited Duty Cycle Threshold) 0x8F22 (Critical Duty Cycle Action Taken) 0x8F23 (Duty Cycle fallen below Limited-Critical Duty Cycle Threshold) 0x8F24 (Regulated Duty Cycle Action Taken) 0x8F25 (Duty Cycle fallen below Critical-Regulated Duty Cycle Threshold) 0x8F27 (Sub GHz Channel Scan initiated) 0x8F29 (Three Lost GSME Searches Failed) 0x8F2B (Sub GHz Channel not changed due to Frequency Agility Parameters) Alert Type 2: <ul style="list-style-type: none"> 0x8F20 (Limited Duty Cycle Action Taken) 0x8F26 (Sub GHz Channel Changed) 0x8F28 (Sub GHz Channel Scan Request Assessment Outcome) 0x8F2A (Sub GHz Configuration Changed) 0x8F2C (Message Discarded Due to Duty Cycle Management) 0x8F2D (No More Sub GHz Device Capacity) 	Responsible EIS ⁵ Responsible GIS ⁵	SMETS2 or later

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N55	S1SP Service Request validation failure N55 is introduced in DUIS Version 3.0	DCC Alert indicating an error with a Service Request, initiated by an S1SP, or a notification by an S1SP	S1SP Service Request validation failure or notification. Additional information is provided in the S1SPAlert payload provided in the DCC Alert.	Service Request sender	SMETS1
N56	S1SP provision of a prepayment top-up UTRN N56 is introduced in DUIS Version 3.0	DCC Alert containing a prepayment top-up UTRN provided by an S1SP	The trigger is a User request for a prepayment top-up. Additional information is provided in the S1SPAlert payload provided in the DCC Alert.	Service Request sender	SMETS1
N57	SMETS1 CHF or SMETS1 PPMID Firmware notification N57 is introduced in DUIS Version 3.0	Notification of intended or successful Firmware version update of a SMETS1 CHF or SMETS1 PPMID	A valid request from the Lead Supplier to update the Firmware of a SMETS1 CHF/ SMETS1 PPMID, or successful activation of new SMETS1 CHF / SMETS1 PPMID Firmware	Gas Supplier associated with the SMETS1 CHF / SMETS1 PPMID	SMETS1
N58	Auxiliary Controller configuration change N58 is introduced in DUIS Version 3.1	APC / ALCS / HCALCS configuration changed on ESME	Upon successful completion of Service Request 6.14.1 Update Device Configuration (Auxiliary Load Control Descriptions) OR Upon successful completion of Service Request 6.14.2 Update Device Configuration (Auxiliary Load Control Scheduler) OR Upon successful completion of Service Request 6.14.3 Update Device Configuration (Auxiliary Control Scheduler)	Registered ENO	SMETS2 or later
N59	Firmware update in progress N59 is introduced in DUIS Version 5.0	Notification of a valid request from a Supplier to update the Firmware of a SMETS2 PPMID.	This is determined by DSP based on the notification received from CSPs, (which contains the list of devices that failed CSP validation checks).	All Responsible Import Suppliers for that Device, other than the Service Request sender	SMETS2 or later
N60	Failed to deliver Firmware image to Comms Hub N60 is introduced in DUIS Version 5.0	Failed to deliver Firmware image to Comms Hub	Notification from CSP indicating that the image could not be delivered to the Comms Hub.	Update Firmware request sender	SMETS2 or later
N61	Firmware image successfully delivered to Comms Hub N61 is introduced in DUIS Version 5.0	Firmware image successfully delivered to Comms Hub	Notification from CSP indicating that the image has been successfully delivered to the Comms Hub.	Update Firmware request sender	SMETS2 or later
N62	Comms Hub Alert N62 is introduced in DUIS Version 5.0	A Comms Hub generates a Device Alert as defined by GBCS	An Alert from a Comms Hub is received by the DSP Access Control Broker.	Responsible EIS Responsible GIS (For firmware delivery status the Alerts will be delivered to the sender of the Request)	SMETS2 or later
N63	ECoS Alert N63 is introduced in DUIS Version 5.1	The ECoS Party sends a message to DSP for delivery to the relevant Service User	A notification from the ECoS Party is received by the DSP Access Control Broker	Responsible EIS Responsible GIS	All

DCC Alert Code	Alert Name	Event	Trigger	DCC Alert Recipient	SMETS Version Applicability
N64	Comms Hub Firmware Activation N64 is introduced in DUIS Version 5.1	Successful Comms Hub Firmware Activation	Response from Comms Hub to the Activate Firmware request (CS06) sent by the CSP via DCC Data Systems.	All Responsible Suppliers	SMETS2 or later
N65	CoS Certificate Alert N65 is introduced in DUIS Version 5.1	A Device is installed with an unsupported CoS Certificate in its CoS Party Trust Anchor Cell.	DSP detects that a newly installed Device holds an unsupported Certificate in its CoS Party Trust Anchor Cell.	Responsible EIS Responsible GIS	SMETS2 or later
N999	DUIS Version Mismatch N999 is introduced in DUIS Version 2.0	DCC Service User DUIS version incompatible with DCC Alert or Service Response to be sent	DCC Alert or Service Response is not compatible with the DUIS version used by the DCC Service User	Recipient of the incompatible DCC Alert or Service Response	All

Table 49 DCC Alerts

¹ DCC Service User ID with registered User Role EIS / ENO for an Electricity Smart Meter associated to the Communications Hub Function reporting the Power Outage

² DCC Service User ID with registered User Role GIS / GNO for a Gas Smart Meter associated to the Communications Hub Function reporting the Power Outage

³ Only applicable to ESME

⁴ Only applicable to GSME / GPF

⁵ Alert is only sent if a Party is identified

⁶ For GSME withdrawal, also applicable to GPF

⁷ These DCC Service Users are identified by checking the Smart Metering Inventory to determine the Smart Metering System to which the PPMID is associated with. Once identified the Primary Import MPAN associated with the ESME and/or the MPRN associated with the GSME connected to the same Smart metering System are used to look up the Registered Suppliers. Alert is only sent if a Party is identified

⁸ Alert only sent if the PPMID was joined to both Electricity and Gas equipment

⁹ If Supplier Certificates have been replaced with ACB Certificates then the EIS / GIS has to replace them with their own by using Service Request 6.21 (Request Handover Of DCC Controlled Device) if the Digital Signing Certificate is one that has been replaced or by using Service Request 6.15.1 (Update Security Credentials (KRP)) if the Supplier's Digital Signing Certificate remains on the Device. In addition, if the Network Operator Certificates have been replaced with ACB Certificates then the EIS / GIS has to replace them with the Network Operator Certificates by using Service Request 6.21 (Request Handover Of DCC Controlled Device)

¹⁰ Upon completion of the SMKI Recovery Procedure on a given Device, the Registered Supplier will receive N44 (if the ACB Credentials have been placed on the Device) or N45 (if the Service User's own Credentials have been placed on the Device). The Network Operator will receive N45 (if the Service User's own Credentials have been placed on the Device) or, in the case where ACB Credentials have been placed on the device, will subsequently receive an N42 Alert when the Registered Supplier replaces the ACB certificates with the Network Operator's certificates

¹¹ Only sent if the Responsible Supplier didn't submit the Service Request

¹² Please note that Alert N53 does not replace existing N12 or N13 Alerts from the DCC, which will continue to be produced to confirm the DCC processing of the relevant Service Request. Alert N53 is produced directly by the CHF and should be regarded as additional

information which may be used by the DCC Service User to adjust the frequency of requests being sent to the relevant ESME device. It is likely that after receipt of an Alert N53 a DCC Service User shall receive a subsequent Alert N13 at the end of the Final Retry Period for the Service Request sent if applicable

14 Connection Mechanisms

14.1 Connection Overview

Physical connectivity to the DCC Data Centres is provided by a dedicated private network which is referred to as the DCC User Gateway Network.

The DCC is responsible for providing this network and for making available network services to allow DCC Service User organisations to obtain connectivity to the network.

A high level view of network connectivity is shown in Figure 65.

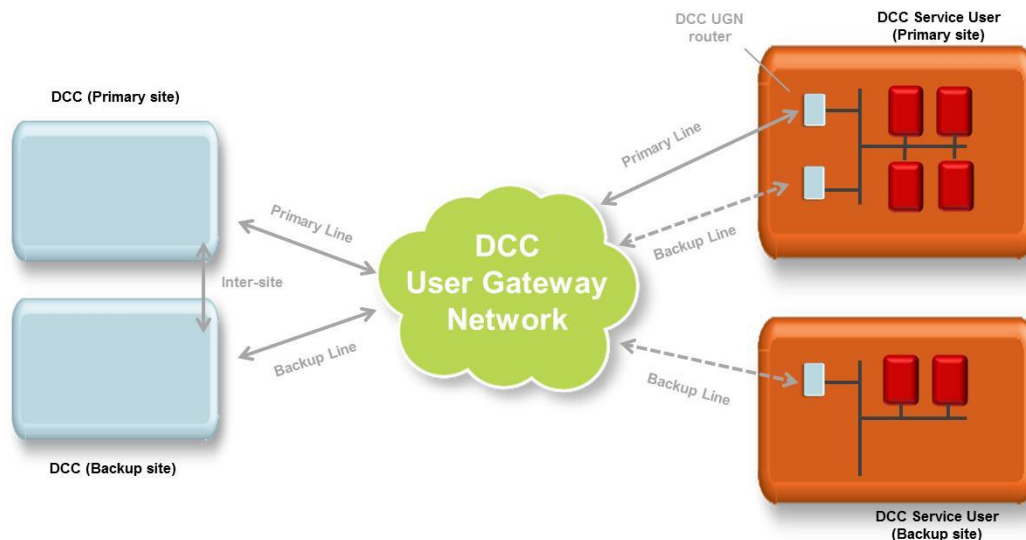


Figure 65 Physical Network Connections

Each DCC Service User shall be required to procure, from the DCC, as a minimum a Primary Line for connection to the DCC User Gateway Network. In addition, one or more Backup Lines may be procured to the same or alternate locations. The options available for physical connections are described in section 14.2.

As part of the connection to the DCC User Gateway Network, the DCC is responsible for providing the terminating network equipment within the DCC Service User's location(s). The obligations and responsibilities around this equipment are described in section 14.3.

For the avoidance of doubt, the DCC is responsible for maintaining its own connections to the DCC User Gateway Network.

14.2 Connection Options

As a minimum, the DCC will provide at least two "Means of Connection" options to the DCC User Gateway Network, as follows:

- a **High Volume Connection** for DCC Service Users who expect to carry out a large volume of Service Request processing; and
- a **Low Volume Connection** for DCC Service Users who expect to carry out a smaller volume of Service Request processing.

The technical solutions available for each of these means of connection are summarised below:

Connection Size / Type	Technology Solution	Bandwidth (download/upload)
High	Ethernet	100Mb (initially rated 10Mb)
Low	Superfast Broadband (FTTC)	40Mb/10Mb
Backup Only	Copper based backup link	20Mb/2.5Mb

Table 50 Connection Options

The table above shows the expected options which will be made available. The High Volume Connection is scalable and allows a DCC Service User to increase their bandwidth, up to 100Mb, when required without the need for additional site surveys or access to data centres. (The increase in bandwidth though would need to be agreed and managed via the DCC.) Additional options beyond 100Mb could be provisioned if required, however the DCC does not expect these to be required for the foreseeable future.

The Low Volume Connection (Superfast Broadband) is a business Fibre to the Cabinet (FTTC) option. Speeds will vary as per all DSL services but will be typically 10Mb upload and 40Mb download.

DCC Service Users may request and procure from the DCC as many DCC User Gateway Network connections from the options table above as they wish to meet their business needs for resilience and availability. Note that Backup lines may use any of the connection options described above i.e. they are not restricted to the Backup Only connection type. DCC Service Users may add further connections in the future or they may choose to upgrade from one option to another.

The DCC User Gateway Connections will be purchased by DCC Service Users via the DCC in accordance with the SEC charging arrangements.

14.3 DCC User Gateway Equipment

As part of the connection to the DCC User Gateway Network, the DCC is responsible for providing the terminating network equipment within the DCC Service User's location(s).

The table below provides technical details of the expected equipment requirements for each of the connection options.

Connection Size/Type	Technology Solution	Equipment
High	Ethernet	Cisco 3560-8PS Switch Dimensions: 1.73 x 10.6 x 9.1 in. (4.4 x 27 x 23 cm) Max Power 204W
Low	Superfast Broadband (FTTC)	Cisco 3560-8PS Switch Dimensions: 1.73 x 10.6 x 9.1 in. (4.4 x 27 x 23 cm) Max Power 204W
Backup	Copper based backup link	Cisco 887-M Router Dimensions: 1.75 x 12.8 x 9.8 in. (4.4 x 32.5 x 24.9 cm) Max Power 80W

Table 51 DCC User Gateway Equipment

This equipment will be provided by DCC. It should be noted that each Cisco 3560-8PS switch or Cisco 887-M router requires 1U of rack space and dual 240V UK power supplies.

The high level obligations and responsibilities around this equipment are described in SEC section H3 DCC User Gateway Equipment. More detailed obligations and responsibilities are contained in the DCC User Gateway Interface Code of Connection.

14.4 Maintenance

Maintenance of the DCC User Gateway equipment installed at customer premises is the responsibility of the DCC and wherever possible will be carried out remotely using the network connection itself to gain access to the equipment. Where this is not possible then the DCC Service User shall provide local access to the equipment as per the obligations and responsibilities described in the DCC User Gateway Interface Code of Connection.

14.5 Use of the Connection

The DCC User Gateway Network is used to provide access to many different DCC Services, not just the DCC User Gateway Interface for Service Request processing (which is the subject of this specific Design Specification).

The same physical connection to the DCC User Gateway Network may therefore be used by a DCC Service User to provide more than one “logical” connection to DCC Services. Each logical connection to DCC Services is governed by its own Code of Connection and is subject to its own authentication and security requirements to ensure separation of the services. Each logical connection will be set up as a separate VPN over the VPLS network.

In a similar fashion, there is a need to provide separate test connections for access to the DCC User Gateway Interface test services. Test connections can be provided over the same physical connection as the main services and will be subject to the same authentication and security requirements as described in the DCC User Gateway Code of Connection, albeit using separate test systems and security credentials to establish the test connection.

For DCC Service User Organisations operating with more than one SEC Party and Role it is possible to use the same physical connection for more than one role. The authentication mechanisms to support this are described in section 7 and section 15.

14.6 IP Addressing

Details of the IP addressing and network configuration will be provided to the DCC Service User as part of the process for obtaining a connection to the DCC User Gateway as described in the DCC User Gateway Connection.

15 Connection – Certificate and Key Management

Certificate and Key Management is described in the DCCKI SEC documentation set, including the following documents:

- DCCKI RAPP
- DCCKI Interface Specification
- DCCKI Code of Connection
- DCCKI Certificate Policy
- DCCKI Repository Interface Specification
- DCCKI Repository Code of Connection

16 Anomaly Detection

16.1 Overview

The DCC Data Systems are required to provide an anomaly detection service for Service Request and Response processing (including Alerts) in order to protect the overall DCC service from potential threats or malicious behaviour.

The anomaly detection service will perform anomaly detection on incoming Service Requests, Service Responses and Alerts. Where a Service Request is flagged as being anomalous then the message will be quarantined, pending an investigation and confirmation of validity from the relevant DCC Service User. Should the message(s) prove to be valid then the message shall be released from quarantine and delivered to the relevant device. Messages which are confirmed as not valid will be deleted.

There are two levels of operation for the anomaly detection service:

- DCC service wide anomaly detection which operates across all DCC Service Users to protect the overall DCC Service. This service is configured and managed by the DCC.
- DCC Service User specific anomaly detection which operates against the Service Request and Response processing for each DCC Service User. This is managed with each DCC Service User individually.

Volume threshold anomaly detection does not treat SMETS1 Service Requests differently to Service Requests for other Devices, i.e. numbers of Service Requests sent are counted towards volume thresholds irrespective of the SMETS versions of the associated Devices.

16.2 Approach

There are two patterns of usage for the anomaly detection service:

- Volume threshold checking against the rate of receipt of messages
- Attribute limit checking against specific values in each message

The basic approach for the volume threshold anomaly detection service is to check the volume of messages received against a set of agreed thresholds for the rate of receipt of messages. These thresholds are set for a given Service Reference Variant by configuration of one or more anomaly detection “rules”. See section 16.3 for more details.

For each volume threshold anomaly detection rule which is configured, there are two thresholds applied:

- a “Warning” threshold which if exceeded causes an event to be recorded and reported but which does not result in messages being stopped; and
- a “Quarantine” threshold which if exceeded causes an event to be recorded and reported but which also places the anomalous message and all subsequent requests of that type into quarantine.

For attribute limit checking, individual attributes within messages are checked against specific upper or lower limit values. These limits are set for a given Service Reference Variant by configuration of one or more anomaly detection “rules”. See section 16.4 for more details.

For either pattern of usage, when an anomaly detection rule is breached the relevant DCC Service User is informed via an out of band process, not via the DCC User Gateway.

The mechanism for notification of anomaly detection events is described in the Threshold Anomaly Detection Procedures document.

If messages have been quarantined then the DCC Service User is responsible for investigating the cause of the exception and confirming back to the DCC whether the messages were valid or not.

The mechanism for confirming validity of messages and subsequent release from quarantine is described in the Threshold Anomaly Detection Procedures document

Upon confirmation that the messages are valid then the DCC will release the messages from quarantine for onward delivery to the relevant device. If the messages are confirmed as not valid then they will be deleted from the DCC Data Systems.

If the DCC Service User does not notify the DCC of the decision to release or delete messages within [72] hours of the messages being placed in quarantine then the DCC will set these messages as “archived” and will delete these messages after a further [28] days have elapsed.

16.3 Volume Threshold Anomaly Detection Rules

The volume threshold anomaly detection rules to be applied for each DCC Service User are configurable items that can be changed over time. This section describes the available patterns and, where appropriate, related algorithms that are used for anomaly detection. The specific instances of volume threshold anomaly detection rules will be agreed with each DCC Service User and provided to the DCC. The mechanism for notification of anomaly detection rules is described in the Threshold Anomaly Detection Procedures document.

For Service Request processing the basic pattern for anomaly detection is to monitor the number of messages received over a given time period. The time period is a rolling window based on the total counts recorded for each recording interval, where the recording interval is calculated such that there are a fixed number of intervals (initially set at 30) within that period. So, for example, a time period of 30 minutes would use 30 recording intervals of 1 minute each, a time period of 60 minutes would use 30 recording intervals of 2 minutes each, and so on.

To avoid multiple, repeated notifications of thresholds being breached, a “quarantine event” will be started and notified at the first breach of the threshold and all subsequent messages placed in quarantine will be considered part of that quarantine event. The quarantine event will continue whilst the threshold is breached for consecutive recording intervals and will only be deemed complete at the end of the next recording interval at which the threshold is not breached.

The rules to be applied will be agreed with each DCC Service User. DCC Service Users are required to set anomaly detection rules for each Service Reference Variant that is classified as Critical and each Service Reference Variant that returns sensitive data. Rules may be set for other Service Reference Variants if desired.

The table below shows the template for defining the anomaly detection rules along with some examples (values are indicative and not intended to be taken as representative of actual values expected). The actual values will be agreed with DCC Service Users as described in the Threshold Anomaly Detection Procedures document.

Service Reference Variant	Warning threshold	Quarantine threshold	Time Period
SR1.1.1 Update Tariff	10	20	1440 minutes
SR7.2 Disable Supply	50	200	5 minutes
SR1.2.1 Update Price	25	50	30 minutes

Table 52: Example anomaly detection rules

For Service Responses there is less configurability on a per Service Request basis and in fact the only anomaly detection that is applied for Service Responses is to check that the Service Response has an associated unfulfilled Service Request. If it does not then that Service Response is considered anomalous. Information about anomalous Service Responses is recorded within the DCC Data Systems Service Audit Trail and event log and will be reported to the relevant DCC Service User. (The process for notifying the DCC Service User will be

agreed as part of the Service Management Framework.) Note, however, that anomalous Service Responses are not placed in quarantine but are discarded once they have been recorded in the Service Audit Trail, since there is no valid scenario in which these responses should be delivered to a DCC Service User.

For Alert processing it is expected that as a minimum there is at least one absolute rule which is applied for each Device to detect a “flood” of Alerts, for example receipt of 100 Alerts in 30 minutes. When such an anomaly detection threshold is breached then this is recorded in the DCC Data Systems event log and will be reported to the relevant DCC Service User. (The process for notifying the DCC Service User will be agreed as part of the Service Management Framework.)

16.4 Attribute Limit Anomaly Detection Rules

Attribute limit anomaly detection rules are set by the DCC and are applied to specific attributes on a pre-defined set of messages.

16.4.1 SMETS2 or later

Attribute limit checks are carried out against the values held in Signed Pre-Commands. A specific attribute may be subject to an upper or lower limit check, with a value which is above or below this limit being deemed anomalous.

An example of the configuration details held for an attribute limit anomaly detection rule is as follows

Service Reference Variant	Attribute	Limit Type	Value
SR1.1.1 Update Tariff	Standing Charge	Upper	100
SR1.6 Update Payment Mode	Disablement Threshold	Lower	0

Table 53: Example anomaly detection rules

If an attribute limit anomaly detection rule is breached then the message is placed in quarantine. The mechanism for notifying the affected Service User is exactly the same out of band mechanism as used for notification of breaches of volume threshold anomaly detection rules.

To avoid multiple, repeated notifications of the same limit check being breached, a “quarantine event” will be started and notified at the first breach of the limit and all subsequent messages that breach the same limit will be considered part of that quarantine event. The quarantine event will continue for a configurable maximum period of time after the first breach, after which that particular quarantine event will be deemed closed. Any subsequent messages that breach the same limit will start a new quarantine event.

The mechanisms for reporting and releasing messages from quarantine are exactly the same as for volume threshold anomaly detection quarantine events.

16.4.2 SMETS1

For SMETS1 Service Requests, Attribute Limit Anomaly Detection is carried out only by the S1SP, and on the XML values (whereas for SMETS2 or later Devices it is on GBCS attributes).

As described in the SEC Service Request Processing Document, any Service Request which breaches Attribute Limit Anomaly Detection shall be discarded by the S1SP. Release from Quarantine is not supported for SMETS1 Service Requests discarded due to Attribute Limit Anomaly Detection.

Appendices

Appendix 1 – Glossary

Acronym	Description
ACB	Access Control Broker
ALCS	Auxiliary Load Control Switch
APC	Auxiliary Proportional Controller
API	Application Programming Interface
BS	British Standard
CA	Certificate Authority
CAD	Consumer Access Device
CCS	Customer Consent Service
CESG	Communications Electronic Security Group, the UK Government's National Technical Authority for Information Assurance
CHECK	UK government IT Health Check Service
CHF	Communications Hub Function
CHTS	Communications Hub Technical Specifications
CIN	Customer Identification Number
CISO	Chief Information Security Officer
CMS	Customer Management Service
CoCo	Code of Connection
CoS	Change of Supplier
CoS Party	CoS Party is the general term to describe the Party that authorises CoS Service Requests. It may refer to an ECoS Party or the TCoS Party.
CoT	Change of Tenancy
Countersigned S1SP Alert	Asynchronous message sent by the DCC Data Systems to the DCC Service User. It is a DCC Alert with a DCC Alert Code that indicates it carries an S1SP Alert within it.
Countersigned SMETS1 Alert	Asynchronous message sent and signed by the DCC Data Systems to a DCC Service User. It incorporates a SMETS1 Alert provided by an S1SP, and contains data using MMC Device Alert formats.
Countersigned SMETS1 Response	Synchronous or Asynchronous message sent and signed by the DCC Data Systems to the DCC Service User, in response to a Service Request where the target is a SMETS1 Device. A Countersigned SMETS1 Response wraps a SMETS1 Response provided by an S1SP.
CPL	Central Products List
CR	Credit (Meter Payment Mode)
CREST	A not for profit organisation for the information security industry
CSP	Communications Services Provider

Acronym	Description
CSR	Certification Signing Request
CSS	Central Switching Service
CV	Command Variant
DCC	Data Communications Company
DCCKI	Data Communications Company Key Infrastructure
DECC	Department of Energy and Climate Change
DEMS	Device Estate Management Service
Device ID	Unique number by which an individual Device can be identified, as allocated to that Device in accordance with SMETS or CHTS (where applicable)
DMS	Device Management Service
DSP	Data Service Provider
DUGC	DCC User Gateway Catalogue
DUGIDS	DCC User Gateway Interface Design Specification (this document set)
DUIS	DCC User Interface Specification
DUIS Format	Format defined in this document set, i.e. the XML format defined in the XSD (DUIS XML Schema)
ECB	European Central Bank
ECDH	Elliptic Curve Diffie Helman
ECDSA	Elliptic Curve Digital Signature Algorithm
ECoS Party	Enduring Change of Supplier Party SMETS2 or later: Performs authorisation checks on CoS Requests and creates a GBCS signed pre-command. SMETS1: Performs authorisation checks on CoS Requests.
EES	Electricity Export Supplier
EIS	Electricity Import Supplier
ENO	Electricity Network Operator
ENUM	ENUMeration
ESME	Electricity Smart Metering Equipment
FDEDA	Future Dated Execution Device Alert
FS	Firmware Service
GBCS	Great Britain Companion Specification
GBCS UC	Great Britain Companion Specification Use Case
GIS	Gas Import Supplier
GMAC	Galois Message Authentication Code
GNO	Gas Network Operator
GPF	Gas Proxy Function
GPG	CESG Good Practice Guide
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
HCALCS	HAN Connected Auxiliary Load Control Switch

Acronym	Description
HHT	Hand Held Terminal
HMG	Her Majesty's Government
HTTP	HyperText Transport Protocol
HTTPS	HyperText Transport Protocol Secure
ICT	Information & Communications Technology
ID	Identifier
IHD	In Home Display
IP	Internet Protocol
ISMS	Information Security Management System
ISO	International Organization for Standardization
IT	Information Technology
KRP	Known Remote Party. SMETS2 or later: Definition as per GBCS. In the context of a specific Device, a Remote Party whose Security Credentials are stored on that Device in at least one Trust Anchor Cell SMETS1: In relation to a SMETS1 Device, shall mean a Party for which the Relevant S1SP holds either a current Notified Critical Supplier ID or a current Notified Critical Network Operator ID for the SMETS1 Device in question.
MAC	Message Authentication Code
MMC	Message Mapping Catalogue
MMC Format	Format defined in this document set for MMC, i.e. the XML format defined in the MMC XML Schema XSD (document 4 of this documentation set)
MPAN	Meter Point Administration Number (Electricity)
MPRN	Meter Point Reference Number (Gas)
M2M	Machine To Machine
N/A	Not Applicable
OU	Other User
PEP	Policy Enforcement Point Means, a logical entity that enforces policies for admission control and policy decisions in response to a request for access. It is the logical boundary between the DCC Data Systems and connecting systems, namely Service User Systems and RDP Systems. The PEP ensures that: (a) the policies in the applicable Code of Connection relevant to the applicable Party are being enforced; (b) there is appropriate separation of the DCC Data Systems from the connecting systems of the applicable Party; and (c) all the connections to the Service User Systems, RDP Systems, or DCC Data Systems are compliant with the same applicable Code of Connection.
PKCS	Public Key Cryptography Standards
PKR	Public Key Repository
PMS	Product Management Service

Acronym	Description
PP	PrePayment (Meter Payment Mode)
PPMID	PrePayment Interface Device
PS	Prepay Service DCC Systems
PTUT	Prepayment Top Up Token
RDP	Registration Data Provider
RNDS	Record Network Data Service
RS	Reading Service
S1SP	SMETS1 Service Provider; SMETS1 equivalent of CSP
S1SP Alert	An S1SP Alert is a message originated by an S1SP, containing information relevant to a SMETS1 Device, which is sent to the DSP for inclusion in a DCC Alert with a DCC Alert Code which indicates that it contains an S1SP Alert.
SAPC	Standalone Auxiliary Proportional Controller, a Device conforming to SMETS2 section 9 (SMETS2 v5.0 or later). SAPC Devices are implemented as Device Type ESME on the CPL and in DCC Data Systems,
SEC	Smart Energy Code
SECCo	Company established to facilitate the operation of the SEC
SLA	Service Level Agreement
SMETS1	Smart Metering Equipment Technical Specifications first version
SMETS1 Alert	SMETS1 Alerts are used to communicate Alert codes related to SMETS1 Devices which are (where applicable) the equivalent of Device Alerts. They include a subset of GBCS Device Alert codes which are deemed also applicable to SMETS1 Devices, and additional Alert codes for SMETS1 Devices. A SMETS1 Alert is sent by an S1SP to the DCC Data Systems and contains data using MMC Device Alert formats. The DCC Data Systems signs a SMETS1 Alert for sending to the appropriate Service User, incorporating it into a Countersigned SMETS1 Alert.
SMETS1 Response	A message from an S1SP to the DCC Data Systems, signed by the S1SP, in response to a Countersigned Service Request. The DCC Data Systems. A SMETS1 Response is sent by an S1SP to the DCC Data Systems and contains data using MMC Response formats. The DCC Data Systems signs a SMETS1 Response for sending to the appropriate Service User, incorporating it into a Countersigned SMETS1 Response.
SMETS2	Smart Metering Equipment Technical Specifications second version
SMKI	Smart Meter Key Infrastructure
SMS	Smart Metering Systems
SMS	Supply Management Service
SM WAN	Smart Meter Wide Area Network
SNA	Supplier Nominated Agent
SOAP	Simple Object Access Protocol
SS	Scheduling Service

Acronym	Description
SU	Service User
TBC	To Be Completed
TCoS Party	Transitional Change of Supplier Party SMETS2 or later: Performs authorisation checks on CoS Requests and creates a GBCS signed pre-command. SMETS1: Not applicable.
TLS	Transport Layer Security
TOU	Time Of Use
UC	Use Case
UKAS	United Kingdom Accreditation Service
UPRN	Unique Property Reference Number
URL	Uniform Resource Locator
URP	Unknown Remote Party. SMETS2 or later: Definition as per GBCS. In the context of a specific Device, a Remote Party whose Security Credentials are not stored on that Device SMETS1: In relation to a SMETS1 Device, shall mean a Party for which the Relevant S1SP does not hold either a current Notified Critical Supplier ID or a current Notified Critical Network Operator ID for the SMETS1 Device in question.
UTC	Coordinated Universal Time
UTRN	Unique Transaction Reference Number
VPLS	Virtual Private LAN Service
VPN	Virtual Private Network
WAN	Wide Area Network
WIP	Work In Progress
XML	eXtensible Markup Language
XML DSP Role Signing Private Key	A Private Key associated with a Public Key that is contained within an Organisation Certificate with a Remote Party Role of "dSPXmlSign"
XML User Role Signing Private Key	A Private Key associated with a Public Key that is contained within an Organisation Certificate with a Remote Party Role of "xmlSign"
XSD	XML Schema Definition

Table 54 Definitions

Appendix 2 – DUIS XML Schema Definition Instructions

The DUIS XML schema is compliant with the XML 1.1 standard and can be viewed using Internet Explorer. The DUIS XML schema contains 2 top level items that are used to define the messages passed between the DCC Service Users and the DCC Data Systems. These top level items are;

- Request – Defines the Service Requests and Signed Pre-Command for the DCC Data Systems
- Response – Defines the data that is returned by the DCC Data Systems to the DCC Service User. This covers Service Responses, Alerts and Acknowledgements.

For the avoidance of doubt, the DUIS/MMC XML Schema is provided as the authoritative source for data item definitions. Where any inconsistencies may exist between the definitions contained within the main text within this document and the DUIS/MMC XML Schema then the DUIS/MMC XML Schema shall take precedence.

The DUIS XML schema definition uses a small number of constructs to define the structure and formats of the data.

The key constructs used in the schema are;

- SimpleType – A basic data type for a data item for example an Integer or String. SimpleTypes may have a restriction to only allow certain data items to be entered, for example, EUI is defined as 8 pairs of hexadecimal strings separated by a colon.
- Element – An item within the XML, this may be a standard data type or be defined by a SimpleType.
- ComplexType – A collection on Elements that make up a structure
- Sequence – Within a ComplexType a Sequence specifies that the Elements must be included in a particular order. Elements within the Sequence may be optional or mandatory.
- Choice – Within a ComplexType there may be a choice between which Elements are allowable, this defined by a Choice.

Unless explicitly defined with the Type definitions, no restrictions are applied to the standard XSD Attributes and a User may use the full range of values as defined by that XML Type

The following is a simplified version of the section of the DUIS XML schema that defines the Response;

```
<xs:complexType name="Response">
  <xs:sequence>
    <xs:element name="Header">
      <xs:complexType>
        <xs:sequence>
          <xs:element maxOccurs="1" name="RequestID" type="sr:RequestIDType"
            minOccurs="0"/>
          <xs:element maxOccurs="1" name="ResponseID" type="sr:ResponseIDType"
            minOccurs="0"/>
          <xs:element name="ResponseCode" type="sr:ResponseCode"/>
          <xs:element name="ResponseDateTime" type="xs:dateTime"/>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="Body">
      <xs:complexType>
        <xs:choice minOccurs="1">
          <xs:element name="ResponseMessage" type="sr:ResponseMessage"> </xs:element>
          <xs:element name="DeviceAlertMessage" type="sr:DeviceAlertMessage"/>
        </xs:choice>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="DCCAlertMessage" type="sr:DCCAlertMessage"/>
</xs:choice>
</xs:complexType>
</xs:element>
<xs:element ref="ds:Signature" minOccurs="0"/>
</xs:sequence>
</xs:complexType>
```

The structure is defined as a ComplexType and identified by the name "Response". It contains a Sequence of three Elements: Header, Body and ds:Signature. The four Elements of the Header have unique names, the first two are optional (minimum allowed occurrences is 0 and maximum is 1) and the last two are mandatory (minimum and maximum number of allowed occurrences is 1). The Body is a choice and so one of its three elements must be included in the XML. The ds:Signature is a reference to an external Schema and it is optional

The data types and restrictions are defined elsewhere in the schema, for example CommandVariant is defined as;

```
<xs:simpleType name="CommandVariant">
  <xs:restriction base="xs:positiveInteger">
    <xs:enumeration value="1"/>
    <xs:enumeration value="2"/>
    <xs:enumeration value="3"/>
    <xs:enumeration value="4"/>
    <xs:enumeration value="5"/>
    <xs:enumeration value="6"/>
    <xs:enumeration value="7"/>
    <xs:enumeration value="8"/>
  </xs:restriction>
</xs:simpleType>
```

That is a positive integer that must be between the values 1 and 8 inclusive.

Note that the education site [w3schools.com](http://www.w3schools.com/schema/default.asp) provides a useful primer on XML schemas with many examples, see <http://www.w3schools.com/schema/default.asp>

Appendix 3 – MMC XML Schema Definition Instructions

The MMC XML schema can be viewed using Internet Explorer. The MMC XML schema contains 1 top level item that is used to define the data passed from the Parse software to DCC Service User's systems. This top level item is as follows;

- GBCSResponse – Defines the data that is returned by the Parse software to the DCC Service User. This covers Service Responses (from Device) and Device Alerts.

The MMC XML schema definition uses the same constructs as the DUIS XML schema (see Appendix 2) to define the structure and formats of the data.

For the avoidance of doubt, the DUIS/MMC XML Schema is provided as the authoritative source for data item definitions. Where any inconsistencies may exist between the definitions contained within the main text within this document and the DUIS/MMC XML Schema then the DUIS/MMC XML Schema shall take precedence.

The GBCSResponse also follows a similar approach to that defined in the DUIS XML schema, in that it is defined as a ComplexType and identified by the name "GBCSResponse". It contains a Sequence of two Elements: Header and Body.

A more detailed set of information on the MMC XML schema is contained in Annex 18.

Appendix 4 – XML Data Type Ranges

The following table summarises the minimum and maximum values for those numeric data types that have a range defined in XML and are used in the DUIS and / or the MMC XML Schema.

Datatype	Description	Minimum Value		Maximum Value	
xs:short	Signed 16-bit integer	-32,768	-2^{15}	32,767	$2^{15} - 1$
xs:int	Signed 32-bit integer	-2,147,483,648	-2^{31}	2,147,483,647	$2^{31} - 1$
xs:long	Signed 64-bit integer	-9,223,372,036,854,775,808	-2^{63}	9,223,372,036,854,775,807	$2^{63} - 1$
xs:unsignedShort	Unsigned 16-bit integer	0		65,535	$2^{16} - 1$
xs:unsignedInt	Unsigned 32-bit integer	0		4,294,967,295	$2^{32} - 1$
xs:unsignedLong	Unsigned 64-bit integer	0		18,446,744,073,709,551,615	$2^{64} - 1$

Table 55 XML Data Type Ranges

Appendix 5 – GBCS Assumptions – Requests

This version of DUGIDS documentation set includes the following GBCS assumptions:

ID	Description	Service Request / Use Case	GIST Ref / IRP / DECC Ref	DUGIDS Impact	Solution Impact	Action
A44	Although CRP412 states that Service Request 6.2.10 is applicable to the RSA (SNA) User Role, the GBCS UCs ECS25r1, ECS25r2 and GCS20r aren't applicable to the ACB role, so it is not possible for the RSA to run this Service Request. SR 6.2.10 will therefore not be allowed for the RSA role. DUGIDS conforms to SEC namely to permit use by Roles EIS, GIS and ENO.	6.2.10 / ECS25r1, ECS25r2, GCS20r	TBC	Request and Response	If the Command was generated by the ACB using the URP pattern it would be rejected by the Device	Build to assumption

Table 56 GBCS Assumptions

Appendix 6 – GBCS Assumptions – Responses

The Service Request Responses (Parse) are aligned to GBCS v2.0 Draft 5 The following is a list of outstanding GBCS assumptions / queries:

ID	Description	Service Request / Use Case	GIST Number	DUGIDS Impact	Solution Impact	Action
A44	Although CRP412 states that Service Request 6.2.10 is applicable to the RSA (SNA) User Role, the GBCS UCs ECS25r1, ECS25r2 and GCS20r aren't applicable to the ACB role, so it is not possible for the RSA to run this Service Request. SR 6.2.10 will therefore not be allowed for the RSA role.	6.2.10 / ECS25r1, ECS25r2, GCS20r	TBC	Request and Response	If the Command was generated by the ACB using the URP pattern it would be rejected by the Device	Build to assumption

Table 57 Response GBCS Assumptions

Appendix 7 – SEC and GBCS Version Assumptions

This version of DUGIDS documentation set includes the following SEC assumptions:

ID	Description	Service Request	DUGIDS Impact
A106	It is assumed that this DUGIDS document set is aligned to GBCS v4.2. Should there be any misalignment found then these will be documented here in a future version of this document.		

Table 58 SEC and GBCS Version Assumptions

Appendix 8 – SMI Device Status – Entity Lifecycle Diagrams

The following diagrams summarise the status lifecycle for each SMETS2 or later Device Type in the Smart Metering Inventory:

1. ESME (including SAPC)

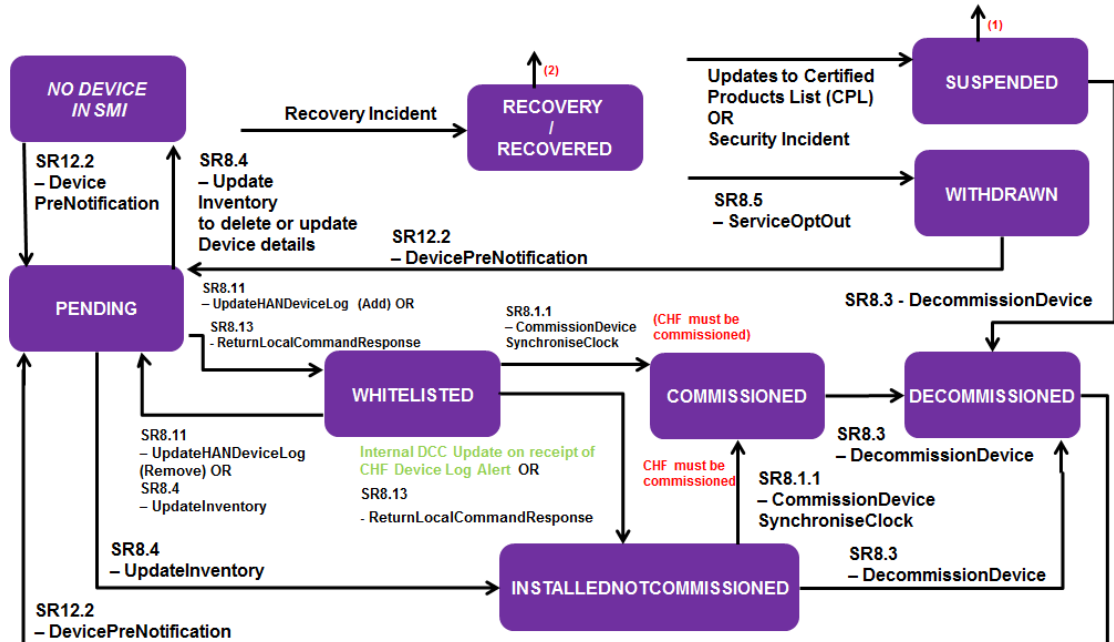


Figure 66 – Entity Lifecycle Diagram – ESME (including SAPC)

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension
- (2) A Device may exit Recovery status after replacement of the Certificates has completed and ACB Certificates have not been used in the recovery process. If replacement uses ACB Certificates then the Device moves to Recovered status and it remains in Recovered status until those ACB Certificates have been replaced. Upon exiting Recovery or Recovered status the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its recovery. If a Device cannot be recovered, then it is possible to decommission that Device via Service Request 8.3

2. GSME

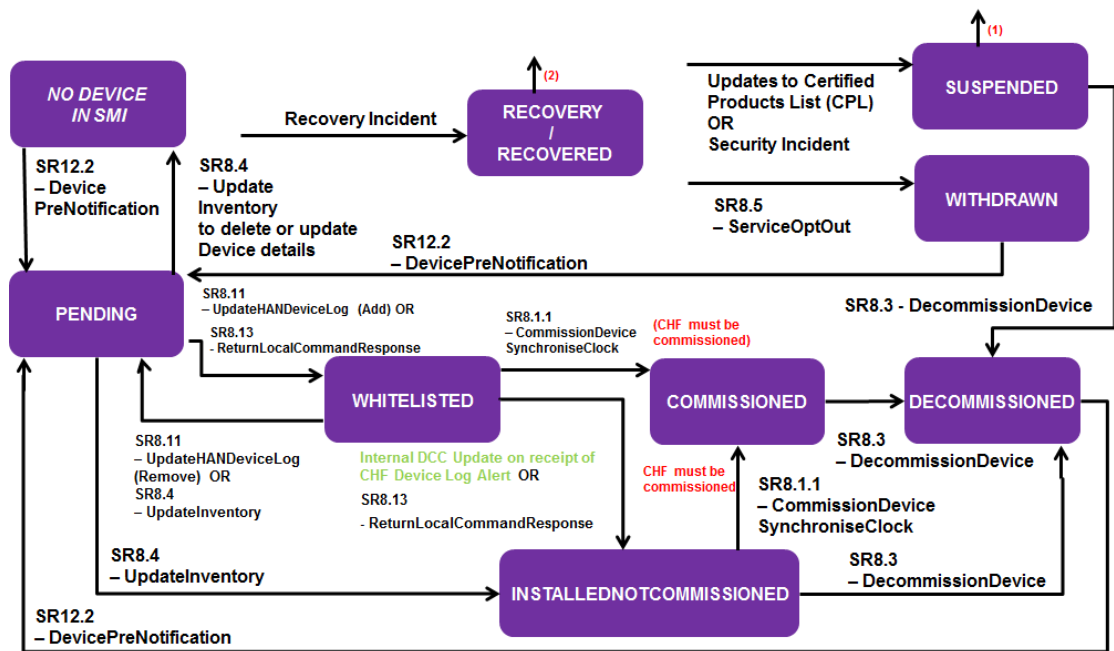


Figure 67 – Entity Lifecycle Diagram – GSME

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension
- (2) A Device may exit Recovery status after replacement of the Certificates has completed and ACB Certificates have not been used in the recovery process. If replacement uses ACB Certificates then the Device moves to Recovered status and it remains in Recovered status until those ACB Certificates have been replaced. Upon exiting Recovery or Recovered status the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its recovery. If a Device cannot be recovered, then it is possible to decommission that Device via Service Request 8.3

3. CHF

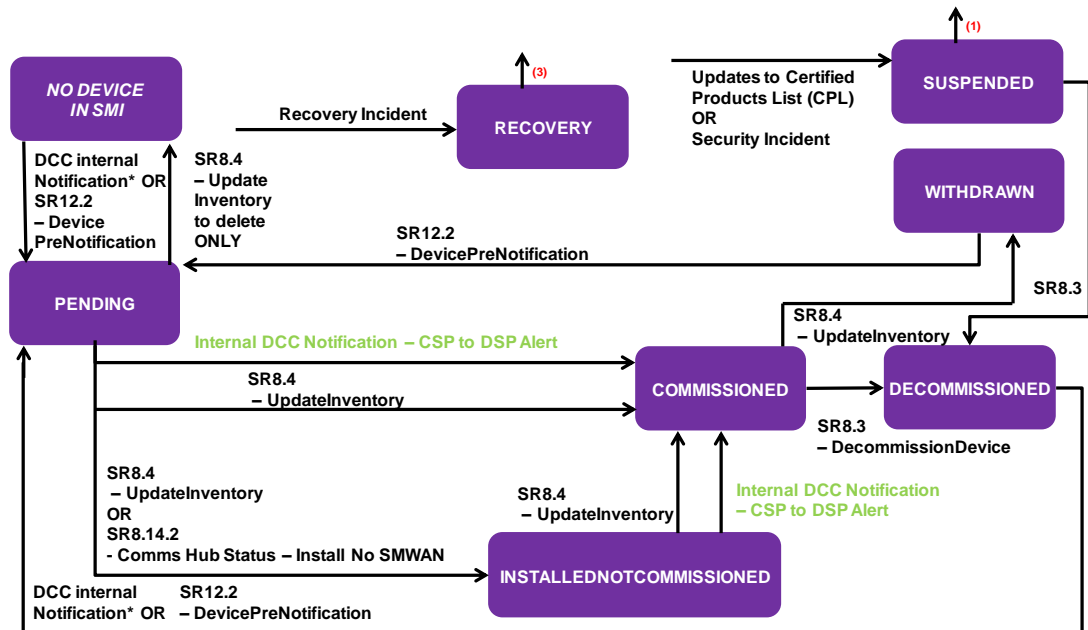


Figure 68 – Entity Lifecycle Diagram – CHF

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension
- (3) A Device may exit Recovery status after replacement of the Certificates has completed. Upon exiting Recovery status the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its recovery. If a Device cannot be recovered, then it is possible to decommission that Device via Service Request 8.3

4. GPF

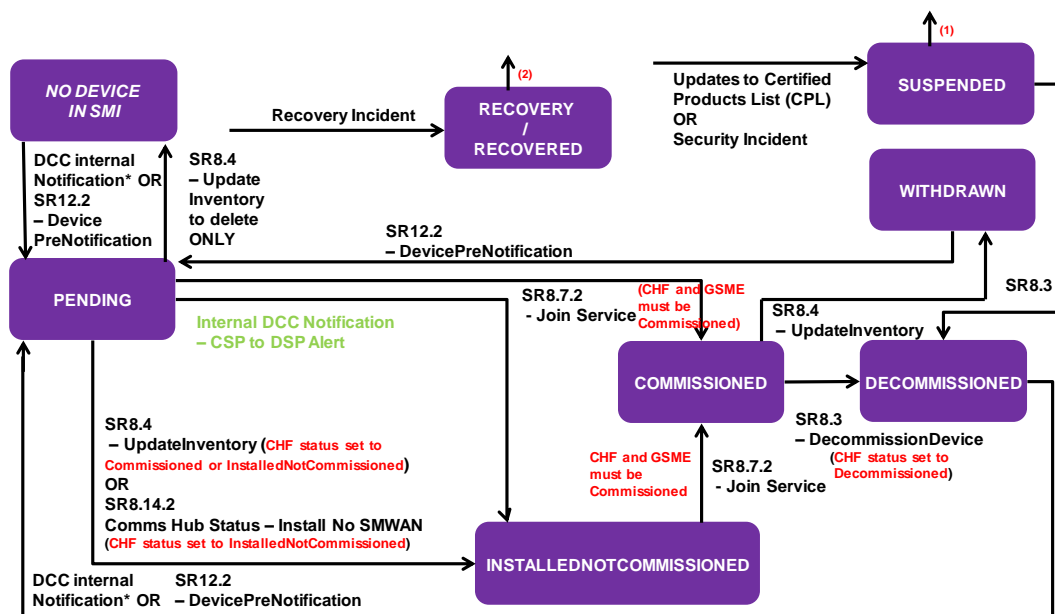


Figure 69 – Entity Lifecycle Diagram – GPF

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension
- (2) A Device may exit Recovery status after replacement of the Certificates has completed and ACB Certificates have not been used in the recovery process. If replacement uses ACB Certificates then the Device moves to Recovered status and it remains in Recovered status until those ACB Certificates have been replaced. Upon exiting Recovery or Recovered status the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its recovery. If a Device cannot be recovered, then it is possible to decommission that Device via Service Request 8.3

5. PPMID

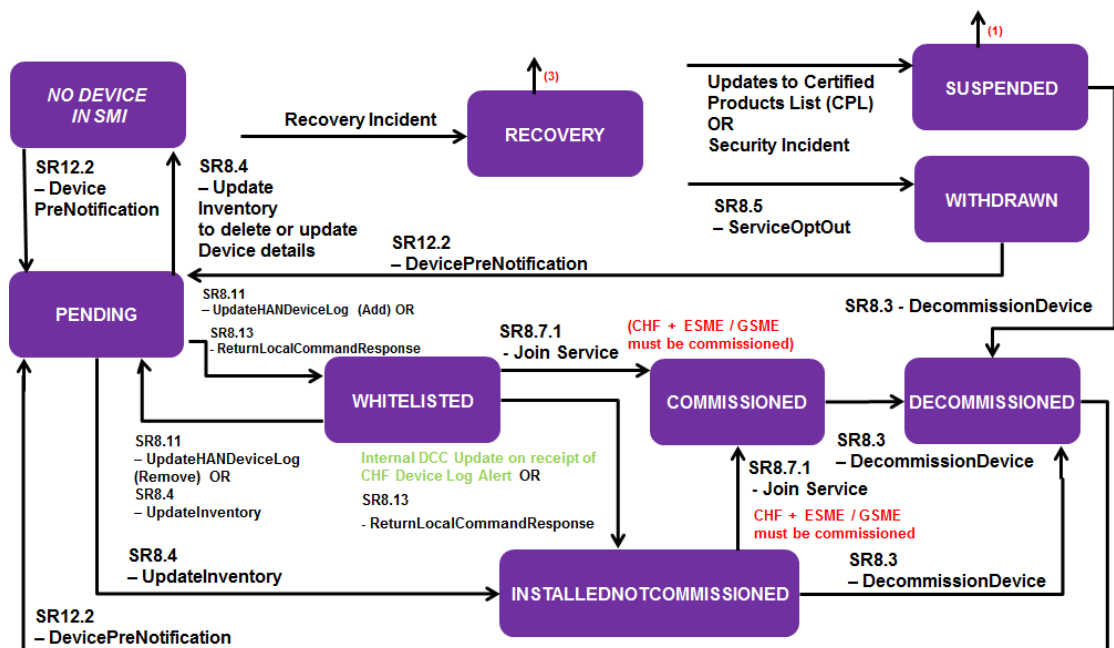


Figure 70 – Entity Lifecycle Diagram – PPMID

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension
- (3) A Device may exit Recovery status after replacement of the Certificates has completed. Upon exiting Recovery status the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its recovery. If a Device cannot be recovered, then it is possible to decommission that Device via Service Request 8.3

6. HCALCS

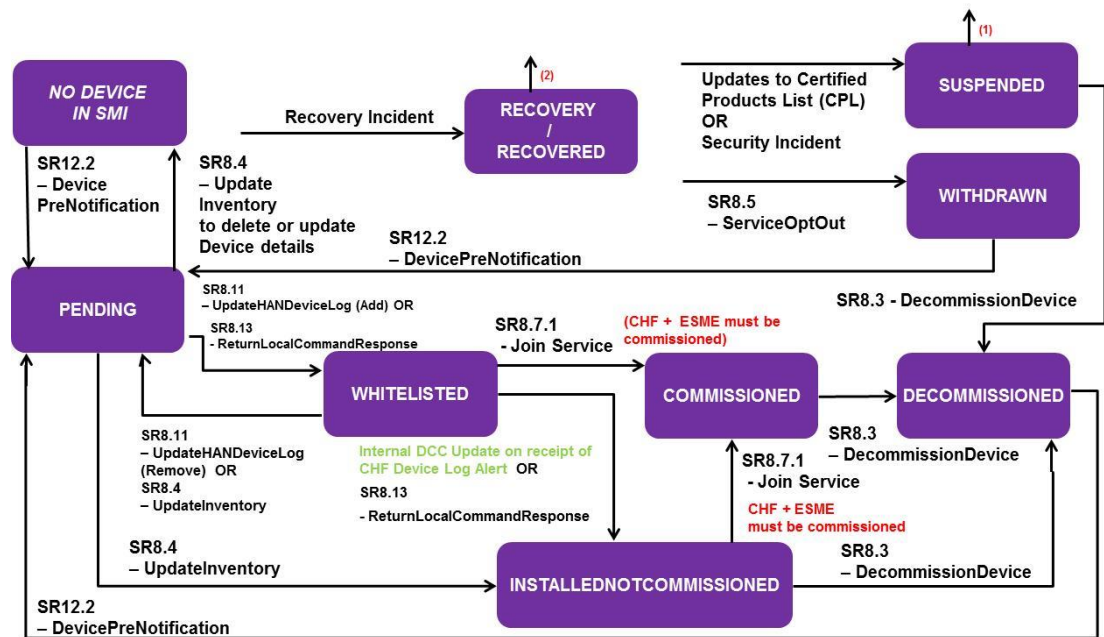


Figure 71 – Entity Lifecycle Diagram – HCALCS

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension
- (2) A Device may exit Recovery status after replacement of the Certificates has completed and ACB Certificates have not been used in the recovery process. If replacement uses ACB Certificates then the Device moves to Recovered status and it remains in Recovered status until those ACB Certificates have been replaced. Upon exiting Recovery or Recovered status the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its recovery. If a Device cannot be recovered, then it is possible to decommission that Device via Service Request 8.3

7. Type 2

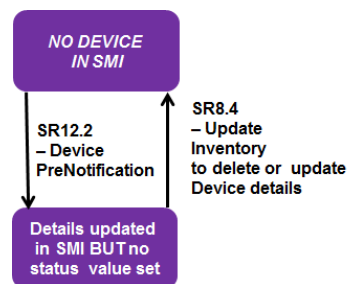


Figure 72 – Entity Lifecycle Diagram – Type 2

The following diagrams summarise the status lifecycle for each SMETS1 Device Type in the Smart Metering Inventory:

8. ESME

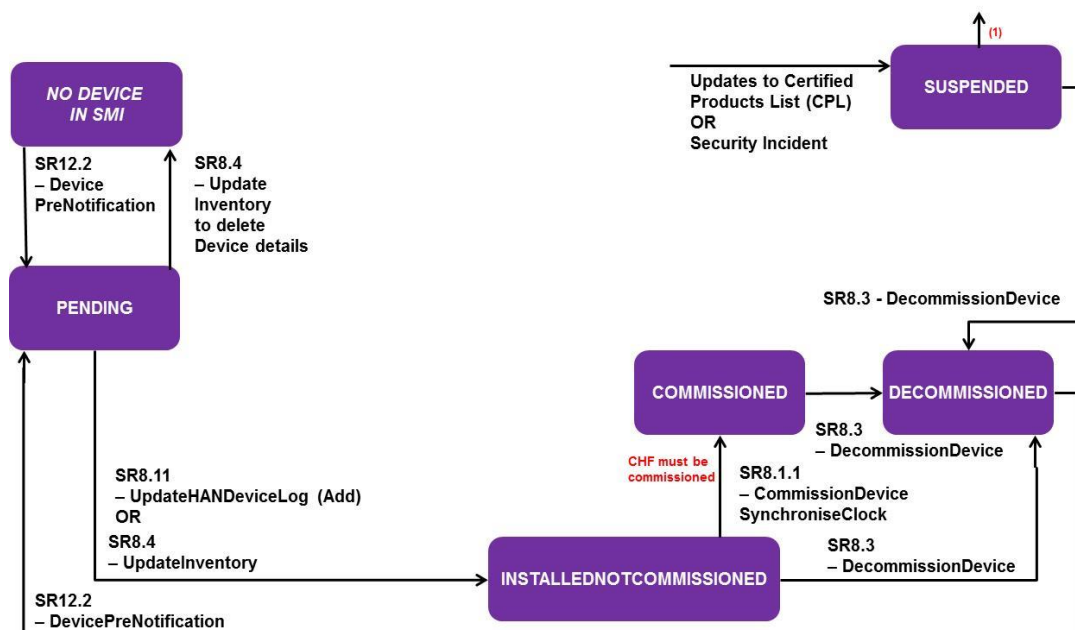


Figure 73 – SMETS1 Entity Lifecycle Diagram – ESME

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension

9. GSME

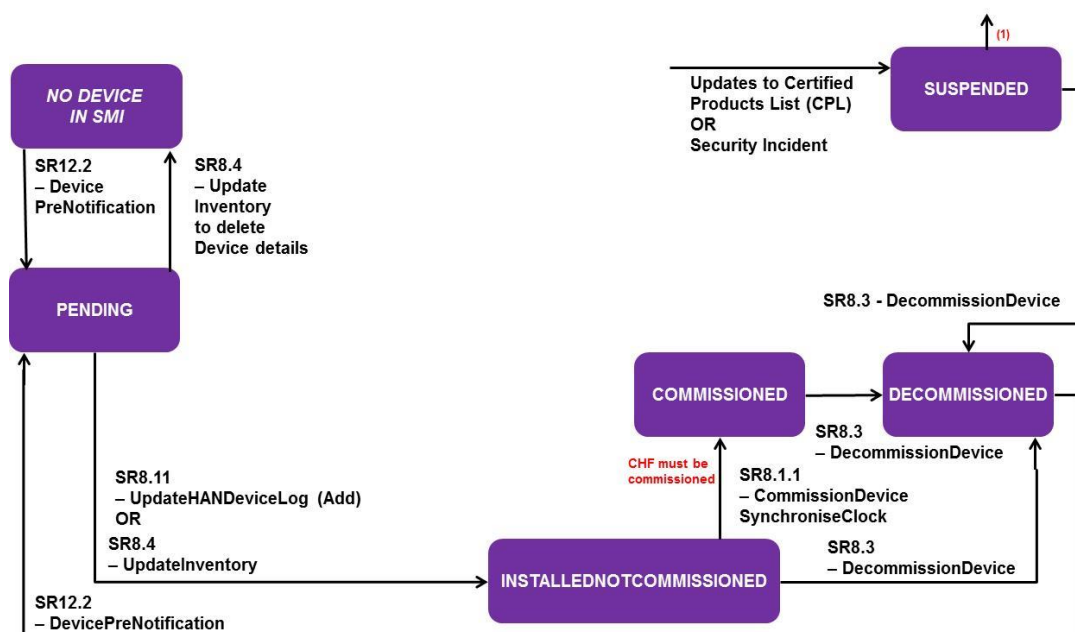


Figure 74 – SMETS1 Entity Lifecycle Diagram – GSME

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension

10. CHF

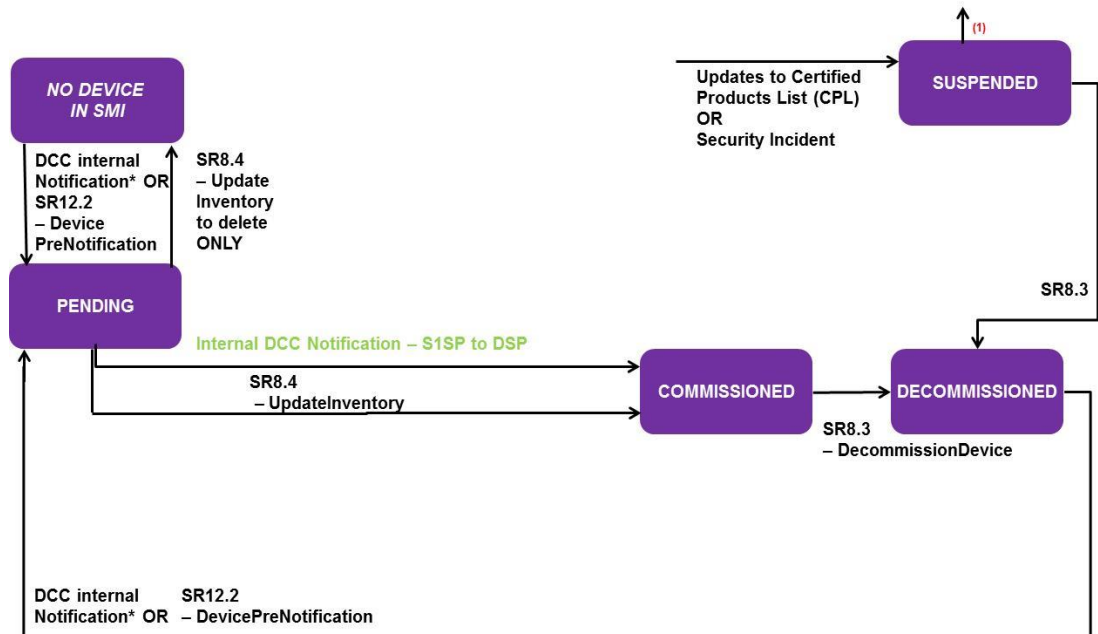


Figure 75 – SMETS1 Entity Lifecycle Diagram – CHF

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension

11. GPF

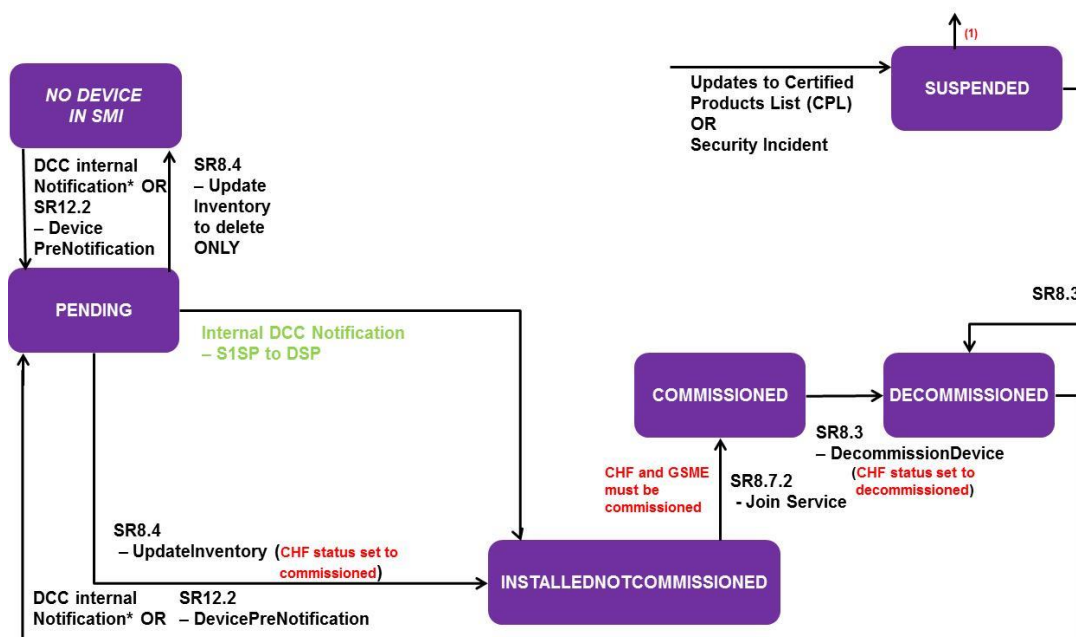


Figure 76 – SMETS1 Entity Lifecycle Diagram – GPF

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension

12. PPMID

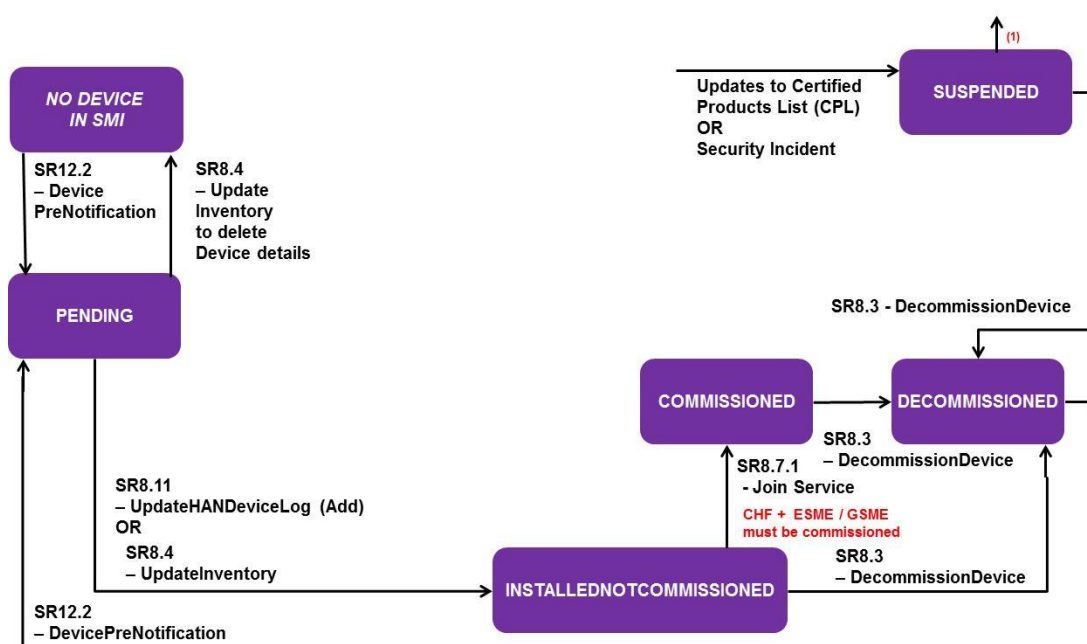


Figure 77 – SMETS1 Entity Lifecycle Diagram – PPMID

- (1) If a Device ceases to be Suspended as a result of the Device Model / Firmware Version being added to the Central Products List or of the Firmware Version being activated on the Device, the DCC Data Systems shall change the SMI Status of that Device to the status it held immediately prior to its Suspension

13. Type 2

As per SMETS 2 or later.

Appendix 9 – Error Handling and DCC Alerts

The following diagrams outline the main Error Handling scenarios as described in section 11.6, including the DCC Alerts generated in each scenario.

Some aspects of messaging to SMETS1 Devices require different error handling strategies. This section includes separate sets of diagrams for SMETS1 Devices and SMETS2 or later Devices.

SMETS2 or Later Devices

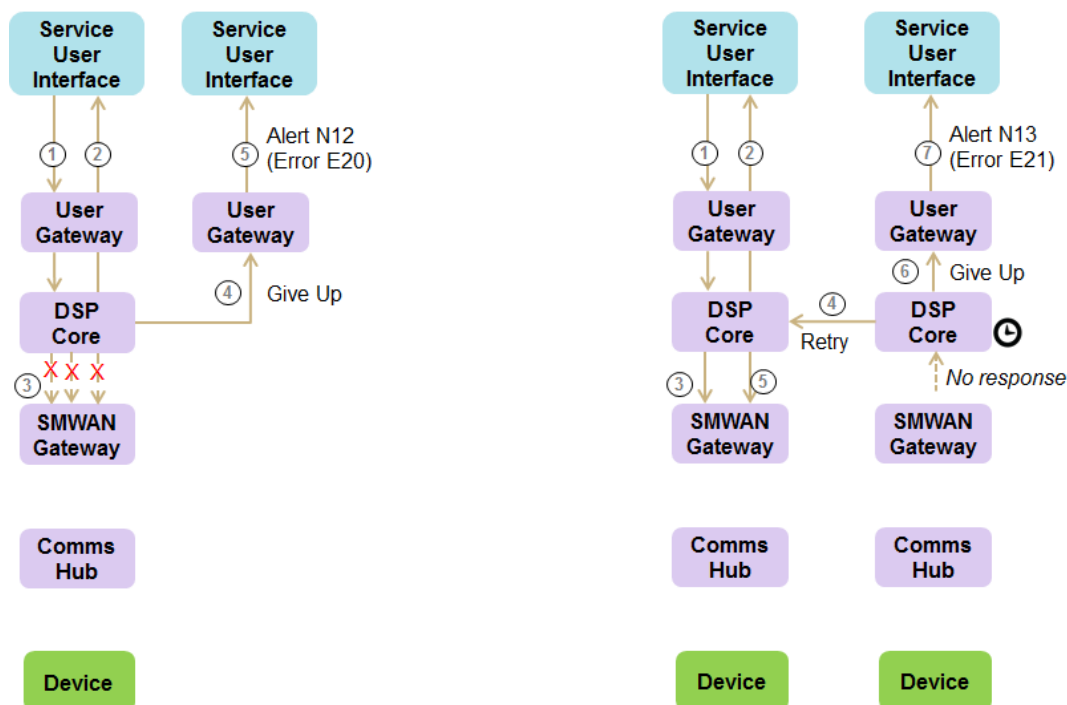


Figure 78 – Error Handling – On Demand

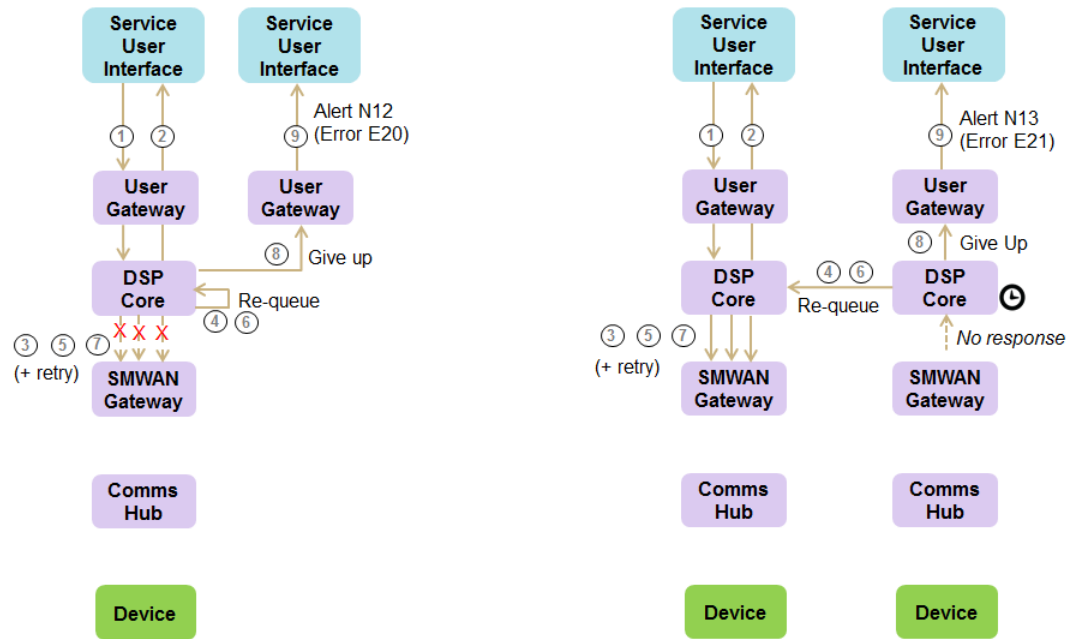


Figure 79 – Error Handling – Future Dated (Device) – Command Acknowledgement

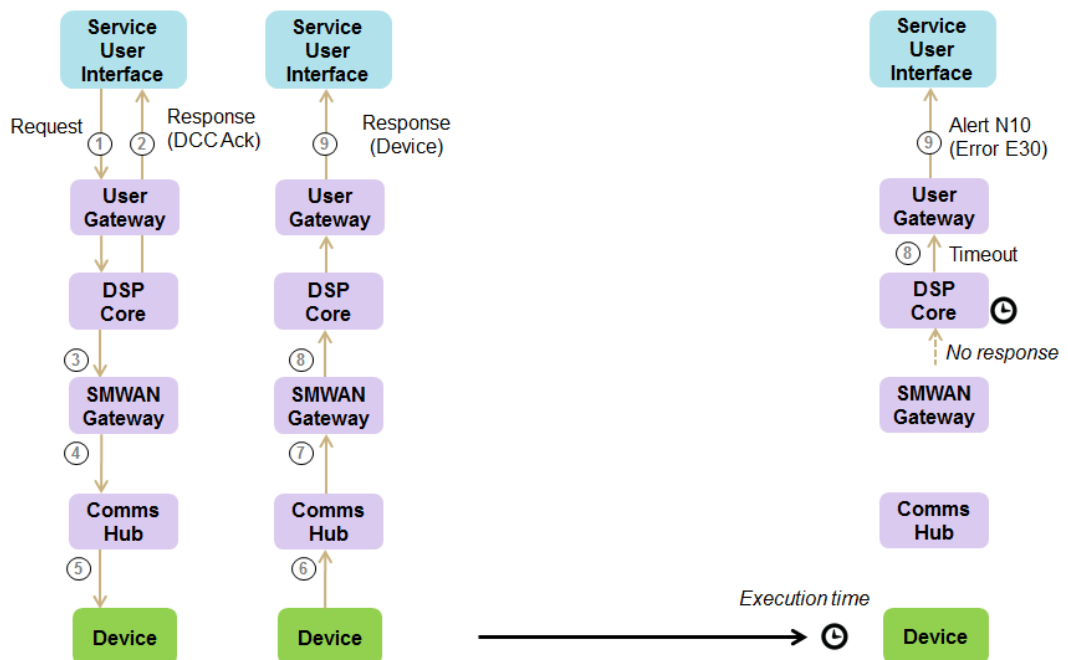


Figure 80 – Error Handling – Future Dated (Device) – Command Execution

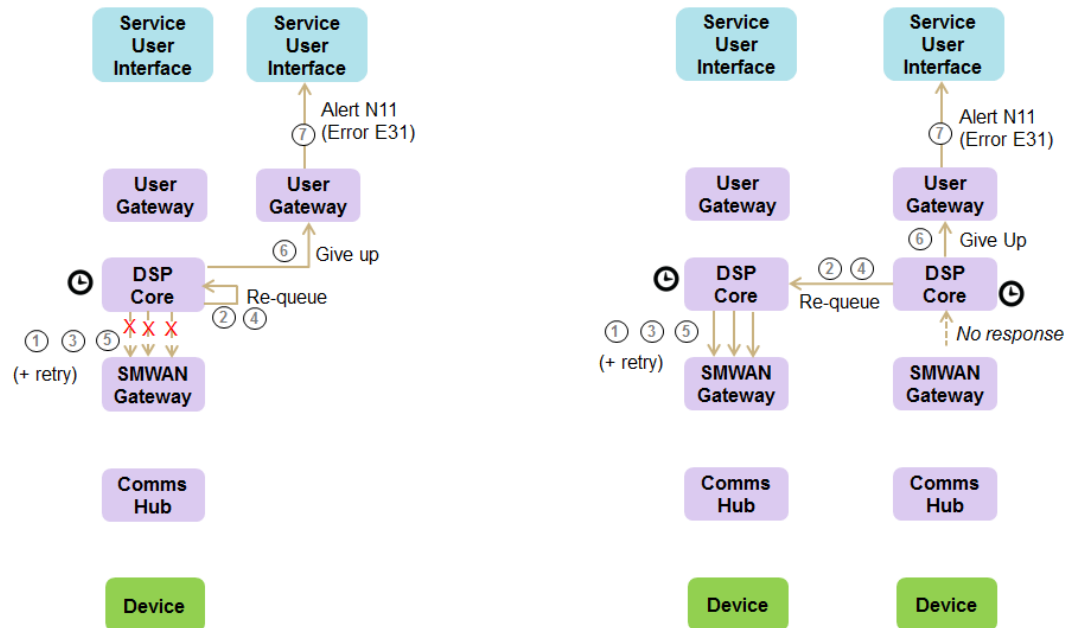


Figure 81 – Error Handling – DSP Scheduled / Future Dated (DSP)

SMETS1 Devices

Error Handling for SMETS1 Devices follows similar patterns to SMETS2 or later devices with the following variations:

- Validation errors may also be reported asynchronously by the S1SP via a DCC Alert.
- Retries when no response is received will be carried out by the S1SP rather than the DSP (note this only applies to the “short” retry strategy; where applicable the DSP will continue to use the “long” retry strategy and place requests on a back off queue for retry every 2 hours.)

The following diagrams show these variations for SMETS1 devices.

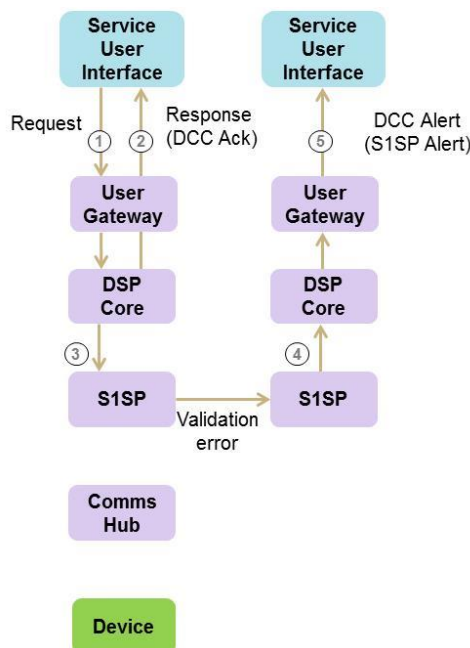


Figure 82 – Error Handling – S1SP Validation Error

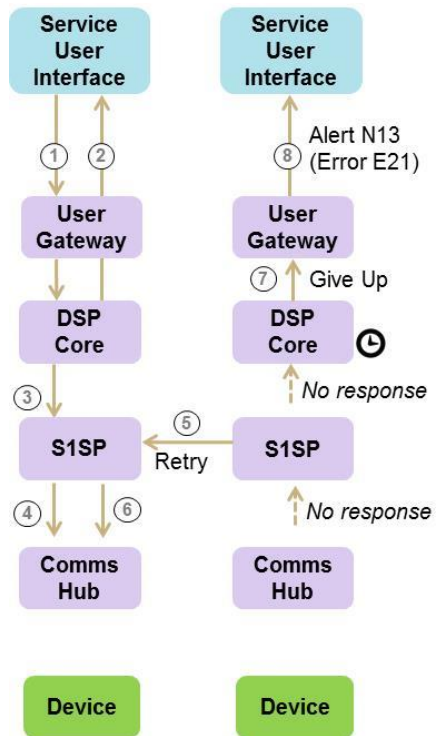


Figure 83 – Error Handling – S1SP Retry

Appendix 10 – Service Request Variant – GBCS UC Mapping Versioning

The following table summarises the Service Request Variant – GBCS UC mapping applicable to the different DUIS XSD, MMC XSD and GBCS versions:

Service Request Variant					GBCS Use Cases					
ID	DUIS XSD version	Modified in DUIS versions	MMC XSD version	Modified in MMC versions	GBCS version 1.0/1.1	GBCS version 2.0/2.1	GBCS version 3.2/3.3	GBCS version 4.0	GBCS version 4.1	GBCS version 4.2
1.1.1	>= 1.0	N/A	>= 1.0	N/A	ECS01a, GCS01a	ECS01a, GCS01a	ECS01a, GCS01a	ECS01a, GCS01a	ECS01a, GCS01a	ECS01a, GCS01a
1.1.2	>= 1.0	N/A	>= 1.0	N/A	ECS01c	ECS01c	ECS01c	ECS01c	ECS01c	ECS01c
1.2.1	>= 1.0	N/A	>= 1.0	N/A	ECS01b, GCS01b	ECS01b, GCS01b	ECS01b, GCS01b	ECS01b, GCS01b	ECS01b, GCS01b	ECS01b, GCS01b
1.2.2	>= 1.0	N/A	>= 1.0	N/A	ECS01d	ECS01d	ECS01d	ECS01d	ECS01d	ECS01d
1.5	>= 1.0	N/A	>= 1.0	N/A	ECS04a, ECS04b, GCS40a, GCS40b, GCS40c, GCS40d	ECS04a, ECS04b, GCS40a, GCS40b, GCS40c, GCS40d	ECS04a, ECS04b, GCS40a, GCS40b, GCS40c, GCS40d	ECS04a, ECS04b, GCS40a, GCS40b, GCS40c, GCS40d	ECS04a, ECS04b, GCS40a, GCS40b, GCS40c, GCS40d	ECS04a, ECS04b, GCS40a, GCS40b, GCS40c, GCS40d
1.6	>= 1.0	N/A	>= 1.0	N/A	ECS02, ECS03, GCS02, GCS03	ECS02, ECS03, GCS02, GCS03	ECS02, ECS03, GCS02, GCS03	ECS02, ECS03, GCS02, GCS03	ECS02, ECS03, GCS02, GCS03	ECS02, ECS03, GCS02, GCS03
1.7	>= 1.0	N/A	>= 1.0	N/A	ECS05	ECS05	ECS05	ECS05	ECS05	ECS05
2.1	>= 1.0	2.0	>= 1.0	2.0	ECS08, GCS05	ECS08a , GCS05	ECS08a, GCS05	ECS08a, GCS05	ECS08a, GCS05	ECS08a, GCS05
2.2	>= 1.0	N/A	>= 1.0	N/A	CS01a, CS01b	CS01a, CS01b	CS01a, CS01b	CS01a, CS01b	CS01a, CS01b	CS01a, CS01b
2.3	>= 1.0	N/A	>= 1.0	N/A	ECS07, GCS04	ECS07, GCS04	ECS07, GCS04	ECS07, GCS04	ECS07, GCS04	ECS07, GCS04
2.5	>= 1.0	N/A	>= 1.0	N/A	ECS09, GCS06	ECS09, GCS06	ECS09, GCS06	ECS09, GCS06	ECS09, GCS06	ECS09, GCS06
3.1	>= 1.0	N/A	>= 1.0	N/A	ECS10, GCS07	ECS10, GCS07	ECS10, GCS07	ECS10, GCS07	ECS10, GCS07	ECS10, GCS07
3.2	>= 1.0	N/A	>= 1.0	N/A	ECS12, GCS09	ECS12, GCS09	ECS12, GCS09	ECS12, GCS09	ECS12, GCS09	ECS12, GCS09
3.3	>= 1.0	N/A	>= 1.0	N/A	ECS15a, ECS15c, CS11	ECS15a, ECS15c, CS11	ECS15a, ECS15c, CS11	ECS15a, ECS15c, CS11	ECS15a, ECS15c, CS11	ECS15a, ECS15c, CS11
3.4	>= 1.0	N/A	>= 1.0	N/A	ECS16, GCS44	ECS16, GCS44	ECS16, GCS44	ECS16, GCS44	ECS16, GCS44	ECS16, GCS44
3.5	>= 1.0	N/A	>= 1.0	N/A	ECS14, GCS11	ECS14, GCS11	ECS14, GCS11	ECS14, GCS11	ECS14, GCS11	ECS14, GCS11
4.1.1	>= 1.0	N/A	>= 1.0	N/A	ECS17b, GCS13a	ECS17b, GCS13a	ECS17b, GCS13a	ECS17b, GCS13a	ECS17b, GCS13a	ECS17b, GCS13a
4.1.2	>= 1.0	N/A	>= 1.0	N/A	ECS17d, GCS13c	ECS17d, GCS13c	ECS17d, GCS13c	ECS17d, GCS13c	ECS17d, GCS13c	ECS17d, GCS13c
4.1.3	>= 1.0	N/A	>= 1.0	N/A	ECS17e	ECS17e	ECS17e	ECS17e	ECS17e	ECS17e

Service Request Variant					GBCS Use Cases					
ID	DUIS XSD version	Modified in DUIS versions	MMC XSD version	Modified in MMC versions	GBCS version 1.0/1.1	GBCS version 2.0/2.1	GBCS version 3.2/3.3	GBCS version 4.0	GBCS version 4.1	GBCS version 4.2
4.1.4	>= 1.0	N/A	>= 1.0	N/A	GCS13b	GCS13b	GCS13b	GCS13b	GCS13b	GCS13b
4.2	>= 1.0	N/A	>= 1.0	N/A	ECS17a	ECS17a	ECS17a	ECS17a	ECS17a	ECS17a
4.3	>= 1.0	N/A	>= 1.0	N/A	ECS19, GCS14	ECS19, GCS14	ECS19, GCS14	ECS19, GCS14	ECS19, GCS14	ECS19, GCS14
4.4.2	>= 1.0	N/A	>= 1.0	N/A	ECS20b, GCS15b	ECS20b, GCS15b	ECS20b, GCS15b	ECS20b, GCS15b	ECS20b, GCS15b	ECS20b, GCS15b
4.4.3	>= 1.0	N/A	>= 1.0	N/A	ECS20c, GCS15c	ECS20c, GCS15c	ECS20c, GCS15c	ECS20c, GCS15c	ECS20c, GCS15c	ECS20c, GCS15c
4.4.4	>= 1.0	N/A	>= 1.0	N/A	ECS20a, GCS15d	ECS20a, GCS15d	ECS20a, GCS15d	ECS20a, GCS15d	ECS20a, GCS15d	ECS20a, GCS15d
4.4.5	>= 1.0	N/A	>= 1.0	N/A	ECS20d, GCS15e	ECS20d, GCS15e	ECS20d, GCS15e	ECS20d, GCS15e	ECS20d, GCS15e	ECS20d, GCS15e
4.6.1	>= 1.0	N/A	>= 1.0	N/A	ECS21a, GCS16a	ECS21a, GCS16a	ECS21a, GCS16a	ECS21a, GCS16a	ECS21a, GCS16a	ECS21a, GCS16a
4.6.2	>= 1.0	N/A	>= 1.0	N/A	ECS21c	ECS21c	ECS21c	ECS21c	ECS21c	ECS21c
4.8.1	>= 1.0	N/A	>= 1.0	N/A	ECS22b, GCS17	ECS22b, GCS17	ECS22b, GCS17	ECS22b, GCS17	ECS22b, GCS17	ECS22b, GCS17
4.8.2	>= 1.0	N/A	>= 1.0	N/A	ECS22c	ECS22c	ECS22c	ECS22c	ECS22c	ECS22c
4.8.3	>= 1.0	N/A	>= 1.0	N/A	ECS22a	ECS22a	ECS22a	ECS22a	ECS22a	ECS22a
4.10	>= 1.0	N/A	>= 1.0	N/A	ECS23, ECS23b, GCS18	ECS23, ECS23b, GCS18	ECS23, ECS23b, GCS18	ECS23, ECS23b, GCS18	ECS23, ECS23b, GCS18	ECS23, ECS23b, GCS18
4.11.1	>= 1.0	N/A	>= 1.0	N/A	ECS24, GCS21f	ECS24, GCS21f	ECS24, GCS21f	ECS24, GCS21f	ECS24, GCS21f	ECS24, GCS21f
4.11.2	>= 1.0	N/A	>= 1.0	N/A	ECS24b	ECS24b	ECS24b	ECS24b	ECS24b	ECS24b
4.12.1	>= 1.0	N/A	>= 1.0	N/A	ECS18b	ECS18b	ECS18b	ECS18b	ECS18b	ECS18b
4.12.2	>= 1.0	N/A	>= 1.0	N/A	ECS18a	ECS18a	ECS18a	ECS18a	ECS18a	ECS18a
4.13	>= 1.0	N/A	>= 1.0	N/A	ECS26a, GCS21b	ECS26a, GCS21b	ECS26a, GCS21b	ECS26a, GCS21b	ECS26a, GCS21b	ECS26a, GCS21b
4.14	>= 1.0	N/A	>= 1.0	N/A	ECS21b, GCS16b	ECS21b, GCS16b	ECS21b, GCS16b	ECS21b, GCS16b	ECS21b, GCS16b	ECS21b, GCS16b
4.15	>= 1.0	N/A	>= 1.0	N/A	ECS27	ECS27	ECS27	ECS27	ECS27	ECS27
4.16	>= 1.0	N/A	>= 1.0	N/A	ECS17c	ECS17c	ECS17c	ECS17c	ECS17c	ECS17c
4.17	>= 1.0	N/A	>= 1.0	N/A	ECS66, GCS61	ECS66, GCS61	ECS66, GCS61	ECS66, GCS61	ECS66, GCS61	ECS66, GCS61
4.18	>= 1.0	N/A	>= 1.0	N/A	ECS82, GCS60	ECS82, GCS60	ECS82, GCS60	ECS82, GCS60	ECS82, GCS60	ECS82, GCS60a
5.1	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5.2	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5.3	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Service Request Variant					GBCS Use Cases					
ID	DUIS XSD version	Modified in DUIS versions	MMC XSD version	Modified in MMC versions	GBCS version 1.0/1.1	GBCS version 2.0/2.1	GBCS version 3.2/3.3	GBCS version 4.0	GBCS version 4.1	GBCS version 4.2
6.2.1	>= 1.0	N/A	>= 1.0	N/A	ECS26b, ECS26k	ECS26b, ECS26k	ECS26b, ECS26k	ECS26b, ECS26k	ECS26b, ECS26k	ECS26b, ECS26k
6.2.2	>= 1.0	N/A	>= 1.0	N/A	ECS26c	ECS26c	ECS26c	ECS26c	ECS26c	ECS26c
6.2.3	>= 1.0	2.0	>= 1.0	2.0	ECS26d, GCS21d	ECS26l, GCS21k	ECS26l, GCS21k	ECS26l, GCS21k	ECS26l, GCS21k	ECS26l, GCS21k
6.2.4	>= 1.0	2.0	>= 1.0	2.0	ECS26e, ECS26i, GCS21e	ECS26m, ECS26n, GCS21m	ECS26m, ECS26n, GCS21m	ECS26m, ECS26n, GCS21m	ECS26m, ECS26n, GCS21m	ECS26m, ECS26n, GCS21m
6.2.5	>= 1.0	N/A	>= 1.0	N/A	ECS26f	ECS26f	ECS26f	ECS26f	ECS26f	ECS26f
6.2.7	>= 1.0	N/A	>= 1.0	N/A	ECS40, GCS46	ECS40, GCS46	ECS40, GCS46	ECS40, GCS46	ECS40, GCS46	ECS40, GCS46
6.2.8	>= 1.0	N/A	>= 1.0	N/A	GCS21a	GCS21a	GCS21a	GCS21a	GCS21a	GCS21a
6.2.9	>= 1.0	N/A	>= 1.0	N/A	ECS26j, GCS21j	ECS26j, GCS21j	ECS26j, GCS21j	ECS26j, GCS21j	ECS26j, GCS21j	ECS26j, GCS21j
6.2.10	>= 2.0	2.0	>= 2.0	2.0	N/A	ECS25r1, ECS25r2, GCS20r	ECS25r1, ECS25r2, GCS20r	ECS25r1, ECS25r2, GCS20r	ECS25r1, ECS25r2, GCS20r	ECS25r1, ECS25r2, GCS20r
6.4.1	>= 1.0	N/A	>= 1.0	N/A	ECS28a	ECS28a	ECS28a	ECS28a	ECS28a	ECS28a
6.4.2	>= 1.0	N/A	>= 1.0	N/A	ECS28b	ECS28b	ECS28b	ECS28b	ECS28b	ECS28b
6.5	>= 1.0	2.0	>= 1.0	2.0	ECS29a, ECS29b	ECS29a, ECS29b, ECS29c, ECS29d	ECS29a, ECS29b, ECS29c, ECS29d	ECS29a, ECS29b, ECS29c, ECS29d	ECS29a, ECS29b, ECS29c, ECS29d	ECS29a, ECS29b, ECS29c, ECS29d
6.6	>= 1.0	N/A	>= 1.0	N/A	GCS23	GCS23	GCS23	GCS23	GCS23	GCS23
6.7	>= 1.0	3.1	>= 1.0	N/A	GCS24	GCS24	GCS24a	GCS24a	GCS24a	GCS24a
6.8	>= 1.0	2.0	>= 1.0	2.0	ECS30, GCS25	ECS30a, GCS25a	ECS30a, GCS25a	ECS30a, GCS25a	ECS30a, GCS25a	ECS30a, GCS25a
6.11	>= 1.0	N/A	>= 1.0	N/A	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28
6.12	>= 1.0	N/A	>= 1.0	N/A	ECS34	ECS34	ECS34	ECS34	ECS34	ECS34
6.13	>= 1.0	3.1	>= 1.0	4.0	ECS35a, ECS35b, ECS35c, ECS35d, ECS35e, ECS35f, CS10a, CS10b	ECS35a, ECS35b, ECS35c, ECS35d, ECS35e, ECS35f, CS10a, CS10b	ECS35a, ECS35b, ECS35c, ECS35d, ECS35e, ECS35g , CS10a, CS10b	ECS35a, ECS35b, ECS35c, ECS35d, ECS35e, ECS35g , CS10a, CS10b	ECS35a, ECS35b, ECS35c, ECS35d, ECS35e, CS10a, CS10b	ECS35a, ECS35b, ECS35c, ECS35d, ECS35e, CS10a, CS10b
6.14.1	>= 1.0	N/A	>= 1.0	N/A	ECS46a	ECS46a	ECS46a	ECS46a	ECS46a	ECS46a
6.14.2	>= 1.0	N/A	>= 1.0	N/A	ECS46c	ECS46c	ECS46c	N/A	N/A	N/A
6.14.3	>= 4.0	N/A	>= 4.0	N/A	N/A	N/A	N/A	ECS46d	ECS46d	ECS46d
6.15.1	>= 1.0	4.0	>= 1.0	2.0, 4.0	CS02b	CS02b	CS02b	CS02b CS02g	CS02b CS02g	CS02b CS02g

Service Request Variant					GBCS Use Cases					
ID	DUIS XSD version	Modified in DUIS versions	MMC XSD version	Modified in MMC versions	GBCS version 1.0/1.1	GBCS version 2.0/2.1	GBCS version 3.2/3.3	GBCS version 4.0	GBCS version 4.1	GBCS version 4.2
6.15.2	>= 1.0	N/A	>= 1.0	N/A	CS02d	CS02d	CS02d	CS02d	CS02d	CS02d
6.17	>= 1.0	N/A	>= 1.0	N/A	CS02c	CS02c	CS02c	CS02c	CS02c	CS02c
6.18.1	>= 1.0	N/A	>= 1.0	N/A	ECS37	ECS37	ECS37	ECS37	ECS37	ECS37
6.18.2	>= 1.0	N/A	>= 1.0	N/A	ECS57	ECS57	ECS57	ECS57	ECS57	ECS57
6.20.1	>= 1.0	N/A	>= 1.0	N/A	ECS39a, GCS41	ECS39a, GCS41	ECS39a, GCS41	ECS39a, GCS41	ECS39a, GCS41	ECS39a, GCS41
6.20.2	>= 1.0	N/A	>= 1.0	N/A	ECS39b	ECS39b	ECS39b	ECS39b	ECS39b	ECS39b
6.21	>= 1.0	N/A	>= 1.0	2.0	CS02b	CS02b	CS02b	CS02b	CS02b	CS02b
6.22	>= 1.0	2.0	>= 1.0	2.0	ECS25a, ECS25b, GCS20 (WAN Alerts only)	ECS25a, ECS25b, GCS20 (WAN Alerts only), ECS25a1, ECS25a2, ECS25a3, ECS25b3, GCS20	ECS25a, ECS25b, GCS20 (WAN Alerts only), ECS25a1, ECS25a2, ECS25a3, ECS25b3, GCS20	ECS25a, ECS25b, GCS20 (WAN Alerts only), ECS25a1, ECS25a2, ECS25a3, ECS25b3, GCS20	ECS25a, ECS25b, GCS20 (WAN Alerts only), ECS25a1, ECS25a2, ECS25a3, ECS25b3, GCS20	ECS25a, ECS25b, GCS20 (WAN Alerts only), ECS25a1, ECS25a2, ECS25a3, ECS25b3, GCS20
6.23	>= 1.0	N/A	>= 1.0	2.0	CS02b	CS02b	CS02b	CS02b	CS02b	CS02b
6.24.1	>= 1.0	4.0	>= 1.0	4.0	CS02a	CS02a	CS02a	CS02a CS02f	CS02a CS02f	CS02a CS02f
6.24.2	>= 1.0	N/A	>= 1.0	N/A	CS02e	CS02e	CS02e	CS02e	CS02e	CS02e
6.25	>= 1.0	N/A	>= 1.0	N/A	ECS81	ECS81	ECS81	ECS81	ECS81	ECS81
6.26	>= 2.0	2.0	>= 2.0	2.0	N/A	ECS48	ECS48	ECS48	ECS48	ECS48
6.27	>= 2.0	2.0	>= 2.0	2.0	N/A	ECS29e, ECS29f	ECS29e, ECS29f	ECS29e, ECS29f	ECS29e, ECS29f	ECS29e, ECS29f
6.28	>= 2.0	2.0	>= 2.0	2.0	N/A	DBCH04	DBCH04	DBCH04	DBCH04	DBCH04
6.29	>= 2.0	2.0	>= 2.0	2.0	N/A	DBCH05	DBCH05	DBCH05	DBCH05	DBCH05
6.30	>= 2.0	2.0	>= 2.0	2.0	N/A	DBCH03	DBCH03	DBCH03	DBCH03	DBCH03
6.31	>= 2.0	2.0	>= 2.0	2.0	N/A	DBCH01	DBCH01	DBCH01	DBCH01	DBCH01
6.32	>= 2.0	2.0	>= 2.0	2.0	N/A	DBCH02	DBCH02	DBCH02	DBCH02	DBCH02
7.1	>= 1.0	N/A	>= 1.0	N/A	ECS42	ECS42	ECS42	ECS42	ECS42	ECS42
7.2	>= 1.0	N/A	>= 1.0	N/A	ECS43, GCS32	ECS43, GCS32	ECS43, GCS32	ECS43, GCS32	ECS43, GCS32	ECS43, GCS32
7.3	>= 1.0	N/A	>= 1.0	N/A	ECS44, GCS39	ECS44, GCS39	ECS44, GCS39	ECS44, GCS39	ECS44, GCS39	ECS44, GCS39
7.4	>= 1.0	N/A	>= 1.0	N/A	ECS45, GCS33	ECS45, GCS33	ECS45, GCS33	ECS45, GCS33	ECS45, GCS33	ECS45, GCS33
7.5	>= 1.0	N/A	>= 1.0	N/A	ECS47	ECS47	ECS47	N/A	N/A	N/A

Service Request Variant					GBCS Use Cases					
ID	DUIS XSD version	Modified in DUIS versions	MMC XSD version	Modified in MMC versions	GBCS version 1.0/1.1	GBCS version 2.0/2.1	GBCS version 3.2/3.3	GBCS version 4.0	GBCS version 4.1	GBCS version 4.2
7.6	>= 1.0	N/A	>= 1.0	N/A	ECS47	ECS47	ECS47	N/A	N/A	N/A
7.7	>= 1.0	N/A	>= 1.0	N/A	ECS61a	ECS61a	ECS61a	N/A	N/A	N/A
7.8	>= 1.0	N/A	>= 1.0	N/A	ECS47	ECS47	ECS47	N/A	N/A	N/A
7.9	>= 1.0	N/A	>= 1.0	N/A	ECS62	ECS62	ECS62	ECS62	ECS62	ECS62
7.10	>= 1.0	N/A	>= 1.0	N/A	ECS62	ECS62	ECS62	ECS62	ECS62	ECS62
7.11	>= 1.0	N/A	>= 1.0	N/A	ECS61c	ECS61c	ECS61c	ECS61c	ECS61c	ECS61c
7.12	>= 1.0	N/A	>= 1.0	N/A	ECS38	ECS38	ECS38	ECS38	ECS38	ECS38
7.13	>= 4.0	N/A	>= 4.0	N/A	N/A	N/A	N/A	ECS47a	ECS47a	ECS47a
7.14	>= 4.0	N/A	>= 4.0	N/A	N/A	N/A	N/A	ECS61d	ECS61d	ECS61d
7.15	>= 4.0	N/A	>= 4.0	N/A	N/A	N/A	N/A	ECS61e	ECS61e	ECS61e
7.16	>= 4.0	N/A	>= 4.0	N/A	N/A	N/A	N/A	ECS47e	ECS47e	ECS47e
8.1.1	>= 1.0	N/A	>= 1.0	N/A	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28	ECS70, GCS28
8.2	>= 1.0	2.0 (Response only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.3	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.4	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.5	>= 1.0	N/A	>= 1.0	2.0	CS02b	CS02b	CS02b	CS02b	CS02b	CS02b
8.6	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.7.1	>= 1.0	N/A	>= 1.0	N/A	CS03a1, CS03a2, CS03c	CS03a1, CS03a2, CS03c	CS03a1, CS03a2, CS03c	CS03a1, CS03a2, CS03c	CS03a1, CS03a2, CS03c	CS03a1, CS03a2, CS03c
8.7.2	>= 1.0	N/A	>= 1.0	N/A	CS03a2, CS03b, CS03c	CS03a2, CS03b, CS03c	CS03a2, CS03b, CS03c	CS03a2, CS03b, CS03c	CS03a2, CS03b, CS03c	CS03a2, CS03b, CS03c
8.8.1	>= 1.0	N/A	>= 1.0	N/A	CS04ac	CS04ac	CS04ac	CS04ac	CS04ac	CS04ac
8.8.2	>= 1.0	N/A	>= 1.0	N/A	CS04ac, CS04b	CS04ac, CS04b	CS04ac, CS04b	CS04ac, CS04b	CS04ac, CS04b	CS04ac, CS04b
8.9	>= 1.0	2.0	>= 1.0	2.0	CCS05/C, CS04, CS07	CCS06 , CS07	CCS06, CS07	CCS06, CS07	CCS06, CS07	CCS06, CS07
8.11	>= 1.0	N/A	>= 1.0	N/A	CCS01, CCS02	CCS01, CCS02	CCS01, CCS02	CCS01, CCS02	CCS01, CCS02	CCS01, CCS02
8.12.1	>= 1.0	N/A	>= 1.0	N/A	CCS03	CCS03	CCS03	CCS03	CCS03	CCS03
8.12.2	>= 1.0	N/A	>= 1.0	N/A	GCS59	GCS59	GCS59	GCS59	GCS59	GCS59
8.13	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.14.1	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Service Request Variant					GBCS Use Cases					
ID	DUIS XSD version	Modified in DUIS versions	MMC XSD version	Modified in MMC versions	GBCS version 1.0/1.1	GBCS version 2.0/2.1	GBCS version 3.2/3.3	GBCS version 4.0	GBCS version 4.1	GBCS version 4.2
8.14.2	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.14.3	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8.14.4	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9.1	>= 1.0	N/A	>= 1.0	N/A	ECS50, GCS36	ECS50, GCS36	ECS50, GCS36	ECS50, GCS36	ECS50, GCS36	ECS50, GCS36
11.1	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11.2	>= 1.0	N/A	>= 1.0	N/A	ECS52, GCS38	ECS52, GCS38	ECS52, GCS38	ECS52, GCS38	ECS52, GCS38, CS08	ECS52, GCS38, CS08
11.3	>= 1.0	N/A	>= 1.0	N/A	CS06	CS06	CS06	CS06	CS06	CS06
11.4	>= 5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12.1	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12.2	>= 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14.1	>= 1.0	N/A	>= 1.0	2.0 (doc only)	GCS31	GCS31	GCS31	GCS31	GCS31	GCS31

Table 59 Service Request Variant mapping to GBCS UC – Mapping Versioning

Appendix 11 – Use of Multiple EUI64 IDs

In accordance with the requirements of SEC Clause H1.5, a Service User may use more than one EUI64 ID for a given SEC Party and Role combination.

A Service User may use any of their EUI64 IDs to communicate over the DCC User Interface, provided that EUI64 ID has been notified to the DCC for use for this purpose and that the Service User has completed all the necessary steps (in particular those relating to security) that are required in order to use that EUI64 ID.

Where a Service User has more than one EUI64 ID, the behaviour of the DCC Data Systems with respect to Registration data will depend on how those EUI64 IDs are mapped to Market Participant IDs. There are two possible scenarios as outlined below.

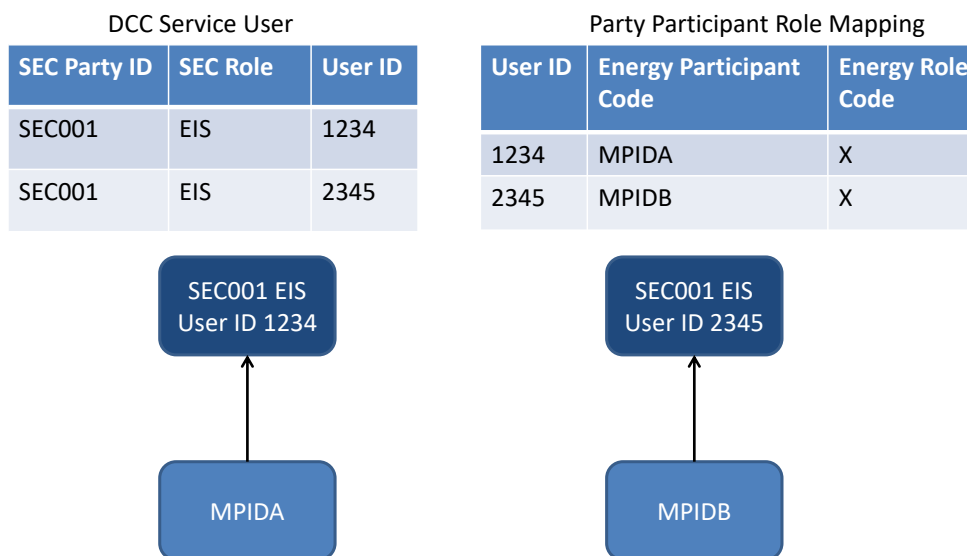


Figure 84 – EUI64 IDs mapped to different MPIDs

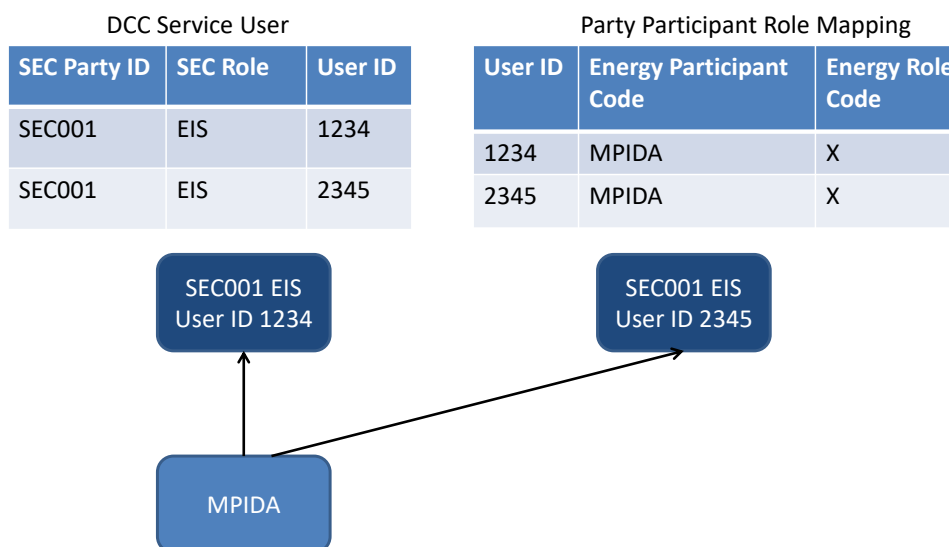


Figure 85 – EUI64 IDs mapped to same MPID

In the first scenario, the two User IDs operate independently and the relevant User ID must be used in order to pass any Registration Data checks associated with MPIDA or MPIDB.

In the second scenario, either User ID will pass the Registration Data checks associated with MPIDA however the Service User is responsible for ensuring they use the correct User ID that is associated with the SMKI security credentials held on the target device. If the wrong User ID is used then the GBCS Command will be rejected by the device.

Additionally, where Registration Data is used to determine a Responsible or Interested Party in order to deliver DCC Alerts then if an MPID maps to more than one User ID then the DCC Data Systems shall use its knowledge of which SMKI security credentials are held on the device in order to determine which User ID should be used. Where this cannot be done then the User ID that was notified first to the DCC for that MPID will be used.

Appendix 12 – Firmware Version Alerts

Support for multiple versions of GBCS relies on Firmware Version information in the Smart Metering Inventory (SMI) being accurate. With this in mind, the DCC Data Systems will monitor all Read Firmware Service Requests (see Annex 11) and will update the details held in the Smart Metering Inventory if this is necessary.

The following diagrams describe the logic for determining whether an update should be made and which DCC Alert is generated (see section 13).

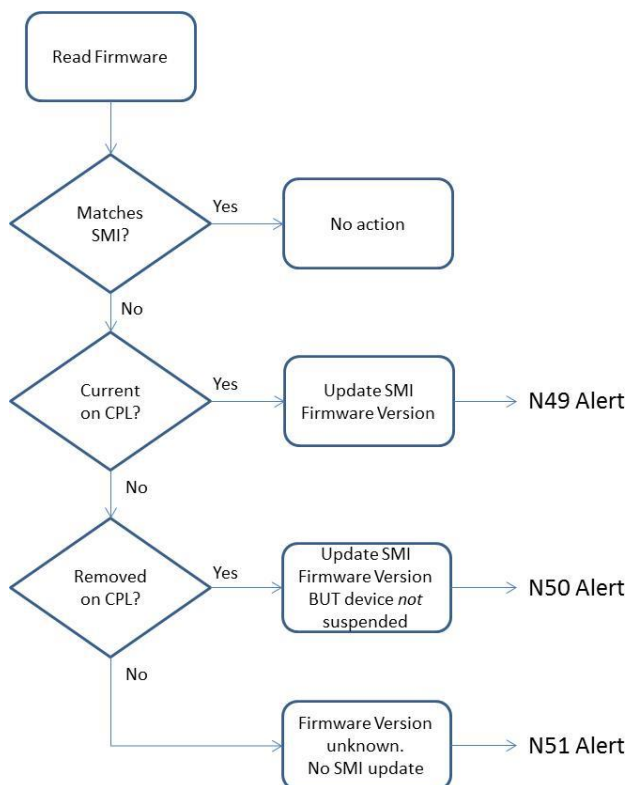


Figure 86 – Read Firmware (ESME, GSME, CHF, HCALCS, PPMID)

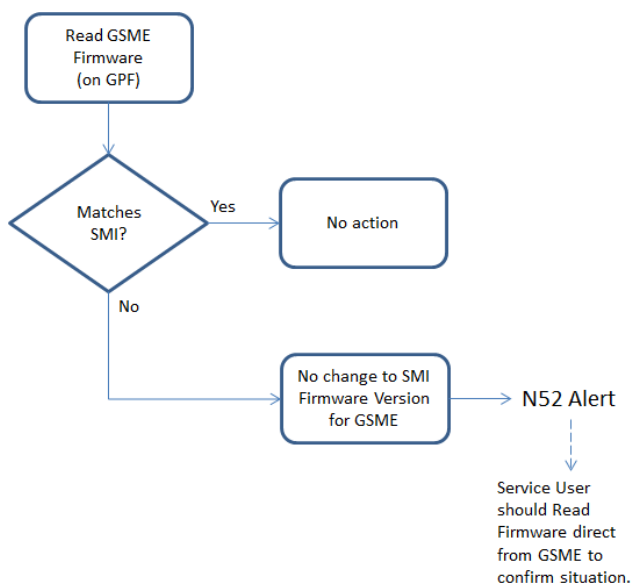


Figure 87 – Read GSME Firmware (on GPF)

Appendix 13 – Non-Critical Configurable Events / Alerts

The following tables summarise the non-critical Events / Alerts that are configurable by the Supplier on the ESME or GSME (Event / Alert Code in the 0x81 range) or by the Network Operator (Event / Alert Code in the 0x80 range) via Service Request 6.22 (Configure Alert Behaviour) – See Annex 6. See GBCS v2.0 Draft 5 section 16.2 for master data.

Event / Alert Code	Alert Name	GSME	ESME (All)	ESME (excl multi-phase)	ESME (multi-phase only)	ESME (twin element only)
0x810D	Combined Credit Below Low Credit Threshold (prepayment mode)	x	x			
0x810E	Credit Added Locally	x	x			
0x8119	Emergency Credit Has Become Available (prepayment mode)	x	x			
0x8145	Clock adjusted (within tolerance)	x	x			
0x8154	Immediate HAN Interface Command Received and Successfully Actioned	x	x			
0x8155	Immediate HAN Interface Command Received but not Successfully Actioned	x	x			
0x8161	User Interface Command Input and Successfully Actioned	x	x			
0x8162	User Interface Command Input but not Successfully Actioned	x	x			
0x8168	Supply Disabled then Armed - Activate Emergency Credit triggered	x	x			
0x8183	Device joined SMHAN	x	x			
0x8184	Valve tested	x				
0x81A1	Battery Cover Closed	x	x			
0x81A2	CH Connected to ESME		x			
0x81A3	CH Disconnected from ESME		x			
0x81A4	Close Tunnel Command Rejected	x	x			
0x81A5	Communication From Local Port (e.g. Optical)	x	x			
0x81A6	Customer Acknowledged Message on HAN Device	x	x			
0x81A7	Debt Collection Completed - Time Debt 1	x	x			
0x81A8	Debt Collection Completed - Time Debt 2	x	x			
0x81A9	Debt Collection Completed - Payment Debt	x	x			
0x81A A	Emergency Credit Exhausted	x	x			
0x81A B	Emergency Credit Activated	x	x			
0x81A C	Error Measurement Fault	x	x			

Event / Alert Code	Alert Name	GSME	ESME (All)	ESME (excl multi-phase)	ESME (multi-phase only)	ESME (twin element only)
0x81A D	Error Metrology Firmware Verification Failure	x	x			
0x81A E	Error Non Volatile Memory	x	x			
0x81AF	Error Program Execution	x	x			
0x81B0	Error Program Storage	x	x			
0x81B1	Error RAM	x	x			
0x81B2	Error Unexpected Hardware Reset	x	x			
0x81B3	Error Watchdog	x	x			
0x81B4	Excess Gas Flow Beyond Meter Capacity	x				
0x81B5	Flow Sensor Detects Air in Gas Flow	x				
0x81B6	Flow Sensor Detects Reverse Flow of Gas	x				
0x81B7	Incorrect phase sequencing				x	
0x81B8	Incorrect Polarity		x			
0x81B9	Meter Cover Closed	x	x			
0x81B A	Request Tunnel Command Rejected	x	x			
0x81B B	Reverse Current		x			
0x81B C	Strong Magnetic Field Removed	x	x			
0x81B D	Supply Connect Failure (Valve or Load Switch)	x	x			
0x81B E	Supply Disabled Then Locked - Supply Tamper State Cause	x	x			
0x81BF	Supply Disabled Then Armed - Uncontrolled Gas Flow Rate	x				
0x81C0	Supply Disconnect Failure (Valve or Load Switch)	x	x			
0x81C1	Terminal Cover Closed		x			
0x81C2	Tilt Tamper Ended	x				
0x81C3	Tilt Tamper	x				
0x81C4	UTRN Manual Entry Suspended	x	x			
0x81C5	UTRN rejected as locked out	x	x			
0x81A0	Smart Meter Integrity Issue – Warning	x	x			

Table 60 Non-critical Events / Alerts configurable by the Supplier

Event / Alert Code	Alert Name	GSME	ESME (All)	ESME (excl multi-phase)	ESME (multi-phase only)	ESME (twin element only)
0x8002	Average RMS Voltage above Average RMS Over Voltage Threshold (current value above threshold; previous value below threshold)			x		
0x8003	Average RMS Voltage above Average RMS Over Voltage Threshold on Phase 1 (current value above threshold; previous value below threshold)				x	
0x8004	Average RMS Voltage above Average RMS Over Voltage Threshold on Phase 2 (current value above threshold; previous value below threshold)				x	
0x8005	Average RMS Voltage above Average RMS Over Voltage Threshold on Phase 3 (current value above threshold; previous value below threshold)				x	
0x8006	Average RMS Voltage below Average RMS Under Voltage Threshold (current value below threshold; previous value above threshold)			x		
0x8007	Average RMS Voltage below Average RMS Under Voltage Threshold on Phase 1 (current value below threshold; previous value above threshold)				x	
0x8008	Average RMS Voltage below Average RMS Under Voltage Threshold on Phase 2 (current value below threshold; previous value above threshold)				x	
0x8009	Average RMS Voltage below Average RMS Under Voltage Threshold on Phase 3 (current value below threshold; previous value above threshold)				x	
0x8020	RMS Voltage above Extreme Over Voltage Threshold (voltage rises above for longer than the configurable period)			x		
0x8021	RMS Voltage above Extreme Over Voltage Threshold on Phase 1 (voltage rises above for longer than the configurable period)				x	
0x8022	RMS Voltage above Extreme Over Voltage Threshold on Phase 2 (voltage rises above for longer than the configurable period)				x	
0x8023	RMS Voltage above Extreme Over Voltage Threshold on Phase 3				x	

Event / Alert Code	Alert Name	GSME	ESME (All)	ESME (excl multi- phase)	ESME (multi- phase only)	ESME (twin element only)
	(voltage rises above for longer than the configurable period)					
0x8024	RMS Voltage above Voltage Swell Threshold (voltage rises above for longer than the configurable period)			x		
0x8025	RMS Voltage above Voltage Swell Threshold on Phase 1 (voltage rises above for longer than the configurable period)				x	
0x8026	RMS Voltage above Voltage Swell Threshold on Phase 2 (voltage rises above for longer than the configurable period)				x	
0x8027	RMS Voltage above Voltage Swell Threshold on Phase 3 (voltage rises above for longer than the configurable period)				x	
0x8028	RMS Voltage below Extreme Under Voltage Threshold (voltage falls below for longer than the configurable period)			x		
0x8029	RMS Voltage below Extreme Under Voltage Threshold on Phase 1 (voltage falls below for longer than the configurable period)				x	
0x802A	RMS Voltage below Extreme Under Voltage Threshold on Phase 2 (voltage falls below for longer than the configurable period)				x	
0x802B	RMS Voltage below Extreme Under Voltage Threshold on Phase 3 (voltage falls below for longer than the configurable period)				x	
0x802C	RMS Voltage below Voltage Sag Threshold (voltage falls below for longer than the configurable period)			x		
0x802D	RMS Voltage below Voltage Sag Threshold on Phase 1 (voltage falls below for longer than the configurable period)				x	
0x802E	RMS Voltage below Voltage Sag Threshold on Phase 2 (voltage falls below for longer than the configurable period)				x	
0x802F	RMS Voltage below Voltage Sag Threshold on Phase 3 (voltage falls below for longer than the configurable period)				x	
0x8085	Average RMS Voltage below Average RMS Over Voltage Threshold (current value below threshold; previous value above threshold)			x		

Event / Alert Code	Alert Name	GSME	ESME (All)	ESME (excl multi- phase)	ESME (multi- phase only)	ESME (twin element only)
0x8086	Average RMS Voltage below Average RMS Over Voltage Threshold on Phase 1 (current value below threshold; previous value above threshold)				x	
0x8087	Average RMS Voltage below Average RMS Over Voltage Threshold on Phase 2 (current value below threshold; previous value above threshold)				x	
0x8088	Average RMS Voltage below Average RMS Over Voltage Threshold on Phase 3 (current value below threshold; previous value above threshold)				x	
0x8089	Average RMS Voltage above Average RMS Under Voltage Threshold (current value above threshold; previous value below threshold)			x		
0x808A	Average RMS Voltage above Average RMS Under Voltage Threshold on Phase 1 (current value above threshold; previous value below threshold)				x	
0x808B	Average RMS Voltage above Average RMS Under Voltage Threshold on Phase 2 (current value above threshold; previous value below threshold)				x	
0x808C	Average RMS Voltage above Average RMS Under Voltage Threshold on Phase 3 (current value above threshold; previous value below threshold)				x	
0x808D	RMS Voltage above Extreme Over Voltage Threshold (voltage returns below for longer than the configurable period)			x		
0x808E	RMS Voltage above Extreme Over Voltage Threshold on Phase 1 (voltage returns below for longer than the configurable period)				x	
0x808F	RMS Voltage above Extreme Over Voltage Threshold on Phase 2 (voltage returns below for longer than the configurable period)				x	
0x8090	RMS Voltage above Extreme Over Voltage Threshold on Phase 3 (voltage returns below for longer than the configurable period)				x	
0x8091	RMS Voltage above Voltage Swell Threshold (voltage returns below for longer than the configurable period)			x		

Event / Alert Code	Alert Name	GSME	ESME (All)	ESME (excl multi- phase)	ESME (multi- phase only)	ESME (twin element only)
0x8092	RMS Voltage above Voltage Swell Threshold on Phase 1 (voltage returns below for longer than the configurable period)				x	
0x8093	RMS Voltage above Voltage Swell Threshold on Phase 2 (voltage returns below for longer than the configurable period)				x	
0x8094	RMS Voltage above Voltage Swell Threshold on Phase 3 (voltage returns below for longer than the configurable period)				x	
0x8095	RMS Voltage below Extreme Under Voltage Threshold (voltage returns above for longer than the configurable period)			x		
0x8096	RMS Voltage below Extreme Under Voltage Threshold on Phase 1 (voltage returns above for longer than the configurable period)				x	
0x8097	RMS Voltage below Extreme Under Voltage Threshold on Phase 2 (voltage returns above for longer than the configurable period)				x	
0x8098	RMS Voltage below Extreme Under Voltage Threshold on Phase 3 (voltage returns above for longer than the configurable period)				x	
0x8099	RMS Voltage below Voltage Sag Threshold (voltage returns above for longer than the configurable period)			x		
0x809A	RMS Voltage below Voltage Sag Threshold on Phase 1 (voltage returns above for longer than the configurable period)				x	
0x809B	RMS Voltage below Voltage Sag Threshold on Phase 2 (voltage returns above for longer than the configurable period)				x	
0x809C	RMS Voltage below Voltage Sag Threshold on Phase 3 (voltage returns above for longer than the configurable period)				x	
0x8010	Over Current			x		
0x8011	Over Current L1				x	
0x8016	Over Current L2				x	
0x8013	Over Current L3				x	
0x8014	Power Factor Threshold Below		x			
0x8015	Power Factor Threshold Ok		x			

Table 61 Non-critical Events / Alerts configurable by the Network Operator

Appendix 14 – Combined Supplier User Role

Where a DCC Service User notifies the DCC that it is using the same unique identifier (DCC Service User ID) for all three supplier roles (EIS, EES, GIS) then the DCC Data Systems shall record this single DCC Service User ID within the DCC database DCC_SERVICE_USER entity against a role identified as Combined Supplier (CS).

For the purposes of Role Based Access Control (RBAC), this Combined Supplier role will allow the DCC Service User to access any Service Request which is applicable to any one of the constituent supplier roles (EIS, EES or GIS) as defined in section 9.4.

So, for example, a DCC Service User identified as using the Combined Supplier Role will have access to, amongst others, all of the following Service requests:

- SR 4.6.1 Retrieve Import Daily Read Log (accessible to EIS and GIS)
- SR4.6.2 Retrieve Export Daily Read Log (accessible to EES)
- SR6.2.1 Read Device Configuration Voltage (accessible to EIS)
- SR6.2.8 Read Device Configuration Gas (accessible to GIS)

For avoidance of doubt, subsequent to any RBAC checks on Service Requests the DCC Data Systems will, where applicable as defined in section 7.4, carry out a check based on Registration data to confirm that the DCC Service User is a Registered Supplier for the Device being communicated with.

Appendix 15 – Firmware Distribution Tracking State Diagram

The diagram below illustrates the possible states for tracking of a Firmware Distribution to a device. Firmware Distribution Tracking is introduced in DUIS 5.0. See Table 3.1 in section 2.3.10 for state definitions.

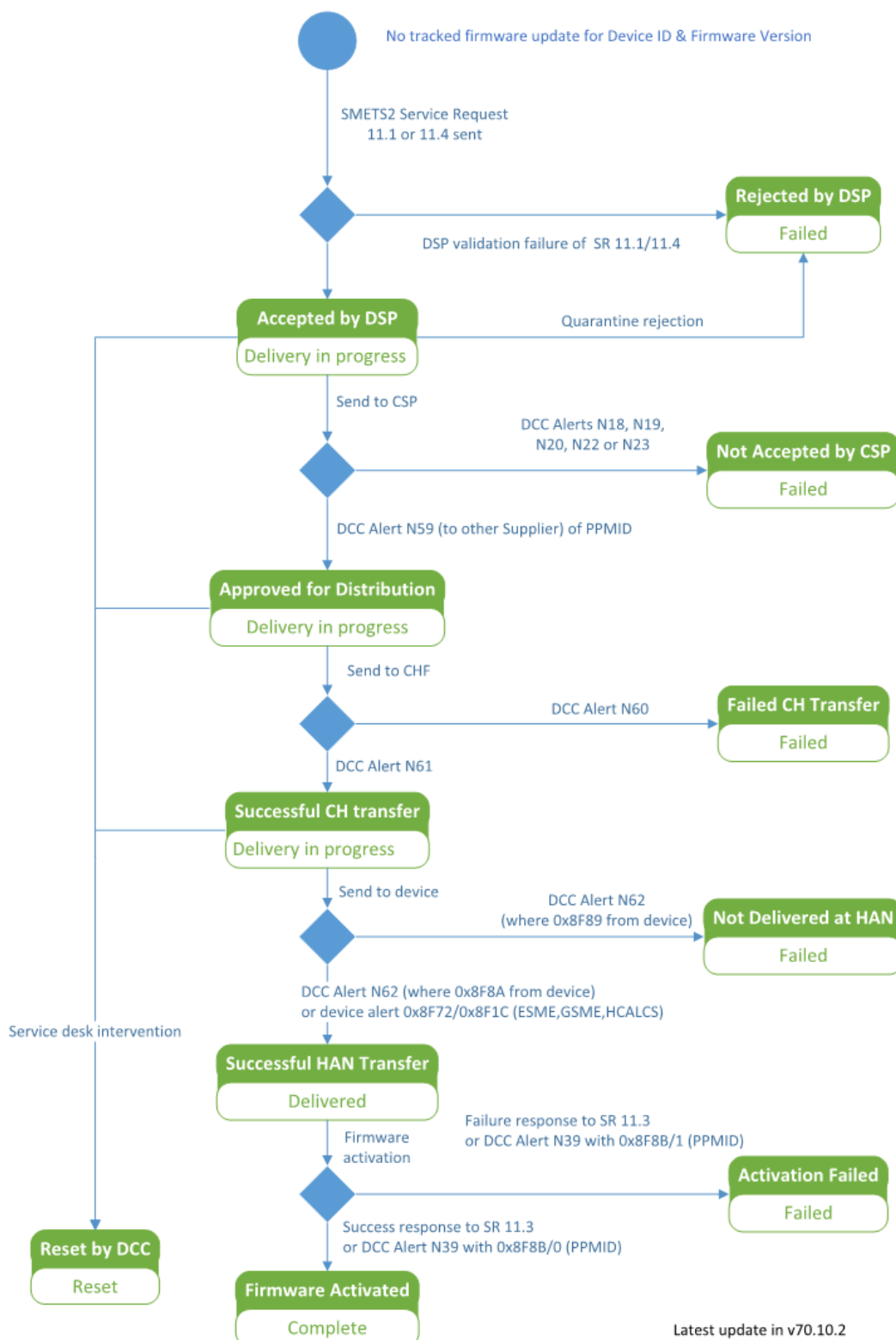


Figure 88 Firmware distribution tracking state diagram

Appendix 16 – Changes for the ECoS Service

The scope of the June 2022 release originally included changes made for the Enduring Change of Supplier (ECoS) service, including additional validation steps and new and updated DCC Alert definitions.

Due to replanning, the ECoS service was not part of the June 2022 release; however, it was decided that some of the new features would be made available as part of the June 2022 release, but others had to be postponed. Details of the impact of changes are described in a DUIS release guidance document which has been shared with the industry, and is embedded below for convenience.



Release Guidance
Notes -DUIS v5.1 - F

The ECoS service is implemented as part of the June 2023 SEC Release.

Appendix 17 – Permitted Activities with Suspended Devices

Where a Device Model / Firmware Version is marked as Removed on the Central Products List (CPL), meaning that it is no longer valid for use via DCC, many operations for affected Devices are restricted by DCC.

Where a Device has a Device Model / Firmware Version associated with the Removed CPL entry, DCC will change the Device Status to Suspended.

The following table provides guidance on restrictions on Service Users for Devices where the Device Status is Suspended.

There is also information in this document regarding Device Status Suspended in footnote 3 in section 7.4 Table 14, and in the Device lifecycle diagrams in Appendix 8.

	Device Status at point of Firmware CPL suspension	OTA Firmware update permitted?	Notes
1	Not yet pre-notified	No	Cannot be pre-notified. SRV 12.2 will fail the CPL check, and error code "E120203" will be returned to Service User
2	Pending (already pre-notified)	No	Cannot be whitelisted. SRV 8.11 will fail the status validation, and error code "E081105" will be returned to Service User
3	"InstalledNotCommissioned" but ACB certificates in the Device for SMETS2 Devices (SMETS1 equivalent: Supplier certificates not associated with the Device)	No	Cannot allocate Supplier certificates to the Device because SRV 6.21 will fail the E5 validation for a non-Critical command
4	"InstalledNotCommissioned" and supplier certificates in the Device for SMETS2 Devices (SMETS1 equivalent: Supplier certificates have been associated with the Device)	Yes	Will be able to commission with SRV 8.1.1, and then follow with SRV 11.1 and SRV 11.3 for OTA Firmware update
5	Commissioned	Yes	Will be able to issue SRV 11.1, SRV 11.3 for OTA and SRV 6.23 for Change of Supplier.

Table 62 Permitted Activities for Suspended Devices

Revision History

Revision Date	Summary of Changes	Version
22/11/2013	Initial Draft for Internal Review	0.1
29/11/2013	Draft for Review	0.2
18/12/2013	Draft for Review	0.3
23/12/2013	Draft for Review	0.4
07/01/2014	Published for Service User consultation	0.5
28/02/2014	Consultation response. DCC assured product.	0.6
27/06/2014	Interim updates to support GBCS proving and DCC design activities. DCC internal version.	0.7
12/09/2014	Updated to align to GBCS v0.8	0.8
03/10/2014	Updated to include changes to Service Requests 5.1 – 5.3 and addition of Service Requests 8.14.1 – 8.14.4	0.8 rev 1
10/12/2014	Updated to include corrections and clarifications to version 0.8	0.8 rev A
06/03/2015	Updated to align to GBCS v0.8.1	0.8.1
27/03/2015	Updated to align to DUIS v0.8.1	0.8.1a
29/05/2015	Updated to align to DUIS Consultation response	0.8.1b
28/08/2015	Updated to align to DUIS Consultation response	0.8.1c
11/11/2015	Updated to align to GBCS 0.8.1 plus IRPs in Appendix 9 GBCS IRPs in scope	0.8.2
26/02/2016	Aligned to DCC Release 1.3	0.8.2.1
30/06/2016	Aligned to DCC Release 1.3.1	0.8.2.2
01/02/2017	Aligned to GBCS v2.0 Draft 2	2.0
19/05/2017	Aligned to GBCS v2.0 Draft 5	2.0b
30/06/2017	Aligned to DUIS and MMC v2.0 draft 2	2.0c
09/03/2018	Aligned to DUIS v2.0d	2.0d
31/01/2019	Included information from DCC DUIS guidance documents, clarifications to include information for users of DUIS 1 as well as DUIS 2 in order to make an operational DUGIDS covering all live versions of DUIS, and some corrections to descriptions of behaviour	2.0e
26/01/2018	Updated to include SMETS1 support	3.0a
16/03/2018	Updated to align to updated DUIS 3.0 and related SEC documents	3.0b
18/12/2018	Updated to align to TMAD v0.2	3.0b
17/05/2019	Updated to align to “operational DUGIDS” principles including changes from v2.0e.	3.0c
16/08/2019	Updated for DUIS v3.1a	3.1a

April 2020	Updated for internal DUIS v3.1b baseline. Only this document and Annexes 11 and 16 have been uplifted to DUGIDS v3.1b, and the DUGIDS v3.1a versions remain valid for the rest of the DUGIDS document set, including the XML schemas.	3.1b
April 2020	Updated for DUIS v4.0, including support for Auxiliary Proportional Controllers.	4.0a
November 2020	Update regarding schema versions applicable to SMETS1 Response and Alerts. Clarifications in Annexes 4 and 8. Updated for publication as operational DUGIDS.	4.0b
May 2021	Updated for DUIS v5.0, including support for firmware distribution to SMETS2 PPMIDs and HCALCS	5.0a
November 2021	Inclusion of DUIS guidance items. Published as operational DUGIDS.	5.0
June 2022	Updated for June 2022 SEC release alignment, including DUIS 5.1. This version of DUGIDS documents changes for Enduring Change of Supplier (ECoS), but the implementation is subject to limitations as noted in Appendix 16 – Changes for the ECoS Service.	5.1a
November 2022	Update for November 22 SEC release alignment including MMC v5.1, GBCS v3.3 and GBCS v4.2, and guidance introduced based on items from the DCC Guidance Use of DUIS document.	5.1b
June 2023	June 2023 release changes include SEC modifications MP102, MP125 and MP220. This version corresponds to the full implementation of the ECoS programme, and includes further information about ECoS in addition to the information provided in advance in v5.1a. Guidance introduced based on items from the DCC Guidance Use of DUIS document.	5.2a

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions Introduction

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Version: 5.2a
Date: June 2023

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0 Introduction

0.1 Document Purpose

The purpose of the DCC User Gateway Interface Design Specification (DUGIDS) documentation is to define the DCC User Interface at a technical level to enable DCC Service Users to integrate their IT infrastructure with the DCC Data Systems. This M2M interface enables suitably authorised DCC Service Users to call Service Requests to interact with Devices and services within the DCC, and to receive responses to those requests as well as Device and DCC Alerts.

The purpose of the Annex document is to define the DCC User Gateway Interface Design Specification Service Request Definitions, i.e. the list of Services that together form the DCC User Gateway Services at a Logical Business Level.

0.2 Document Scope

The DCC User Gateway Interface Design Specification (DUGIDS) documentation consists of 4 separate document parts:

1. **Error! Reference source not found.** – describing how the interface works
2. Annex – describing the Service Request definitions in detail. Its structure is defined in section 0.3
3. DUIS XML Schema (**Error! Reference source not found.**) – describing the main DUIS interface XML definition (instructions on how to view the DUIS XML Schema are included in the Main Document of this documentation set Appendix 2)
4. MMC XML Schema – describing the MMC (Message Mapping Catalogue) XML definition (instructions on how to view the MMC XML Schema are included in the Main Document of this documentation set Appendix 3).

This document set details the interface provided to the DCC Service User to access the Service Requests.

The Annex should be read in conjunction with the Main Document **Error! Reference source not found.** of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (**Error! Reference source not found.** – document 3 of this documentation set).

The format of the Response Codes specific to a Service Request is: Exxyynn, where E indicates error, xxyy is the Service Reference (both xx and yy prefixed with 0 if less than 10) and nn is a sequential number. For example for Service Request 8.12 the first Response Code would be E081201 and for 12.1 it would be E120101.

Please note that the DUGIDS document set is dependent on the contents of the latest published GBCS document. The GBCS defines the data item content of commands and responses from Devices in line with the protocol definitions. This DUGIDS document is aligned with the contents of GBCS version v2.0 Draft 5 issued 4th May 2017.

For SMETS1 Devices additional information is provided in the SEC SMETS1 Supporting Requirements Document, including alternative definitions that replace GBCS definitions for SMETS1 Devices.

0.3 Annex Document Structure

The Annex documentation is structured as follows, with each of Sections 1 to 19¹ defined in separate documents and Section 0 and the Appendices covered in this document:

Section 0 **Introduction**, this section

Section 1 **Product Management Service (1 – PMS)**, describes the PMS Service Requests in detail

Section 2 **Prepay Service (2 – PS)**, describes the PS Service Requests in detail

Section 3 **Customer Management Service (3 – CMS)**, describes the CMS Service Requests in detail

Section 4 **Reading Service (4 – RS)**, describes the RS Service Requests in detail

Section 5 **Scheduling Service (5 – SS)**, describes the SS Service Requests in detail

Section 6 **Device Management Service (6 – DMS)**, describes the DMS Service Requests in detail

Section 7 **Supply Management Service (7 – SMS)**, describes the SMS Service Requests in detail

Section 8 **Device Estate Management Service (8 – DEMS)**, describes the DEMS Service Requests in detail

Section 9 **Customer Consent Service (9 – CCS)**, describes the CCS Service Requests in detail

Section 11 **Firmware Service (11 – FS)**, describes the FS Service Requests in detail

Section 12 **Pre Device Installation Service (12 – PDIS)**, describes the PDIS Service Requests in detail

Section 14 **Record Network Data Service (14 – RNDS)**, describes the RNDS Service Requests in detail

Section 15 **Device Alerts**, describes Device Alerts in detail

Section 16 **DCC Alerts**, describes DCC Alerts in detail

Section 17 **DUIS defined Data Types shared across Service Requests**, defines DUGIDS Data Types shared by more than one Service Request

¹ Please note that sections 10 and 13 don't exist

Section 18 **Parse Output**, describes the Parse Output format in detail

Section 19 **SMETS1 Device Response and Alert**, describes the SMETS1 Response and SMETS1 Alert in detail

Appendix 1 **Response XML Samples**, includes a sample of each generic XML response message type

Appendix 2 **Request XML Samples**, includes a sample of the Service Request and Signed Pre-command message types

Appendix 3 **Device Alert XML Samples**, includes a sample of the Device Alert message type

Appendix 4 **DCC Alert XML Samples**, includes a sample of the DCC Alert message type

Appendix 5 **SMETS1 Response Message**, includes a sample of the SMETS1 Response and the SMETS1 Alert message types

Appendix 6 **Glossary**, lists a Glossary of terms used in this document set

0.4 Referenced Documents

See DUGIDS main document section 1.4 for the list of referenced documents.

Appendices

Please note that the samples included in this document have not been updated to reflect the change in schemaVersion number.

Appendix 1 – XML Response Samples

1. Sample Acknowledgement Response Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I99</ResponseCode>
    <ResponseDateTime>2014-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>4.1</ServiceReference>
      <ServiceReferenceVariant>4.1.1</ServiceReferenceVariant>
    </ResponseMessage>
  </Body>
</Response>
```

Figure 1 Sample Acknowledgement Response Format

2. Sample Pre-command Response Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>2.1</ServiceReference>
      <ServiceReferenceVariant>2.1</ServiceReferenceVariant>
      <PreCommand>
        <GBCSVersion>1.0</GBCSVersion>
        <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
      </PreCommand>
    </ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmenc#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    <KeyInfo>
      <X509Data>
        <X509IssuerSerial>
          <X509IssuerName>CN=dcc transform,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
          <X509SerialNumber>7432112347</X509SerialNumber>
        </X509IssuerSerial>
      </X509Data>
    </KeyInfo>
  </Signature>
</Response>
```

Figure 2 Sample Pre-command Response Format

3. Sample Command for Local Delivery Response Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>3.3</ServiceReference>
      <ServiceReferenceVariant>3.3</ServiceReferenceVariant>
      <LocalCommand>
        <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
      </LocalCommand>
    </ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#">
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256">
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmenc#sha256">
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>5432112345</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Response>
```

Figure 3 Sample Command for Local Delivery Response Format

4. Sample Service Response (from Device) Format for KRP

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>99-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:50</RequestID>
    <ResponseID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-01-04T18:13:51.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>3.3</ServiceReference>
      <ServiceReferenceVariant>3.3</ServiceReferenceVariant>
      <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    </ResponseMessage>
  </Body>
</Response>
```

Figure 4 Sample Service Response (from Device) Format (KRP)

5. Sample Service Response (from Device) Format for URP if Response includes sensitive data

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>12-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:50</RequestID>
    <ResponseID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:230</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-01-04T18:13:51.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>4.8</ServiceReference>
      <ServiceReferenceVariant>4.8.1</ServiceReferenceVariant>
      <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    </ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>5432112345</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Response>
```

Figure 5 Sample Service Response (from Device) Format (URP – Response includes sensitive data)

6. Sample Service Response (from Device) Format URP if Response only includes non-sensitive data

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>12-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:50</RequestID>
    <ResponseID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:230</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-01-04T18:13:51.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>4.8</ServiceReference>
      <ServiceReferenceVariant>4.8.2</ServiceReferenceVariant>
      <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    </ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    <KeyInfo>
      <X509Data>
        <X509IssuerSerial>
          <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
          <X509SerialNumber>5432112345</X509SerialNumber>
        </X509IssuerSerial>
      </X509Data>
    </KeyInfo>
  </Signature>
</Response>
```

Figure 6 Sample Service Response (from Device) Format (URP – Response only includes non-sensitive data)

7. Sample Service Response (from Device) – FutureDatedDeviceAlertMessage Format for KRP

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>99-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:50</RequestID>
    <ResponseID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:456</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-08-04T18:13:51.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>2.1</ServiceReference>
      <ServiceReferenceVariant>2.1</ServiceReferenceVariant>
      <FutureDatedDeviceAlertMessage>
        <FutureDatedAlertCode>8F66</FutureDatedAlertCode>
        <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
        <InstructionNumber>2</InstructionNumber>
        <TotalCommandInstructions>9</TotalCommandInstructions>
      </FutureDatedDeviceAlertMessage>
    </ResponseMessage>
  </Body>
</Response>
```

Figure 7 Sample Service Response (from Device) – FutureDatedDeviceAlertMessage Format (KRP)

8. Sample Service Response (from Device) – FutureDatedDeviceAlertMessage Format for URP

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>99-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:50</RequestID>
    <ResponseID>11-22-33-44-55-66-77-88:98-77-A6-BB-CC-DD-EE-FF:456</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-08-04T18:13:51.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>6.23</ServiceReference>
      <ServiceReferenceVariant>6.23</ServiceReferenceVariant>
      <FutureDatedDeviceAlertMessage>
        <FutureDatedAlertCode>8F66</FutureDatedAlertCode>
        <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
        <InstructionNumber>1</InstructionNumber>
        <TotalCommandInstructions>1</TotalCommandInstructions>
      </FutureDatedDeviceAlertMessage>
    </ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>5432112345</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Response>
```

Figure 8 Sample Service Response (from Device) – FutureDatedDeviceAlertMessage Format (URP)

9. Sample Service Response (from DCC) - DCCOnly Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88:11-DB-33-44-55-66-77-88:100</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-01-31T13:55:07.00</ResponseDateTime>
  </Header>
  <Body>
    <ResponseMessage>
      <ServiceReference>12.1</ServiceReference>
      <ServiceReferenceVariant>12.1</ServiceReferenceVariant>
      <DSPWANMatrix>
        <Request>
          <PartialAddress>
            <PostCode>KT22 7LP</PostCode>
            <AddressIdentifier>17</AddressIdentifier>
          </PartialAddress>
        </Request>
        <CSPRegion>Central</CSPRegion>
        <CoverageAvailability>true</CoverageAvailability>
        <WANTechnology>Cellular</WANTechnology>
        <ConnectivityLikelihood>Medium</ConnectivityLikelihood>
      </DSPWANMatrix>
    </ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>5432112345</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Response>
```

Figure 9 Sample Service Response (from DCC) – DCC Only Format

Appendix 2 – XML Request Samples

1. Sample Service Request Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Request xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <CommandVariant>1</CommandVariant>
    <ServiceReference>6.20</ServiceReference>
    <ServiceReferenceVariant>6.20.1</ServiceReferenceVariant>
  </Header>
  <Body>
    <SetDeviceConfigurationImportMPxN>
      <ImportMPANs>
        <ImportMPAN>1234567890123</ImportMPAN>
      </ImportMPANs>
    </SetDeviceConfigurationImportMPxN>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmenc#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=user 1,OU=smart metering,O=company 1,L=glasgow,ST=scotland,C=uk</X509IssuerName>
        <X509SerialNumber>1262900676</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Request>
```

Figure 10 Sample Service Request Format

2. Sample Signed Pre-command Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Request xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <CommandVariant>5</CommandVariant>
    <ServiceReference>8.1</ServiceReference>
    <ServiceReferenceVariant>8.1.1</ServiceReferenceVariant>
  </Header>
  <Body>
    <SignedPreCommand>
      <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    </SignedPreCommand>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmenc#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=user 1,OU=smart metering,O=company 1,L=glasgow,ST=scotland,C=uk</X509IssuerName>
        <X509SerialNumber>1262900676</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Signature>
</Request>
```

Figure 11 Sample Signed Pre-command Format

Appendix 3 – XML Device Alert Sample

1. Sample Device Alert Format

The following sample shows a sample Device Alert which was not subject to throttling. See Annex 15 section 15.2.3 for a sample Device Alert where the Alert has been limited by throttling.

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <ResponseID>99-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:2000</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-05-04T12:15:55.00</ResponseDateTime>
  </Header>
  <Body>
    <DeviceAlertMessage>
      <AlertCode>8F01</AlertCode>
      <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    </DeviceAlertMessage>
  </Body>
</Response>
```

Figure 12 Sample Device Alert Format – Without Throttling

Appendix 4 – XML DCC Alert Sample

1. Sample DCC Alert Format

The following XML sample shows a sample DCC Alert which was not subject to throttling. See Annex 16 section 16.2.2 for a sample DCC Alert where the Alert has been limited by throttling.

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="1.0">
  <Header>
    <ResponseID>11-DB-33-44-55-66-77-88:11-22-33-44-55-66-77-88:1000</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2014-01-08T07:10:12.00</ResponseDateTime>
  </Header>
  <Body>
    <DCCAlertMessage>
      <DCCAlertCode>AD1</DCCAlertCode>
      <DCCAlert>
        <PowerOutageEvent>
          <CommsHubDeviceID>88-00-AA-BB-CC-DD-EE-FF</CommsHubDeviceID>
          <StartDateTime>2014-09-10T07:05:03.00</StartDateTime>
          <MPxN>311234567890</MPxN>
        </PowerOutageEvent>
      </DCCAlert>
    </DCCAlertMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  </Signature>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>5432112345</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Response>
```

Figure 13 Sample DCC Alert Format – Without Throttling

Appendix 5 – XML SMETS1 Response Message Samples

1. Sample SMETS1 Response Format

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
```

```
<RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
<ResponseID>99-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-88:1060</ResponseID>
<ResponseCode>I0</ResponseCode>
<ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
</Header>
<Body>
  <SMETS1ResponseMessage>
    <ServiceReference>4.1</ServiceReference>
    <ServiceReferenceVariant>4.1.1</ServiceReferenceVariant>
    <SMETS1SignedResponse schemaVersion="3.0">
      <SMETS1Response>
        <Header>
          <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
          <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
          <ra:OriginatorCounter>50</ra:OriginatorCounter>
          <ra:ServiceReference>4.1</ra:ServiceReference>
          <ra:ServiceReferenceVariant>4.1.1</ra:ServiceReferenceVariant>
        </Header>
        <Body>
          <ResponseMessage>
            <ra:SMETSData>
              <ra:ReadInstantaneousImportRegistersRsp MessageSuccess="true">
                <ra:Electricity>
                  <ra:ActiveImportRegister>
                    <ra:Value>10</ra:Value>
                    <ra:ActiveEnergyUnit>Wh</ra:ActiveEnergyUnit>
                  </ra:ActiveImportRegister>
                  <ra:ReactiveImportRegister>
                    <ra:Value>20</ra:Value>
                    <ra:ReactiveEnergyUnit>varh</ra:ReactiveEnergyUnit>
                  </ra:ReactiveImportRegister>
                </ra:Electricity>
              </ra:ReadInstantaneousImportRegistersRsp>
            </ra:SMETSData>
          </ResponseMessage>
        </Body>
      </SMETS1Response>
    <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
      <SignedInfo>
        <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
        <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
        <Reference URI="">
          <Transforms>
            <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
          </Transforms>
          <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
          <DigestValue>ZGVmYXVsdA==</DigestValue>
        </Reference>
      </SignedInfo>
      <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    <KeyInfo>
      <X509Data>
        <X509IssuerSerial>
          <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
          <X509SerialNumber>7432112348</X509SerialNumber>
        </X509IssuerSerial>
      </X509Data>
    </KeyInfo>
  </Signature>
</SMETS1SignedResponse>
</SMETS1ResponseMessage>
</Body>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
    <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
    <Reference URI="">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
      </Transforms>
```

```
<DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
<DigestValue>ZGVmYXVsdA==</DigestValue>
</Reference>
</SignedInfo>
<SignatureValue>ZGVmYXVsdA==</SignatureValue>
<KeyInfo>
  <X509Data>
    <X509IssuerSerial>
      <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
      <X509SerialNumber>7432112347</X509SerialNumber>
    </X509IssuerSerial>
  </X509Data>
</KeyInfo>
</Signature>
</Response>
```

Figure 14 Sample SMETS1 Response Format

2. Sample SMETS1 Alert Format

The following XML sample shows a sample SMETS1 Alert which was not subject to throttling. See Annex 15 section 15.2.3 for a sample SMETS1 Alert where the Alert has been limited by throttling.

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <ResponseID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</ResponseID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <SMETS1SignedResponse schemaVersion="3.0">
        <SMETS1Response>
          <Header>
            <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
            <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
            <ra:OriginatorCounter>50</ra:OriginatorCounter>
          </Header>
          <Body>
            <DeviceAlertMessage>
              <ra:DeviceAlertContent>
                <ra:GBCSHexAlertCode>A1</ra:GBCSHexAlertCode>
                <ra:AlertDescription>Hardware fault</ra:AlertDescription>
                <ra:Timestamp>2017-08-25T03:04:05.00</ra:Timestamp>
              </ra:DeviceAlertContent>
            </DeviceAlertMessage>
          </Body>
        </SMETS1Response>
      <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
        <SignedInfo>
          <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
          <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
          <Reference URI="">
            <Transforms>
              <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
            </Transforms>
            <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256" />
            <DigestValue>ZGVmYXVsdA==</DigestValue>
          </Reference>
        </SignedInfo>
        <SignatureValue>ZGVmYXVsdA==</SignatureValue>
      <KeyInfo>
        <X509Data>
          <X509IssuerSerial>
```

```

        <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>7432112348</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Signature>
</SMETS1SignedResponse>
</SMETS1ResponseMessage>
</Body>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#">
    <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256">
    <Reference URI="">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256">
      <DigestValue>ZGVmYXVsdA==</DigestValue>
    </Reference>
  </SignedInfo>
  <SignatureValue>ZGVmYXVsdA==</SignatureValue>
</KeyInfo>
<X509Data>
  <X509IssuerSerial>
    <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
    <X509SerialNumber>7432112347</X509SerialNumber>
  </X509IssuerSerial>
</X509Data>
</KeyInfo>
</Signature>
</Response>

```

Figure 15 Sample SMETS1 Alert Format – Without Throttling

Appendix 6 – Glossary

Acronym	Description
ACB	Access Control Broker
ALCS	Auxiliary Load Control Switch
APC	Auxiliary Proportional Controller
API	Application Programming Interface
BS	British Standard
CA	Certificate Authority
CAD	Consumer Access Device
CCS	Customer Consent Service
CESG	Communications Electronic Security Group, the UK Government's National Technical Authority for Information Assurance
CHECK	UK government IT Health Check Service
CHF	Communications Hub Function
CHTS	Communications Hub Technical Specifications

Acronym	Description
CIN	Customer Identification Number
CISO	Chief Information Security Officer
CMS	Customer Management Service
CoCo	Code of Connection
CoS	Change of Supplier
CoT	Change of Tenancy
CPL	Certified Products List
CR	Credit (Meter Payment Mode)
CREST	A not for profit organisation for the information security industry
CSP	Communications Services Provider
CSR	Certification Signing Request
CV	Command Variant
DCC	Data Communications Company
DCCKI	Data Communications Company Key Infrastructure
DECC	Department of Energy and Climate Change
DEMS	Device Estate Management Service
Device ID	Unique number by which an individual Device can be identified, as allocated to that Device in accordance with SMETS or CHTS (where applicable)
DMS	Device Management Service
DSP	Data Service Provider
DUGC	DCC User Gateway Catalogue
DUGIDS	DCC User Gateway Interface Design Spec (this document set)
DUIS	DCC User Interface Specification
DUIS Format	Format defined in this document set for DUIS, i.e. the XML format defined in the DUIS XML Schema XSD (document 3 of this documentation set)
ECB	European Central Bank
ECDH	Elliptic Curve Diffie Helman
ECDSA	Elliptic Curve Digital Signature Algorithm
EES	Electricity Export Supplier
EIS	Electricity Import Supplier
ENO	Electricity Network Operator
ENUM	ENUMeration
ESME	Electricity Smart Metering Equipment
FEEDA	Future Dated Execution Device Alert

Acronym	Description
FS	Firmware Service
GBCS	Great Britain Companion Specification
GBCS UC	Great Britain Companion Specification Use Case
GIS	Gas Import Supplier
GMAC	Galois Message Authentication Code
GNO	Gas Network Operator
GPF	Gas Proxy Function
GPG	CESG Good Practice Guide
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
HCALCS	HAN Connected Auxiliary Load Control Switch
HHT	Hand Held Terminal
HTTP	HyperText Transport Protocol
HMG	Her Majesty's Government
HTTPS	HyperText Transport Protocol Secure
ICT	Information & Communications Technology
ID	Identifier
IHD	In Home Display
IP	Internet Protocol
ISMS	Information Security Management System
ISO	International Organization for Standardization
IT	Information Technology
KRP	Known Remote Party. SMETS2 or later: Definition as per GBCS. In the context of a specific Device, a Remote Party whose Security Credentials are stored on that Device in at least one Trust Anchor Cell SMETS1: In relation to a SMETS1 Device, shall mean a Party for which the Relevant S1SP holds either a current Notified Critical Supplier ID or a current Notified Critical Network Operator ID for the SMETS1 Device in question.
MAC	Message Authentication Code
MMC	Message Mapping Catalogue
MMC Format	Format defined in this document set for MMC, i.e. the XML format defined in the MMC XML Schema XSD (document 4 of this documentation set)
MPAN	Meter Point Administration Number (Electricity)
MPRN	Meter Point Reference Number (Gas)
M2M	Machine To Machine

Acronym	Description
N/A	Not Applicable
OU	Other User
PEP	<p>Policy Enforcement Point</p> <p>Means, a logical entity that enforces policies for admission control and policy decisions in response to a request for access. It is the logical boundary between the DCC Data Systems and connecting systems, namely Service User Systems and RDP Systems. The PEP ensures that:</p> <p>(a) the policies in the applicable Code of Connection relevant to the applicable Party are being enforced;</p> <p>(b) there is appropriate separation of the DCC Data Systems from the connecting systems of the applicable Party; and</p> <p>(c) all the connections to the Service User Systems, RDP Systems, or DCC Data Systems are compliant with the same applicable Code of Connection.</p>
PKCS	Public Key Cryptography Standards
PKR	Public Key Repository
PMS	Product Management Service
PP	PrePayment (Meter Payment Mode)
PPMID	PrePayment Interface Device
PS	Prepay Service
PTUT	Prepayment Top Up Token
RDP	Registration Data Provider
RNDS	Record Network Data Service
RS	Reading Service
S1SP	SMETS1 Service Provider; SMETS1 equivalent of CSP
SAPC	Standalone Auxiliary Proportional Controller, a Device conforming to SMETS2 section 9 (SMETS2 v5.0 or later). SAPC Devices are implemented as Device Type ESME on the CPL and in DCC Data Systems,
SEC	Smart Energy Code
SECCo	Company established to facilitate the operation of the SEC
SLA	Service Level Agreement
SMETS1	Smart Metering Equipment Technical Specifications first version
SMETS2	Smart Metering Equipment Technical Specifications second version
SMKI	Smart Meter Key Infrastructure
SMS	Smart Metering Systems

Acronym	Description
SMS	Supply Management Service
SM WAN	Smart Meter Wide Area Network
SNA	Supplier Nominated Agent
SOAP	Simple Object Access Protocol
SS	Scheduling Service
SU	Service User
TBC	To Be Completed
TLS	Transport Layer Security
TOU	Time Of Use
UC	Use Case
UKAS	United Kingdom Accreditation Service
UPRN	Unique Property Reference Number
URL	Uniform Resource Locator
URP	Unknown Remote Party. SMETS2 or later: Definition as per GBCS. In the context of a specific Device, a Remote Party whose Security Credentials are not stored on that Device SMETS1: In relation to a SMETS1 Device, shall mean a Party for which the Relevant S1SP does not hold either a current Notified Critical Supplier ID or a current Notified Critical Network Operator ID for the SMETS1 Device in question.
UTC	Coordinated Universal Time
UTRN	Unique Transaction Reference Number
VPLS	Virtual Private LAN Service
VPN	Virtual Private Network
WAN	Wide Area Network
WIP	Work In Progress
XML	eXtensible Markup Language
XSD	XML Schema Definition

Table 1 Definitions

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

1 – Product Management Service

Author: DCC
Version: 5.2a
Date: June 2023

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1 Product Management Service (1 – PMS)

This section sets out the full content of the DCC Product Management Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	ProductManagement	Service Id	1
Service Objective	<p>To allow a DCC Service User to manage the mode of operation, price or tariff at a specified meter id, such that the meter can update its configuration and confirm that the request has either completed or the reason for its failure.</p> <p>The Product Management service provides DCC Service Users with the ability to effect the terms of their contractual relationship with a consumer at a meter point by requesting that the device be set to operate a particular tariff, price, mode or debt configuration.</p>		
Business Context Statement	<p>The DCC Service User agrees to supply energy to a consumer at a defined cost and mode of payment (including any debt). Once agreement has been reached the DCC Service User initiates a Product Management service request to configure the meter according to the agreement with the consumer.</p> <p>This service may be initiated by a variety of events, such as:</p> <ul style="list-style-type: none"> • Change of Tenancy • Change of Supplier • New product offerings • Customer initiated • Supplier price changes 		
User Roles	<p>The following user roles have access to the list of service requests which make up the Product Management Service:</p> <ul style="list-style-type: none"> • Electricity Import Suppliers (EIS) • Gas Import Suppliers (GIS) 		

Table 1 Overview of Product Management Service

The mapping between the Product Management Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
1.1	1.1.1	Update Import Tariff (Primary Element)	ESME GSME
1.1	1.1.2	Update Import Tariff (Secondary Element)	ESME (Twin Element)
1.2	1.2.1	Update Price (Primary Element)	ESME GSME
1.2	1.2.2	Update Price (Secondary Element)	ESME (Twin Element)
1.5	1.5	Update Meter Balance	ESME GSME
1.6	1.6	Update Payment Mode	ESME GSME
1.7	1.7	Reset Tariff Block Counter Matrix	ESME

Table 2 PMS - Service Requests / Devices

For each of the PMS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.1 Update Import Tariff (1.1)

SMETS2 or later

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID. Therefore the 1.1 Service Request has been broken into two parts: 1.1.1 (Primary Element) and 1.1.2 (Secondary Element).

SMETS1

This Service Request maps to Service Reference Variant 1.1.1 (Primary Element).

1.1.1 Update Import Tariff (Primary Element) (1.1.1)

Service Request Name	UpdateImportTariff
Service Reference	1.1
Service Request Variant Name	UpdateImportTariff(PrimaryElement)
Service Reference Variant	1.1.1
Service Request Objective	To enable a DCC Service User to send a new tariff structure to a ESME/GSME for a specified meter id, such that the meter can update its configuration and confirm that the operation has either completed or the reason for its failure.
Business Context Statement	<p>The DCC Service User requires a new or updated tariff to be applied to a specified device. The assumption is that there are unlikely to be scenarios where a tariff structure would change without an associated change in prices so this service request includes both tariff structure and price data items (also included in 1.2 – see section 1.2). This service request would be initiated in the following scenarios:</p> <ul style="list-style-type: none"> new customer (CoT) new supplier (CoS) customer requests move to new tariff with same supplier customer offer (tariff period) expired and Standard tariff now appropriate customer changes mode (CR to PP/PP to CR) and new tariff required

User Role Access	<ul style="list-style-type: none">Electricity Import Supplier (EIS)Gas Import Supplier (GIS)
Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>

Service Request Narrative
(SMETS2 or later)

1. This Service Request is used for creating a new tariff on the Smart Meter where the initial condition of the tariff is unknown or for updating existing tariffs over time on a specified ESME/GSME
2. This Service Request also sets the initial price associated with the specified Tariff so Service Request 1.2.1 is not required to be sent in addition to this Service Request for the initial Tariff Setting. Service Request 1.2.1 is only applicable for any subsequent updates to the Tariff price. See section 1.2.1
3. For Electricity, when a Service User has defined either a Time Of Use tariff structure or a Block tariff structure, the DCC Data Systems shall populate any unused prices ("TOUPrice" or "BlockPrice" Data Item) in the Command with a value of zero GBP/EUROs per kWh up to the expected maximum of eighty prices that the Electricity Smart Meter requires within the Command, applicable to either a TOU rate or for each block as appropriate. This relates to DCC System processing when creating the GBCS Command as part of the Transform.
4. For Gas, when a Service User has defined either a Time Of Use tariff structure or a Block tariff structure, the DCC Data Systems shall populate any unused prices ("TOUPrice" or "BlockPrice" Data Item) in the Command with a value of zero 1000th pence/cent per kWh up to the expected maximum of four prices that the Gas Smart Meter requires within the Command, applicable to either a TOU rate or for each block as appropriate. This relates to DCC System processing when creating the GBCS Command as part of the Transform.
5. This Service Request updates the tariff and price on the Primary Element of an Electricity Smart Meter or on a Gas Smart Meter. A separate Service Request 1.1.2 is used to update the Secondary Element on an Electricity Smart Meter. See section 1.1.2
6. This Service Request updates the following data items as specified in SMETS,
 - a. *Standing Charge*
 - b. *Tariff Block Price Matrix*
 - c. *Tariff Block Price Matrix TOU*
 - d. *Tariff Switching Table*
 - e. *Tariff Threshold Matrix*
 - f. *Tariff Threshold Matrix Blocks*
 - g. *Tariff TOU Price Matrix*
7. The SeasonStartDate is active from midnight (00:00) UTC.
8. Guidance note: When setting a tariff on an ESME, the Import Supplier should define each DayProfile such that the first ProfileSchedule has a StartTime of midnight (00:00:00.00) to ensure that consumption is recorded on the expected Tariff

	<p>Register. If a DayProfile starts at a time other than midnight, the Service Request will be transformed successfully and may be processed successfully by an ESME. However, unexpected results may arise when later reading consumption registers as an ESME may not have processed the period between midnight and the StartTime of the first ProfileSchedule as expected.</p> <p>9. Guidance note regarding block thresholds. A set of BlockThreshold values may contain up to 3 different threshold elements. Users are not obliged to populate all 3 possible elements, but there are some consequences of leaving them unpopulated.</p> <ol style="list-style-type: none"> ESME: Where a User does not provide a BlockThreshold value, the DCC will NOT populate the associated block threshold value in the GBCS command. However, if the block tariff is selected without a block threshold defined, or the block threshold does not align with the block price, the meter behaviour may not be as expected. GSME: Where a User does not provide a BlockThreshold value the DCC will populate the associated GBCS Command with a value of 2⁴⁸-1 (281474976710655) to ensure that all 3 BlockThreshold values are set in the associated Command. Please note some meters may reject multiple block thresholds of 2⁴⁸-1 (281474976710655). 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0019	0x006B
GBCS Use Case	ECS01a	GCS01a
GBCS Use Case Name	Set Tariff and Price on ESME	Set Tariff and Price on GSME
SMETS1 Applicability	Yes	Yes

<p>Service Request Narrative (SMETS1)</p>	<ol style="list-style-type: none"> 1. The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: 2. Prices may be set for Block tariffs or Time of Use tariffs but not both. 3. Population of unused prices in the tariff, i.e. those not specified in the Service Request by the Service User, shall be to the relevant maximum number for SMETS1 Devices, rather than eighty prices as for SMETS2 Devices. 4. SMETS1 Smart Meters are not required to support Currency Units as a Configuration Data Item, therefore the S1SP shall discard any value in the CurrencyUnits fields when setting values on the Smart Meter. This discarding of values shall not result in an error in the SMETS1 Response. 5. For a SMETS1 GSME, processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing a value for the Total Consumption Register (with its SMETS1 meaning), 6. For SMETS1 ESME, processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing values for the Total Active Import Register (with its SMETS1 meaning) or the Tariff TOU Block Register Matrix. 7. Guidance regarding block thresholds differs from SMETS2. <ol style="list-style-type: none"> a. For the Elster ESME only, the meter will reject a command if any block threshold is not set to 0 when configuring a TOU tariff. For these device models, where a TOU tariff is being used the S1SP will set any block threshold value corresponding to an unpopulated BlockThreshold element in the request to 0. Where a block tariff is being used the S1SP will set any block threshold value corresponding to an unpopulated BlockThreshold element to the maximum value. b. For other meter device models, the DCC will not set unpopulated block threshold values.
---	--

Table 3 Update Import Tariff Service Request (Primary Element)

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.1.1.1 Service Request

1.1.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. The UpdateImportTariff PrimaryElement XML element defines this Service Request and contains all the Data Items to set the tariff and price on the Device and, for Future Dated Requests, the Execution Date and Time.

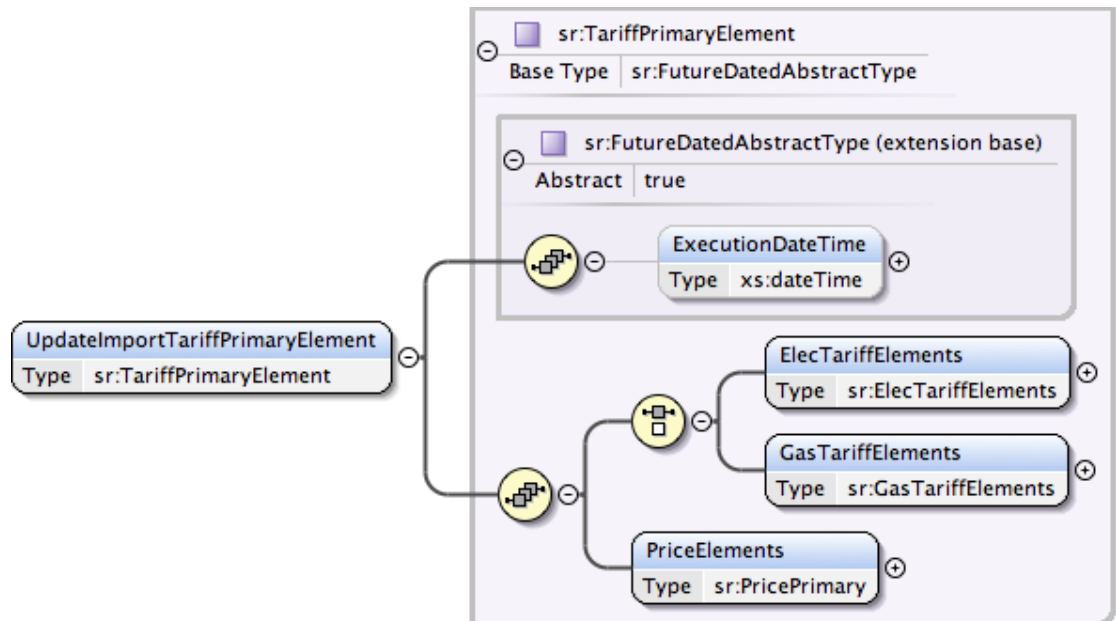


Figure 1 UpdateImportTariffPrimaryElement

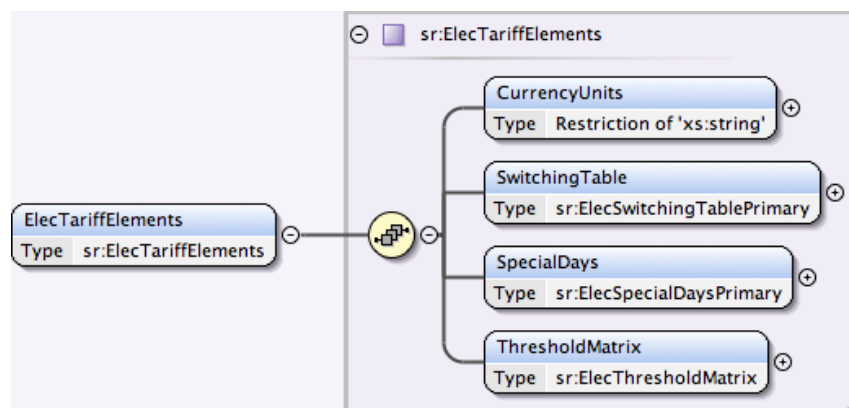


Figure 2 ElecTariffElements

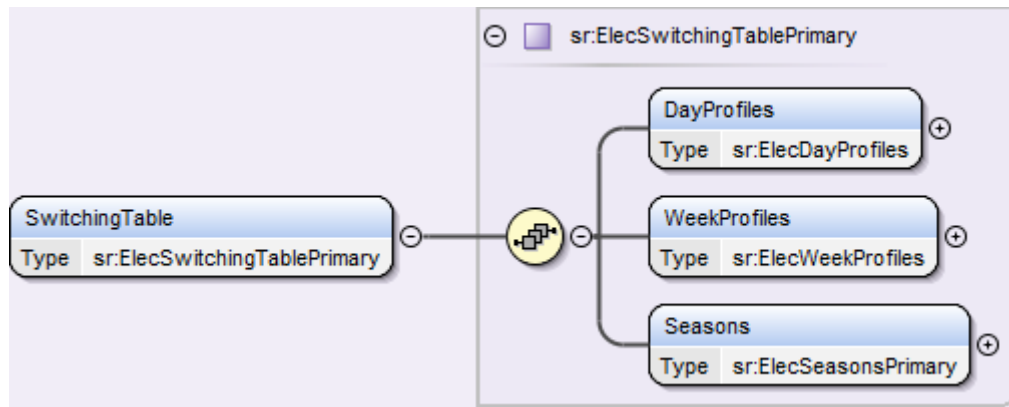


Figure 3 SwitchingTable for Electricity

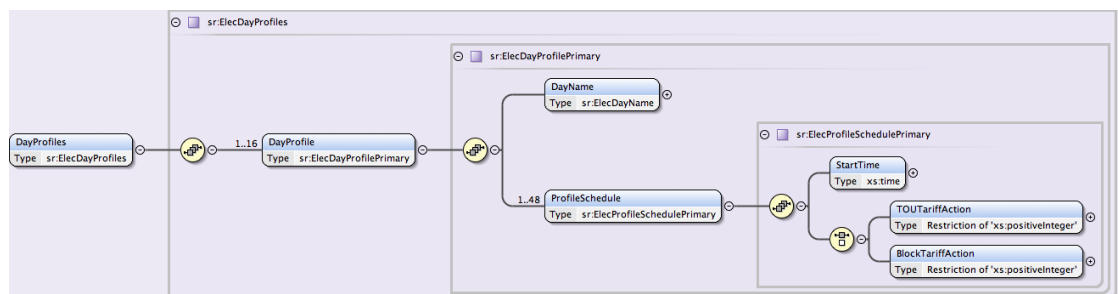


Figure 4 DayProfiles for Electricity

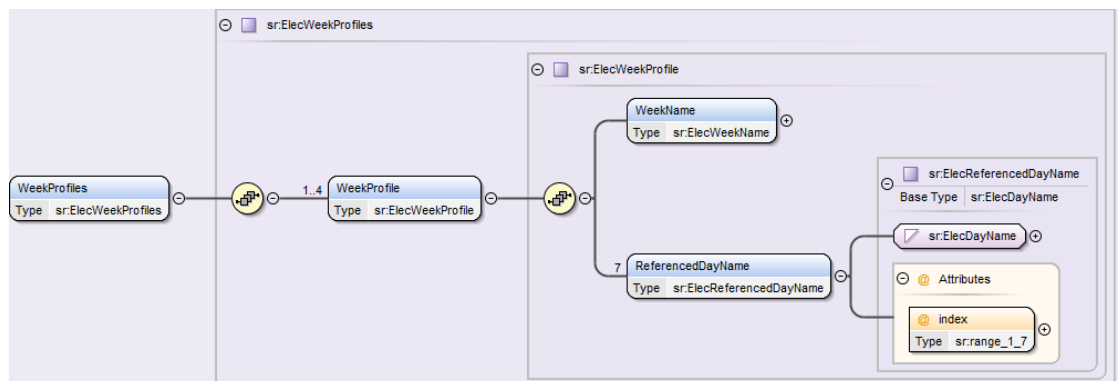


Figure 5 WeekProfiles for Electricity

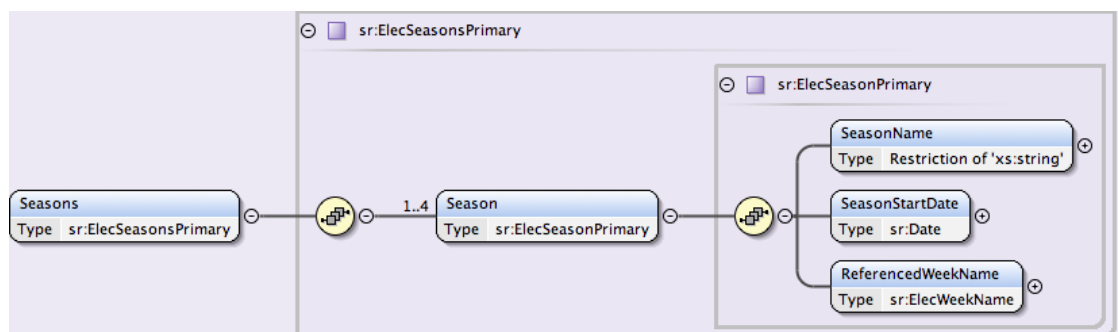


Figure 6 Seasons for Electricity

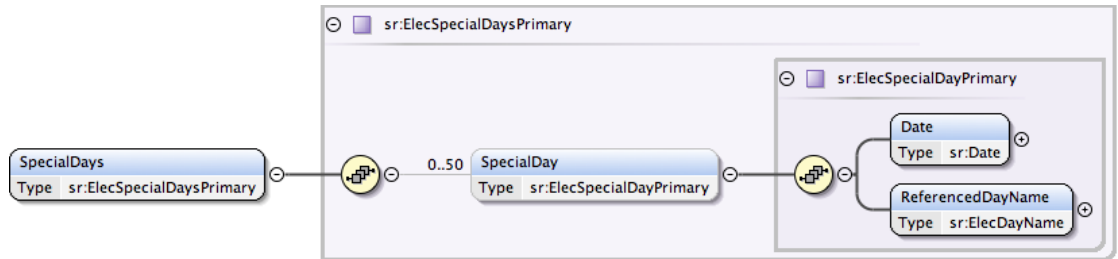


Figure 7 SpecialDays for Electricity

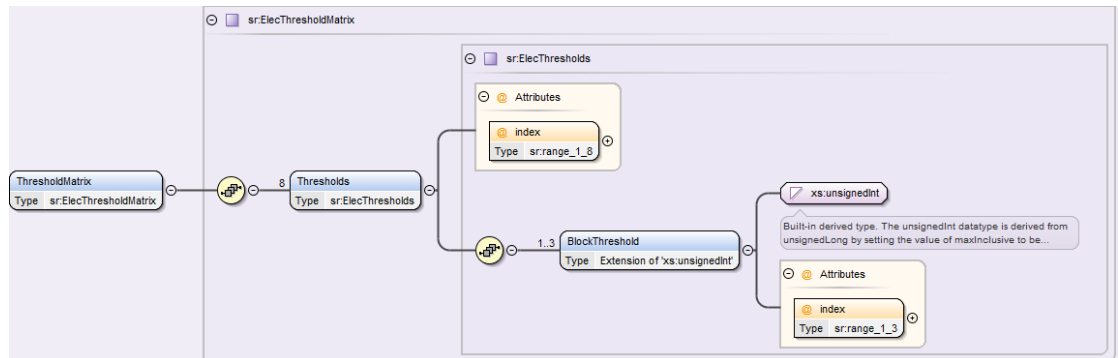


Figure 8 ThresholdMatrix for Electricity

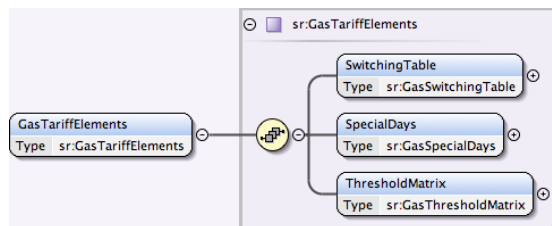


Figure 9 GasTariffElements

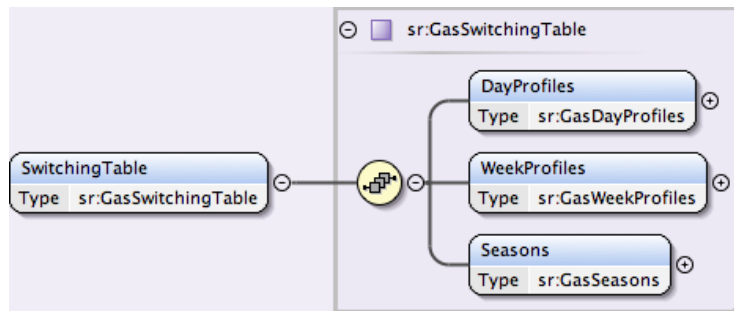


Figure 10 SwitchingTable for Gas

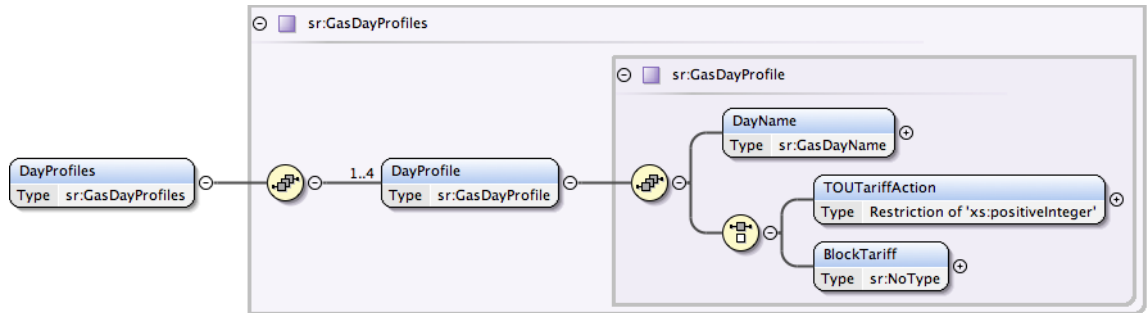


Figure 11 DayProfiles for Gas

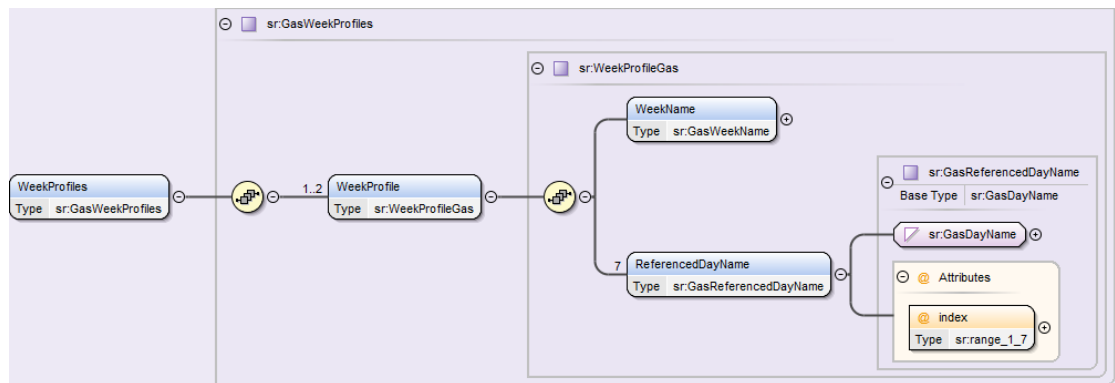


Figure 12 WeekProfiles for Gas

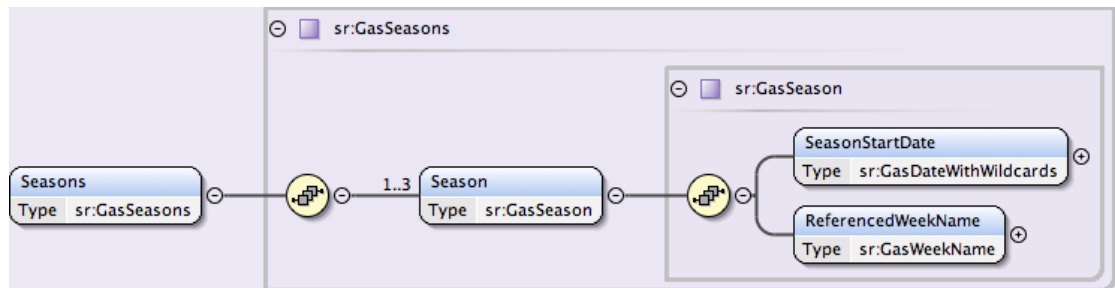


Figure 13 Seasons for Gas

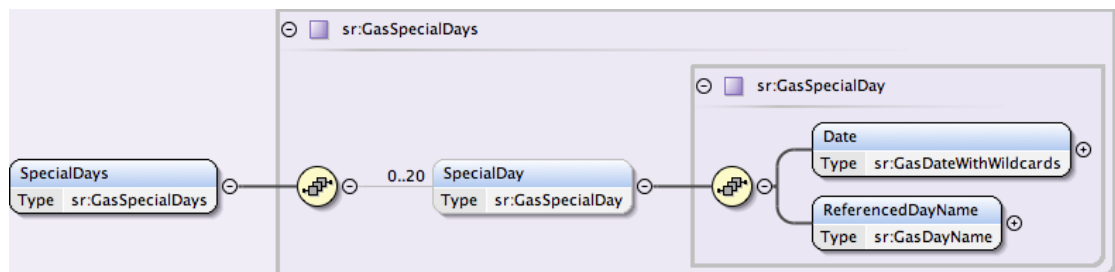


Figure 14 SpecialDays for Gas

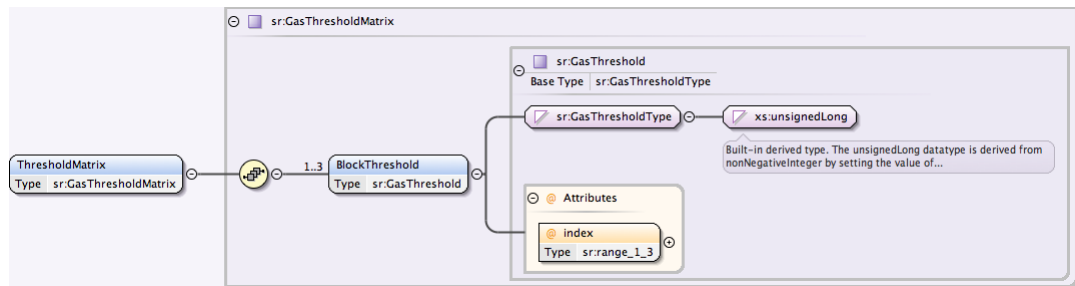


Figure 15 ThresholdMatrix for Gas

1.1.1.1.2 UpdateImportTariffPrimaryElement Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ElecTariffElements	<ul style="list-style-type: none"> Electricity Smart Meter specific tariff elements 	sr:ElecTariffElements (see section 1.1.1.1.3)	Electricity Smart Meter: Yes Gas Smart Meter: N/A	None	N/A	Non-Sensitive
GasTariffElements	Gas Smart Meter specific tariff elements	sr:GasTariffElements (see section 1.1.1.1.16)	Electricity Smart Meter: N/A Gas Smart Meter: Yes	None	N/A	Non-Sensitive
PriceElements	All the Data Items required to update the price on the Device are defined in Service Request 1.2.1 Update Price (Primary Element)	sr:PricePrimary (see section 1.2.1.1.3)	Yes	None	N/A	Non-Sensitive

Table 4 Update Import Tariff (Primary Element) Service Request Data Items

1.1.1.1.3 ElectricityTariffElements Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CurrencyUnits	The Currency Units currently used by a Smart Meter for display purposes, which shall be GB Pounds Valid set: <ul style="list-style-type: none"> GBP. GB Pounds ECB. European Central Bank Euros SMETS1: This element cannot be used by SMETS1 Devices but must be supplied since it is mandatory in the Service Request.	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
SwitchingTable	A calendar defining UTC times, days and dates for switching the Primary Element tariff The Switching Table shall support up to 200 switching rules across all Day Profiles	sr:ElecSwitchingTablePrimary (see section 1.1.1.1.4)	Yes	None	N/A	Non-Sensitive
SpecialDays	A calendar defining special dates for switching the Primary Element tariff	sr:ElecSpecialDaysPrimary (see section 1.1.1.1.12)	Yes ¹	None	N/A	Non-Sensitive
ThresholdMatrix	A 8 (threshold definitions) x 3 (block thresholds) matrix capable of holding thresholds for controlling Block Tariffs.	sr:ElecThresholdMatrix (see section 1.1.1.1.14)	Yes	None	N/A	Non-Sensitive

Table 5 Update Import Tariff (Primary Element) Service Request - ElectricityTariffElements Data Items

¹ If there are no Special Days, this XML element will be present, but empty, i.e. it will contain 0 SpecialDay elements

1.1.1.1.4 SwitchingTable Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfiles	Containing up to 16 DayProfile elements	sr:ElecDayProfiles (see section 1.1.1.1.5)	Yes	None	N/A	Non-Sensitive
WeekProfiles	Containing up to 4 WeekProfile elements	sr:ElecWeekProfiles (see section 1.1.1.1.8)	Yes	None	N/A	Non-Sensitive
Seasons	Containing up to 4 Season elements	sr:ElecSeasonsPrimary (see section 1.1.1.1.10)	Yes	None	N/A	Non-Sensitive

Table 6 Update Import Tariff (Primary Element) Service Request - SwitchingTable Data Items

1.1.1.1.5 DayProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfile	A profile definition for a single day	sr:ElecDayProfilePrimary (see section 1.1.1.1.6)	Yes	None	N/A	Non-Sensitive

Table 7 Update Import Tariff (Primary Element) Service Request - DayProfiles Data Items

1.1.1.1.6 DayProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayName	An identifier for that day that has a number of ProfileSchedule elements associated with it. Note that this is referenced from the WeekProfile element The DayName value must begin at 1 and increment by 1 for each subsequent DayName.	sr:ElecDayName (Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 16))	Yes	None	N/A	Non-Sensitive
ProfileSchedule	Array of Actions and Start Times when a Block or TOU action that is executed at that time. For TOU the action indicates the TOU register that consumption is recorded against. For Block the action indicates which one of the 8 threshold definitions is used. Note that it is not necessary to define which block consumption would be recorded against as the device will calculate this based on consumption. A profile schedule can have either a Block or a TOU action.	sr:ElecProfileSchedule Primary (see section 1.1.1.1.7)	Yes ¹	None	N/A	Non-Sensitive

Table 8 Update Import Tariff Service (Primary Element) Request - DayProfile Data Items

¹ Minimum 1 and maximum 48

1.1.1.1.7 ProfileSchedule Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartTime	The time at which the action is to execute	xs:time	Yes	None	N/A	Non-Sensitive
TOUTariffAction	Identifier (n) of the Action to be executed for a TOU tariff Valid set: Value between 1 and 48	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 48)	TOU Tariff to be applied: Yes Otherwise: N/A	None	N/A	Non-Sensitive
BlockTariffAction	Identifier (n) of the Action to be executed for a Block tariff Valid set: Value between 1 and 8	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 8)	Block Tariff to be applied: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 9 Update Import Tariff (Primary Element) Service Request - ProfileSchedule Data Items

1.1.1.1.8 WeekProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekProfile	A profile definition for a single week	sr:ElecWeekProfile (see section 1.1.1.1.9)	Yes	None	N/A	Non-Sensitive

Table 10 Update Import Tariff (Primary Element) Service Request - WeekProfiles Data Items

1.1.1.1.9 WeekProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekName	An identifier for the week. The WeekName value must begin at 1 and increment by 1 for each subsequent WeekName.	sr:ElecWeekName (Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 4))	Yes	None	N/A	Non-Sensitive
ReferencedDayName	DayName as defined in 1.1.1.1.6	ElecReferencedDayName as defined in 1.1.1.1.6	Yes ¹	None	N/A	Non-Sensitive
Index (Attribute of ReferencedDayName)	Provides an ordering for the ReferencedDayName elements. Monday = 1 Sunday = 7	sr:range_1_7 (xs:positiveInteger from 1 to 7)	Yes	None	N/A	N/A

Table 11 Update Import Tariff (Primary Element) Service Request - WeekProfile Data Items

¹ Minimum 7 and maximum 7

1.1.1.1.10 Seasons Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Season	A single season definition	sr:ElecSeasonPrimary (see section 1.1.1.1.11) minOccurs = 1 maxOccurs = 4	Yes	None	N/A	Non-Sensitive

Table 12 Update Import Tariff (Primary Element) Service Request - Seasons Data Items

1.1.1.1.11 Season Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SeasonName	An identifier for the season.	Restriction of xs:string (maxLength = 8)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SeasonStartDate	The date from which this season is defined to start	sr:Date (with wildcards) (See annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedWeekName	Week name as defined in 1.1.1.1.9	ElecWeekName as defined in 1.1.1.1.9	Yes	None	N/A	Non-Sensitive

Table 13 Update Import Tariff (Primary Element) Service Request - Season Data Items

1.1.1.1.12 SpecialDays Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDay	A collection of between 0 and 50 Special Day elements	sr:ElecSpecialDayPrimary (see section 1.1.1.1.13)	No	None	N/A	Non-Sensitive

Table 14 Update Import Tariff (Primary Element) Service Request – SpecialDays Data Items

1.1.1.1.13 SpecialDay Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Date	The date on which the special day applies	sr:Date (with wildcards) (see Annex Section 17)	Yes	None	N/A	Non-Sensitive
ReferencedDayName	ElecDayName as defined in 1.1.1.1.6	ElecDayName as defined in 1.1.1.1.6	Yes	None	N/A	Non-Sensitive

Table 15 Update Import Tariff (Primary Element) Service Request - SpecialDay Data Items

1.1.1.1.14 ThresholdMatrix Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ThresholdMatrix	A collection of 8 threshold matrix definitions Note that the attribute index provides an ordering for these elements.	sr:ElecThresholdMatrix (see section 1.1.1.1.15)	Yes ¹	None	N/A	Non-Sensitive
Index (Attribute of Thresholds)	Provides an ordering for the Thresholds elements.	sr:range_1_8 (xs:positiveInteger from 1 to 8)	Yes	None	N/A	N/A

Table 16 Update Tariff (Primary Element) Service Request - ThresholdMatrix Data Items

¹ Minimum 8 and Maximum 8

1.1.1.1.15 Thresholds Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockThreshold	Up to 3 threshold values defined within this collection, each value defines the threshold between blocks.	xs:unsignedInt	Yes ¹	None	Wh	Non-Sensitive
Index (Attribute of BlockThreshold)	Provides an ordering for the BlockThreshold elements.	sr:range_1_3 (xs:positiveInteger from 1 to 3)	Yes	None	N/A	N/A

Table 17 Update Tariff (Primary Element) Service Request - Thresholds Data Items

¹ Minimum 1 and Maximum 3

1.1.1.1.16 GasTariffElements Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchingTable	A calendar defining UTC times, days and dates for switching the tariff	sr: GasSwitchingTable (see section 1.1.1.1.18)	Yes	None	N/A	Non-Sensitive
SpecialDays	A calendar defining special dates for switching the Primary Element tariff	sr:GasSpecialDays (see section 1.1.1.1.25)	Yes ¹	None	N/A	Non-Sensitive
ThresholdMatrix	Up to 3 threshold values defined within this collection, each value defines the threshold between blocks	sr:GasThresholdMatrix (see section 1.1.1.1.17)	Yes	None	N/A	Non-Sensitive

Table 18 Update Import Tariff (Primary Element) Service Request - GasTariffElements Data Items

¹ If there are no Special Days, this XML element will be present, but empty, i.e. it will contain 0 SpecialDay elements

1.1.1.1.17 BlockThreshold Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockThreshold	Threshold between one block and the next. Up to 3 can be defined to match the corresponding prices.	sr:GasThresholdType minOccurs = 1 maxOccurs = 3 (xs:unsignedLong , maxInclusive = 281,474,976,710,655)	Yes	None	Wh	Non-Sensitive
Index (Attribute of BlockThreshold)	Provides an ordering for the BlockThreshold elements.	sr:range_1_3 (xs:positiveInteger from 1 to 3)	Yes	None	N/A	N/A

Table 19 Update Import Tariff (Primary Element) Service Request - BlockThreshold Data Items

1.1.1.1.18 GasSwitchingTable Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfiles	Array of up to 4 DayProfiles defining a DayName identifiers and a list of 4 actions and start times to switch tariff	sr:GasDayProfiles (see section 1.1.1.1.19)	Yes	None	N/A	Non-Sensitive
WeekProfiles	Array of up to 2 elements, each including a WeekName and the Day identifiers to be associated with a day of each day (Monday to Sunday)	sr:GasWeekProfiles (see section 1.1.1.1.21)	Yes	None	N/A	Non-Sensitive
Seasons	Array of 3 elements, each including a Season ID, a Season Start Date and the Week ID associated to that Season ID	sr:GasSeasons (see section 1.1.1.1.23)	Yes	None	N/A	Non-Sensitive

Table 20 Update Import Tariff (Primary Element) Service Request - GasSwitchingTable Data Items

1.1.1.1.19 DayProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfile	A profile definition for a single day	sr:GasDayProfile (see section 1.1.1.1.20) minOccurs = 1 maxOccurs = 4	Yes	None	N/A	Non-Sensitive

Table 21 Update Import Tariff (Primary Element) Service Request – DayProfiles Data Items

1.1.1.1.20 DayProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayName	An identifier for that day that has a number of ProfileSchedule elements associated with it. Note that this is referenced from the WeekProfile element The DayName value must begin at 1 and increment by 1 for each subsequent DayName.	sr:GasDayName (Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 4))	Yes	None	N/A	Non-Sensitive
TOUTariffAction	Identifier (n) of the entry in the Gas TOU Tariff Price Matrix [n] (n between 1 and 4) Valid set: Value between 1 and 4 Note that all TOU rates run from midnight, it is not possible to modify the start time.	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 4)	TOU Tariff to be applied: Yes Otherwise: N/A	None	N/A	Non-Sensitive
BlockTariff	Indicates that the block tariff is active on this day. Note that Gas devices do not support a mixture of TOU and Block tariffs. When defining a block tariff all week profiles need to point to a day profile that is set with a Profile Schedule of BlockTariff.	sr:NoType	Block Tariff to be applied: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 22 Update Import Tariff Service (Primary Element) Request - DayProfile Data Items

1.1.1.1.21 WeekProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekProfile	A profile definition for a single week	sr:WeekProfileGas (see section 1.1.1.1.22) minOccurs = 1 maxOccurs = 2	Yes	None	N/A	Non-Sensitive

Table 23 Update Import Tariff (Primary Element) Service Request – WeekProfiles Data Items

1.1.1.1.22 WeekProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekName	An identifier for the week. The WeekName value must begin at 1 and increment by 1 for each subsequent WeekName.	sr:GasWeekName (Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 2))	Yes	None	N/A	Non-Sensitive
ReferencedDayName	DayName as defined in 1.1.1.1.20 Note that the attribute index provides an ordering for these elements.	DayName as defined in 1.1.1.1.20	Yes ¹	None	N/A	Non-Sensitive
Index (Attribute of ReferencedDayName)	Provides an ordering for the ReferencedDayName elements. Monday = 1 Sunday = 7	sr:range_1_7 (xs:positiveInteger from 1 to 7)	Yes	None	N/A	N/A

Table 24 Update Import Tariff (Primary Element) Service Request - WeekProfile Data Items

¹ Minimum 7 and maximum 7

1.1.1.1.23 Seasons Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Season	A definition for a single season	sr:GasSeason (see section 1.1.1.1.24) minOccurs = 1 maxOccurs = 3	Yes	None	N/A	Non-Sensitive

Table 25 Update Import Tariff (Primary Element) Service Request – Seasons Data Items

1.1.1.1.24 Season Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SeasonStartDate	The date from which this season is defined to start	sr:GasDateWithWildcards (See Annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedWeekName	WeekName as defined in 1.1.1.1.22	WeekName as defined in 1.1.1.1.22	Yes	None	N/A	Non-Sensitive

Table 26 Update Import Tariff (Primary Element) Service Request - Season Data Items

1.1.1.1.25 SpecialDays Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDay	A collection of between 0 and 20 Special Days	sr:GasSpecialDay (see section 1.1.1.1.26)	No	None	N/A	Non-Sensitive

Table 27 Update Import Tariff (Primary Element) Service Request – SpecialDays Data Items

1.1.1.1.26 SpecialDay Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Date	The date on which the special day applies	sr:GasDateWithWildcards (See Annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedDayName	DayName as defined in 1.1.1.1.6	sr:GasDayName as defined in 1.1.1.1.20	Yes	None	N/A	Non-Sensitive

Table 28 Update Import Tariff (Primary Element) Service Request - SpecialDay Data Items

1.1.1.1.27 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No
SMETS1	No	Yes	No	DSP	No

Table 29 Update Import Tariff (Primary Element) Modes of Operation

1.1.1.1.28 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 30 Update Import Tariff (Primary Element) Command Variant Values

1.1.1.1.29 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time) validation):

Validation Check	Process	Response Code
Does the number of switching rules exceed 200?	Switching Table shall support up to 200 switching rules across all Day Profiles, calculate the number defined in the Service Request and report an error if it exceeds 200.	E010101

Validation Check	Process	Response Code
For SMETS1 Service Requests, does the Service Request contain both Block tariff and Time of Use tariff prices?	SMETS1 Service Requests are not permitted to populate both Block tariff and Time of Use tariff prices, as indicated by the use of the HybridTariff XML element.	E010102

Table 31 Update Import Tariff (Primary Element) Service Request Validation

1.1.1.1.30 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

Please note only a subset of the TariffSwitchingTable has been included for illustration purposes. Due to its size, the sample has been split into 3 figures.

```
<UpdateImportTariffPrimaryElement>
```

← See Figure 17 for details of ElectricityTariffElements →

← See Figure 37 for details of PriceElements →

```
</UpdateImportTariffPrimaryElement>
```

Figure 16 Update Import Tariff (Primary Element) Transform Request (Body) Format

```
<ElecTariffElements>
  <CurrencyUnits>GBP</CurrencyUnits>
  <SwitchingTable>
    <DayProfiles>
      <DayProfile>
        <DayName>1</DayName>
        <ProfileSchedule>
          <StartTime>00:00:00.00Z</StartTime>
          <TOUTariffAction>1</TOUTariffAction>
        </ProfileSchedule>
      </DayProfile>
      <DayProfile>
        <DayName>2</DayName>
        <ProfileSchedule>
          <StartTime>00:00:00.00Z</StartTime>
          <TOUTariffAction>1</TOUTariffAction>
        </ProfileSchedule>
        <ProfileSchedule>
          <StartTime>12:00:00.00Z</StartTime>
          <TOUTariffAction>2</TOUTariffAction>
        </ProfileSchedule>
      </DayProfile>
    </DayProfiles>
  </SwitchingTable>
</ElecTariffElements>
```

```
</ProfileSchedule>
</DayProfile>
</DayProfiles>
<WeekProfiles>
  <WeekProfile>
    <WeekName>1</WeekName>
    <ReferencedDayName index="1">1</ReferencedDayName>
    <ReferencedDayName index="2">1</ReferencedDayName>
    <ReferencedDayName index="3">1</ReferencedDayName>
    <ReferencedDayName index="4">1</ReferencedDayName>
    <ReferencedDayName index="5">1</ReferencedDayName>
    <ReferencedDayName index="6">2</ReferencedDayName>
    <ReferencedDayName index="7">2</ReferencedDayName>
  </WeekProfile>
</WeekProfiles>
<Seasons>
  <Season>
    <SeasonName>ALL</SeasonName>
    <SeasonStartDate>
      <Year><NonSpecifiedYear></NonSpecifiedYear></Year>
      <Month><NonSpecifiedMonth></NonSpecifiedMonth></Month>
      <DayOfMonth><NonSpecifiedDayOfMonth></NonSpecifiedDayOfMonth></DayOfMonth>
      <DayOfWeek><NonSpecifiedDayOfWeek></NonSpecifiedDayOfWeek></DayOfWeek>
    </SeasonStartDate>
    <ReferencedWeekName>1</ReferencedWeekName>
  </Season>
</Seasons>
</SwitchingTable>
<SpecialDays>
  <SpecialDay>
    <Date>
      <Year><SpecifiedYear>2015</SpecifiedYear></Year>
      <Month><SpecifiedMonth>12</SpecifiedMonth></Month>
      <DayOfMonth><SpecifiedDayOfMonth>25</SpecifiedDayOfMonth></DayOfMonth>
      <DayOfWeek><NonSpecifiedDayOfWeek></NonSpecifiedDayOfWeek></DayOfWeek>
    </Date>
    <ReferencedDayName>2</ReferencedDayName>
  </SpecialDay>
</SpecialDays>
<ThresholdMatrix>
  <Thresholds index="1">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="2">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="3">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="4">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="5">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="6">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="7">
    <BlockThreshold index="1">0</BlockThreshold>
  </Thresholds>
  <Thresholds index="8">
```

```
<BlockThreshold index="1">0</BlockThreshold>
</Thresholds>
</ThresholdMatrix>
</ElecTariffElements>
```

Figure 17 Update Import Tariff (Primary Element) Transform Request Format (ElectricityTariffElements Detail)

1.1.1.2 Responses

The response messages for an "Update Import Tariff (Primary Element)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.1.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E010101	Too many switching rules defined	Error	Switching Table shall support up to 200 switching rules across all Day Profiles.

Table 32 Update Import Tariff (Primary Element) Service Request Response Codes

1.1.1.2.2 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request's Command contains a fixed number of instructions ('n' = 21) and activation date-time instructions ('m' = 6) for Electricity and a variable number of instructions (7 <= 'n' <= 12) and activation date-time instructions (4 <= 'm' <= 5) for Gas. See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload

- i. One Device Response (Command storage outcome containing 'n' results)
- b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1 (Electricity) and 15.4.4.3.2 (Gas)

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

1.1.1.2.3 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateImportTariffPrimaryElementRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML Schema.

1.1.1.2.3.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0019	006B
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS01a</i>	<i>GCS01a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Tariff and Price on ESME</i>	<i>Set Tariff and Price on GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 33 - Update Import Tariff (Primary Element) Parse/ SMETS1 Response Header Data Items

1.1.2 Update Import Tariff (Secondary Element) (1.1.2)

Service Request Name	UpdateImportTariff
----------------------	--------------------

Service Reference	1.1
Service Request Variant Name	UpdateImportTariff(SecondaryElement)
Service Reference Variant	1.1.2
Service Request Objective	To enable a DCC Service User to create a new tariff for second element and update this Tariff on a specified Electricity Smart Meter where the initial condition of the tariff is unknown or for updating existing tariffs for second element.
Business Context Statement	<p>The DCC Service User requires a new or updated tariff to be applied to a specified device. The assumption is that there are unlikely to be scenarios where a tariff structure would change without an associated change in prices so this service request includes both tariff structure and price data items (also included in 1.2 – see section 1.2). This service request would be initiated in the following scenarios:</p> <ul style="list-style-type: none"> • new customer (CoT) • new supplier (CoS) • customer requests move to new tariff with same supplier • customer offer (tariff period) expired and Standard tariff now appropriate • customer changes mode (CR to PP/PP to CR) and new tariff required
User Role Access	<ul style="list-style-type: none"> • Electricity Import Supplier (EIS)
Security Classification	<p>Critical and non-sensitive GBCS XREF: SME.C.C</p>

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. This Service Request updates the tariff and price on the Secondary Element of a Twin Element Electricity Smart Meter 2. This Service Request updates the following data items as specific din SMETS, <ul style="list-style-type: none"> - <i>Tariff Switching Table</i> - <i>Secondary Tariff TOU Price Matrix</i> - A 1 x 4 matrix containing prices for Time-of-use Pricing Tariffs relating to Supply via the secondary measuring element of the Electricity Meter 3. The SeasonStartDate is active from midnight (00:00) UTC. 4. Guidance note: When setting a tariff on an ESME, the Import Supplier should define each DayProfile such that the first ProfileSchedule has a StartTime of midnight (00:00:00.00) to ensure that consumption is recorded on the expected Tariff Register. If a DayProfile starts at a time other than midnight, the Service Request will be transformed successfully and may be processed successfully by an ESME. However, unexpected results may arise when later reading consumption registers as an ESME may not have processed the period between midnight and the StartTime of the first ProfileSchedule as expected. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x00B7	N/A
GBCS Use Case	ECS01c	N/A
GBCS Use Case Name	Set Tariff and Price on ESME secondary	N/A
SMETS1 Applicability	No	N/A

Table 34 Update Import Tariff (Secondary Element) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.1.2.1 Service Request

1.1.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. The UpdateImportTariffSecondaryElement XML element defines this Service Request and contains all the Data Items to set the tariff and price on the Secondary Element of the Meter and, for Future Dated Requests, the Execution Date and Time.

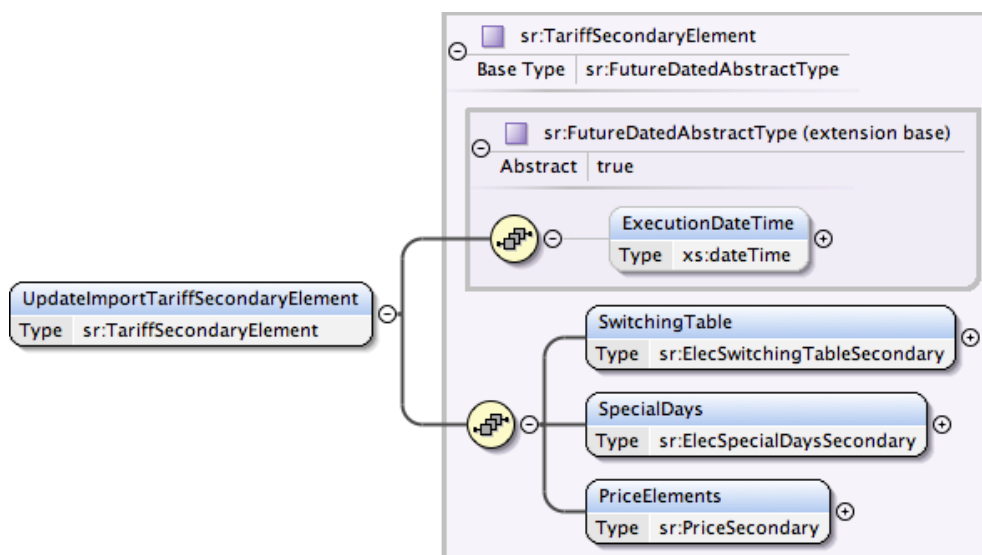


Figure 18 UpdateImportTariffSecondaryElement

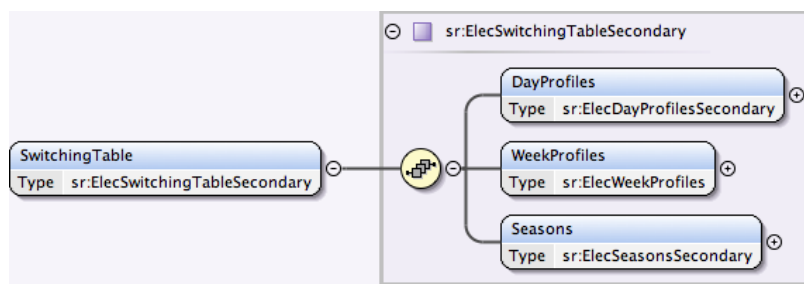


Figure 19 SwitchingTable

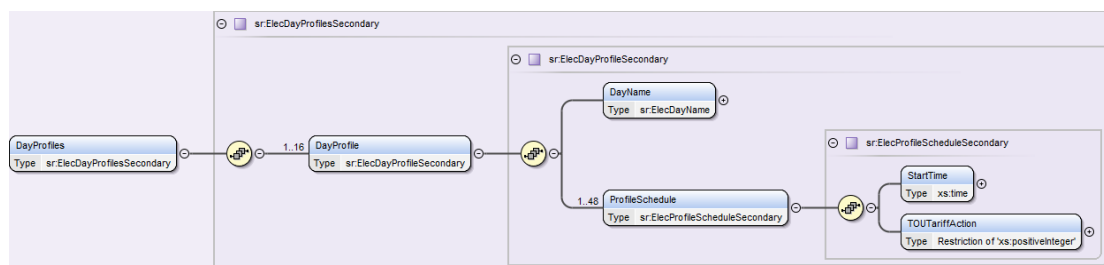


Figure 20 DayProfiles

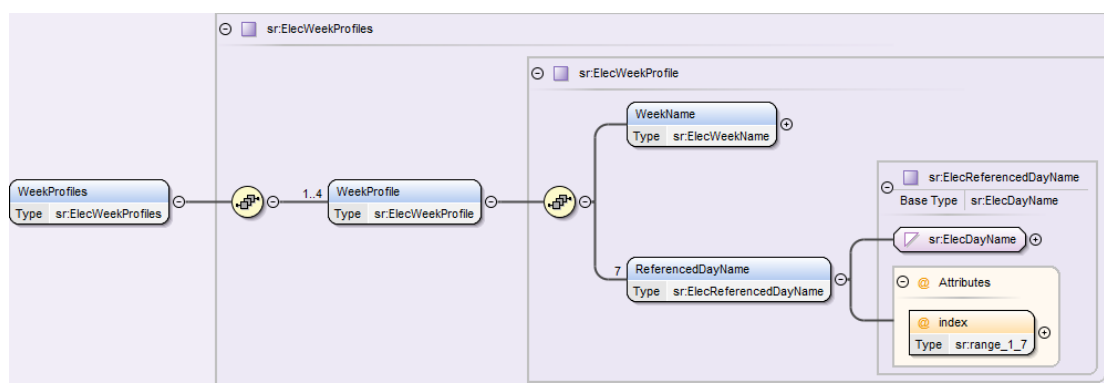


Figure 21 WeekProfiles

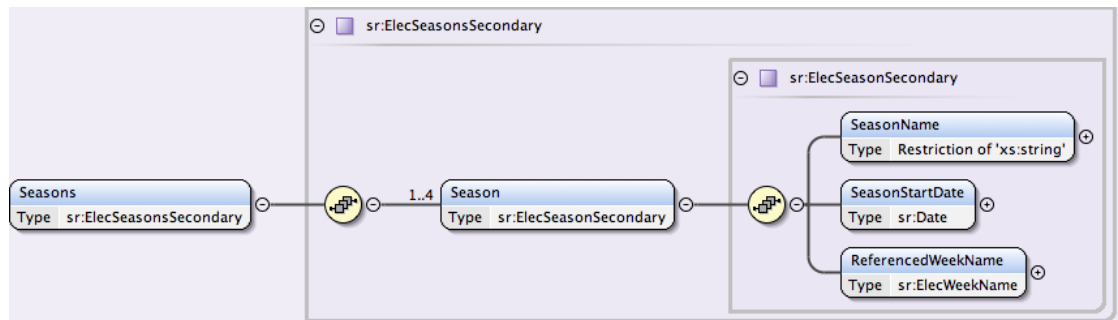


Figure 22 Seasons

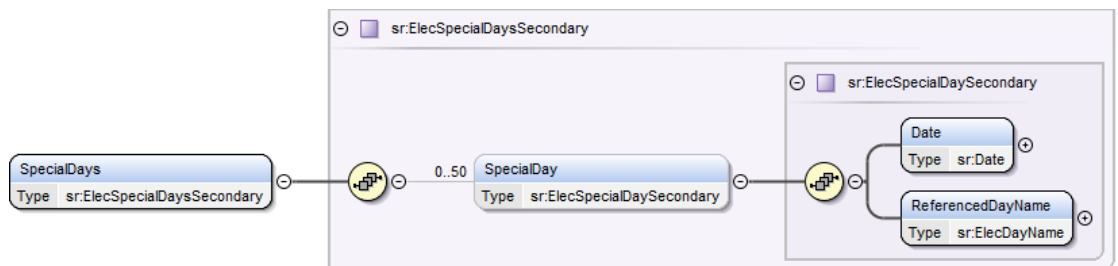


Figure 23 SpecialDays

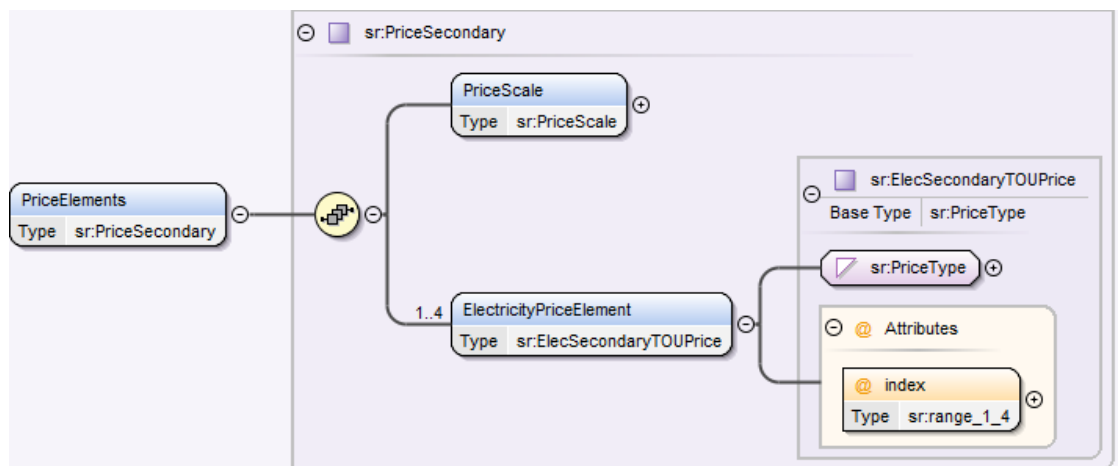


Figure 24 PriceElements

1.1.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC User requires the command to be executed on the Device ID</p> <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchingTable	A calendar defining UTC times, days and dates for switching the Secondary Element tariff	sr:ElecSwitchingTableSecondary (see section 1.1.2.1.3)	Yes	None	N/A	Non-Sensitive
SpecialDays	A calendar defining special dates for switching the Secondary Element tariff	sr:ElecSpecialDaysSecondary (see section 1.1.2.1.11)	Yes ¹	None	N/A	Non-Sensitive
PriceElements	All the Data Items required to update the price on the Device are defined in Service Request 1.2.2 Update Price (Secondary Element)	sr:PriceSecondary (see section 1.2.2.1.3)	Yes	None	N/A	Non-Sensitive

Table 35 Update Import Tariff (Secondary Element) Service Request Data Items

¹ If there are no Special Days, this XML element will be present, but empty, i.e. it will contain 0 SpecialDay elements

1.1.2.1.3 SwitchingTable Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfiles	Containing up to 16 DayProfile elements	sr:ElecDayProfilesSecondary (see section 1.1.2.1.4)	Yes	None	N/A	Non-Sensitive
WeekProfiles	Containing up to 4 WeekProfile elements	sr:ElecWeekProfiles (see section 1.1.2.1.7)	Yes	None	N/A	Non-Sensitive
Seasons	Containing up to 4 Season elements	sr:ElecSeasonsSecondary (see section 1.1.2.1.9)	Yes	None	N/A	Non-Sensitive

Table 36 Update Import Tariff (Secondary Element) Service Request - SwitchingTable

1.1.2.1.4 DayProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfile	A DayProfile definition containing a DayName and ProfileSchedule elements.	sr:ElecDayProfileSecondary (see section 1.1.2.1.5) minOccurs = 1 maxOccurs = 16	Yes	None	N/A	Non-Sensitive

Table 37 Update Import Tariff (Secondary Element) Service Request – DayProfiles Data Items

1.1.2.1.5 DayProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayName	An identifier for that day that has a number of ProfileSchedule elements associated with it. Note that this is referenced from the WeekProfile element The DayName value must begin at 1 and increment by 1 for each subsequent DayName.	sr:ElecDayName (Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 16))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ProfileSchedule	Array of up to 48 Actions and Start Times when an action to trigger a tariff switch is to be run.	sr:ElecProfileSchedule Secondary (see section 1.1.2.1.6) minOccurs = 1 maxOccurs = 48	Yes	None	N/A	Non-Sensitive

Table 38 Update Import Tariff (Secondary Element) Service Request – DayProfile Data Items

1.1.2.1.6 ProfileSchedule Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartTime	The time at which the action is to execute	xs:time	Yes	None	N/A	Non-Sensitive
TOUTariffAction	Identifier (n) of the Script to be run to apply Secondary TOU Tariff Price Matrix [n] (n between 1 and 4) Valid set: Value between 1 and 4	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 4)	Yes	None	N/A	Non-Sensitive

Table 39 Update Import Tariff (Secondary Element) Service Request – ProfileSchedule Data Items

1.1.2.1.7 WeekProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekProfile	A collection of WeekName and ReferencedDayName elements.	sr:ElecWeekProfile (see section 1.1.2.1.8) minOccurs = 1 maxOccurs = 4	Yes	None	N/A	Non-Sensitive

Table 40 Update Import Tariff (Secondary Element) Service Request – WeekProfiles Data Items

1.1.2.1.8 WeekProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekName	An identifier for the week. The WeekName value must begin at 1 and increment by 1 for each subsequent WeekName.	sr:ElecWeekName (Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 4))	Yes	None	N/A	Non-Sensitive
ReferencedDayName	DayName as defined in 1.1.2.1.5	DayName as defined in 1.1.2.1.5	Yes ¹	None	N/A	Non-Sensitive
Index (Attribute of ReferencedDayName)	Provides an ordering for the ReferencedDayName elements. Monday = 1 Sunday = 7	sr:range_1_7 (xs:positiveInteger from 1 to 7)	Yes	None	N/A	N/A

Table 41 Update Import Tariff (Secondary Element) Service Request – WeekProfile Data Items

¹ Minimum 7 and maximum 7

1.1.2.1.9 Seasons Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Season	A single definition of a season.	sr:ElecSeasonsSecondary (see section 1.1.2.1.10) minOccurs = 1 maxOccurs = 4	Yes	None	N/A	Non-Sensitive

Table 42 Update Import Tariff (Secondary Element) Service Request – Seasons Data Items

1.1.2.1.10 Season Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SeasonName	An identifier for the season.	Restriction of xs:string (maxLength = 8)	Yes	None	N/A	Non-Sensitive
SeasonStartDate	The date from which this season is defined to start	sr:Date (with wildcards) (See Annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedWeekName	Week name as defined in 1.1.2.1.8	Week name as defined in 1.1.2.1.8	Yes	None	N/A	Non-Sensitive

Table 43 Update Import Tariff (Secondary Element) Service Request – Season Data Items

1.1.2.1.11 SpecialDays Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDay	A collection of between 0 and 50 Special Days	sr:ElecSpecialDaySecondary (see section 1.1.2.1.12) minOccurs = 0 maxOccurs = 50	No	None	N/A	Non-Sensitive

Table 44 Update Import Tariff (Secondary Element) Service Request - SpecialDays Data Items

1.1.2.1.12 SpecialDay Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Date	The date on which the special day applies	sr:Date (with wildcards) (see Annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedDayName	DayName as defined in 1.1.2.1.5	DayName as defined in 1.1.2.1.5	Yes	None	N/A	Non-Sensitive

Table 45 Update Import Tariff (Secondary Element) Service Request - SpecialDay Data Items

1.1.2.1.13 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	Device	No

Table 46 Update Import Tariff (Secondary Element) Modes of Operation

1.1.2.1.14 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 47 Update Import Tariff (Secondary Element) Command Variant Values

1.1.2.1.15 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time) validation):

Validation Check	Process	Response Code
Does the number of switching rules exceed 200?	Switching Table shall support up to 200 switching rules across all Day Profiles, calculate the number defined in the Service Request and report an error if it exceeds 200.	E010101

Table 48 Update Import Tariff (Secondary Element) Service Request Validation

1.1.2.1.16 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

Due to its size, the sample has been split into multiple figures.

<p><UpdateImportTariffSecondaryElement></p> <p>← See Figure 26 for details of Tariff Switching Table →</p> <p>← See Figure 27 for details of Tariff Switching Table Special Days →</p> <p>← See Figure 28 for details of PriceElements →</p> <p></UpdateImportTariffSecondaryElement></p>

Figure 25 Update Import Tariff (Secondary Element) Transform Request (Body) Format

```

<SwitchingTable>
  <DayProfiles>
    <DayProfile>
      <DayName>1</DayName>
      <ProfileSchedule>
        <StartTime>00:00:00.00Z</StartTime>
        <TOUTariffAction>1</TOUTariffAction>
      </ProfileSchedule>
    </DayProfile>
    <DayProfile>
      <DayName>2</DayName>
      <ProfileSchedule>
        <StartTime>00:00:00.00Z</StartTime>
        <TOUTariffAction>1</TOUTariffAction>
      </ProfileSchedule>
      <ProfileSchedule>
        <StartTime>12:00:00.00Z</StartTime>
        <TOUTariffAction>2</TOUTariffAction>
      </ProfileSchedule>
    </DayProfile>
  </DayProfiles>
  <WeekProfiles>
    <WeekProfile>
      <WeekName>1</WeekName>
      <ReferencedDayName index="1">1</ReferencedDayName>
      <ReferencedDayName index="2">1</ReferencedDayName>
      <ReferencedDayName index="3">1</ReferencedDayName>
      <ReferencedDayName index="4">1</ReferencedDayName>
      <ReferencedDayName index="5">1</ReferencedDayName>
      <ReferencedDayName index="6">1</ReferencedDayName>
      <ReferencedDayName index="7">1</ReferencedDayName>
    </WeekProfile>
  </WeekProfiles>
  <Seasons>
    <Season>
      <SeasonName>ALL</SeasonName>
      <SeasonStartDate>
        <Year><NonSpecifiedYear></NonSpecifiedYear></Year>
        <Month><NonSpecifiedMonth></NonSpecifiedMonth></Month>
        <DayOfMonth><NonSpecifiedDayOfMonth></NonSpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek></NonSpecifiedDayOfWeek></DayOfWeek>
      </SeasonStartDate>
      <ReferencedWeekName>1</ReferencedWeekName>
    </Season>
  </Seasons>
</SwitchingTable>

```

Figure 26 Update Import Tariff (Secondary Element) Transform Request Format
(TariffSwitchingTable Detail)

```
<SpecialDays>
  <SpecialDay>
    <Date>
      <Year><SpecifiedYear>2015</SpecifiedYear></Year>
      <Month><SpecifiedMonth>12</SpecifiedMonth></Month>
      <DayOfMonth><SpecifiedDayOfMonth>25</SpecifiedDayOfMonth></DayOfMonth>
      <DayOfWeek><NonSpecifiedDayOfWeek></NonSpecifiedDayOfWeek></DayOfWeek>
    </Date>
    <ReferencedDayName>2</ReferencedDayName>
  </SpecialDay>
</SpecialDays>
```

Figure 27 Update Import Tariff (Secondary Element) Transform Request Format (TariffSwitchingTableSpecialDays Detail)

```
<PriceElements>
  <PriceScale>-5</PriceScale>
  <ElectricityPriceElement index="1">1000</ElectricityPriceElement>
  <ElectricityPriceElement index="2">3000</ElectricityPriceElement>
</PriceElements>
```

Figure 28 Update Import Tariff (Secondary Element) Transform Request Format (PriceElements Detail)

1.1.2.2 Responses

The response messages for an "Update Import Tariff(Secondary Element)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.1.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E010101	Too many switching rules defined	Error	Switching Table shall support up to 200 switching rules across all Day Profiles.

Table 49 Update Import Tariff (Secondary Element) Service Request Response Codes

1.1.2.2.2 Device Responses and Future Dating

This Service Request's Command contains a fixed number of instructions ('n' = 8) and activation date-time instructions ('m' = 3). See Main Document of this documentation set

section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1

1.1.2.2.3 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdateImportTariffSecondaryElementRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

See section 1.1.2.2.2 for description of the responses to future dated execution requests.

1.1.1.2.3.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	00B7
<i>GBCS Use Case Number (for information only - not in header)</i>	ECS01c
<i>GBCS Use Case Name (for information only - not in header)</i>	Set Tariff and Price on ESME secondary
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 50 - Update Import Tariff (Secondary Element) Parse Response Header Data Items

1.2 Update Price (1.2)

SMETS2 or later

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID. Therefore the 1.2 Service Request has been broken into two parts: 1.2.1 (Primary Element) and 1.2.2 (Secondary Element).

SMETS1

This Service Request maps to Service Reference Variant 1.2.1 (Primary Element).

1.2.1 Update Price (Primary Element) (1.2.1)

Service Request Name	UpdatePrice
Service Reference	1.2
Service Request Variant Name	UpdatePrice(PrimaryElement)
Service Reference Variant	1.2.1
Service Request Objective	To enable a DCC Service User to send a new currency unit price per time/unit of energy consumed to a meter such that the meter can update its configuration and confirm that the operation has either completed, or the reason for its failure.
Business Context Statement	The DCC Service User requires a new or updated pricing structure to be applied to a specified meter, e.g. following a supplier price change, without changing tariff structure. The price update must be effected within a reasonable period of time after the agreement or after the preceding event (e.g. CoS). This period may be the same day.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request updates the price on the Primary Element of an Electricity Smart Meter or on a Gas Smart Meter. For Electricity, when a Service User has defined either a Time Of Use tariff structure or a Block tariff structure, the DCC Data Systems shall populate any unused prices ("TOUPrice" or "BlockPrice" Data Item) in the Command with a value of zero GBP/EUROs per kWh up to the expected maximum of eighty prices that the Electricity Smart Meter requires within the Command, applicable to either a TOU rate or for each block as appropriate. For Gas, when a Service User has defined either a Time Of Use tariff structure or a Block tariff structure, the DCC Data Systems shall populate any unused prices ("TOUPrice" or "BlockPrice" Data Item) in the Command with a value of zero 1000th pence/cent per kWh up to the expected maximum of four prices that the Gas Smart Meter requires within the

	Command, applicable to either a TOU rate or for each block as appropriate.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x00A2	0x00A3
GBCS Use Case	ECS01b	GCS01b
GBCS Use Case Name	Set Price on ESME	Set Price on GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. Prices may be set for Block tariffs or Time of Use tariffs but not both. 2. Population of unused prices in the tariff, i.e. those not specified in the Service Request by the Service User, shall be to the relevant maximum number for SMETS1 Devices, rather than eighty prices as for SMETS2 Devices. 3. SMETS1 Smart Meters are not required to support Currency Units as a Configuration Data Item, therefore the S1SP shall discard any value in the CurrencyUnits fields when setting values on the Smart Meter. This discarding of values shall not result in an error in the SMETS1 Response. 4. For SMETS1 GSME, processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing a value for the Total Consumption Register (with its SMETS1 meaning), 5. For SMETS1 ESME, processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing values for the Total Active Import Register (with its SMETS1 meaning) or the Tariff TOU Block Register Matrix (with its SMETS2 meanings). 	

Table 51 Update Price (Primary Element) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.2.1.1 Service Request

1.2.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdatePricePrimaryElement XML element defines this Service Request and contains all the Data Items to set the price on the Device and, for Future Dated Requests, the Execution Date and Time.

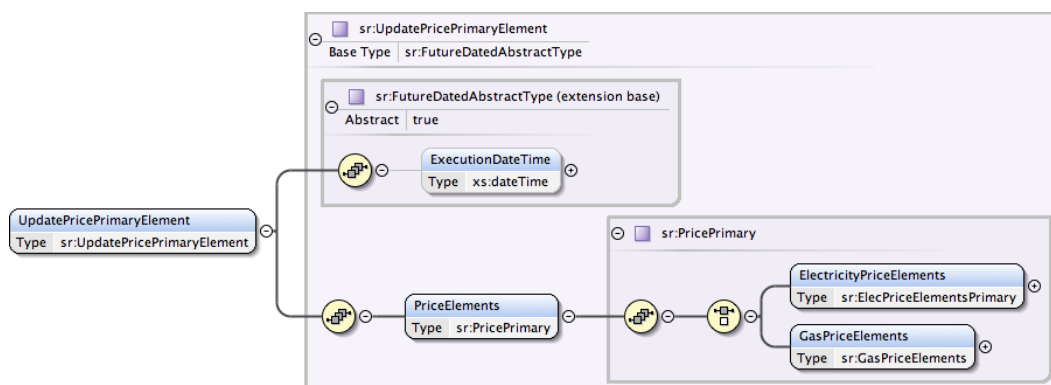


Figure 29 UpdatePricePrimaryElement

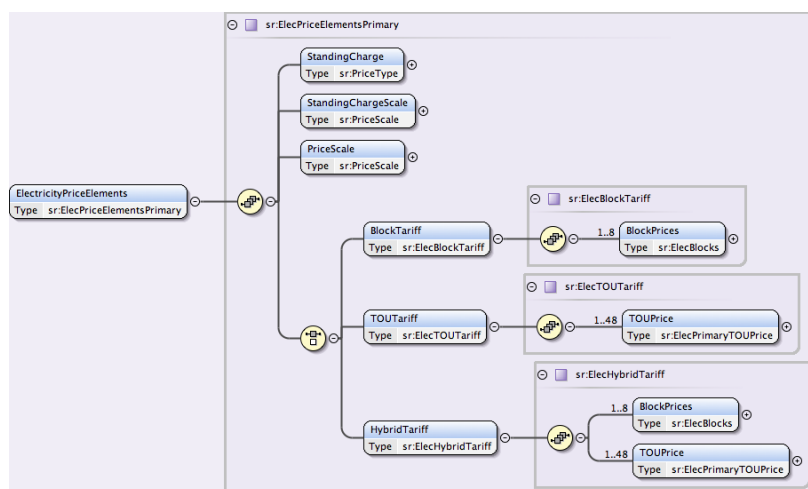


Figure 30 ElectricityPriceElements

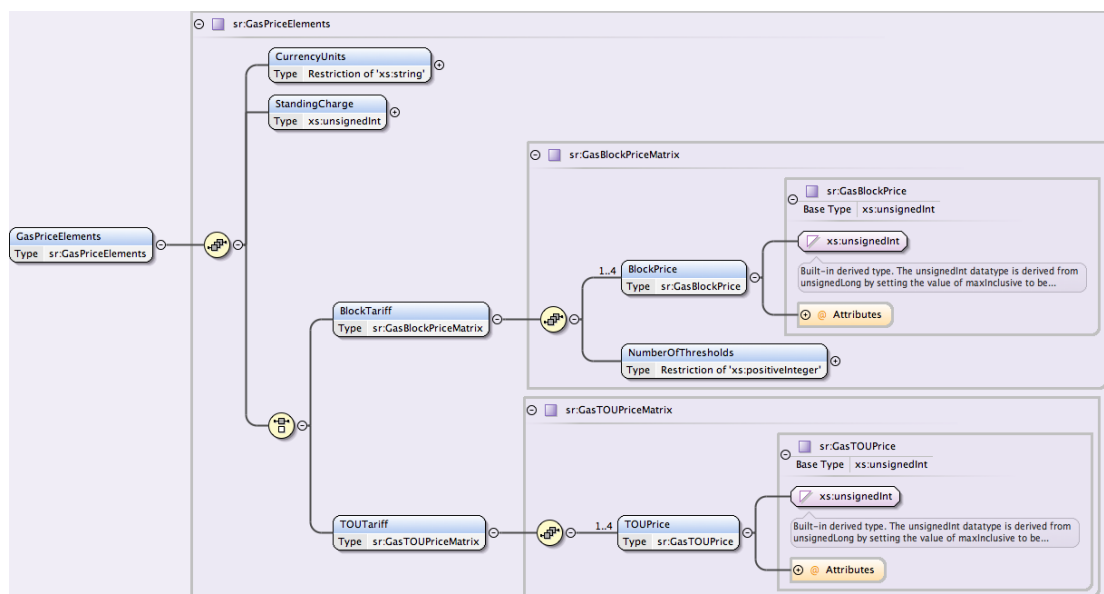


Figure 31 GasPriceElements

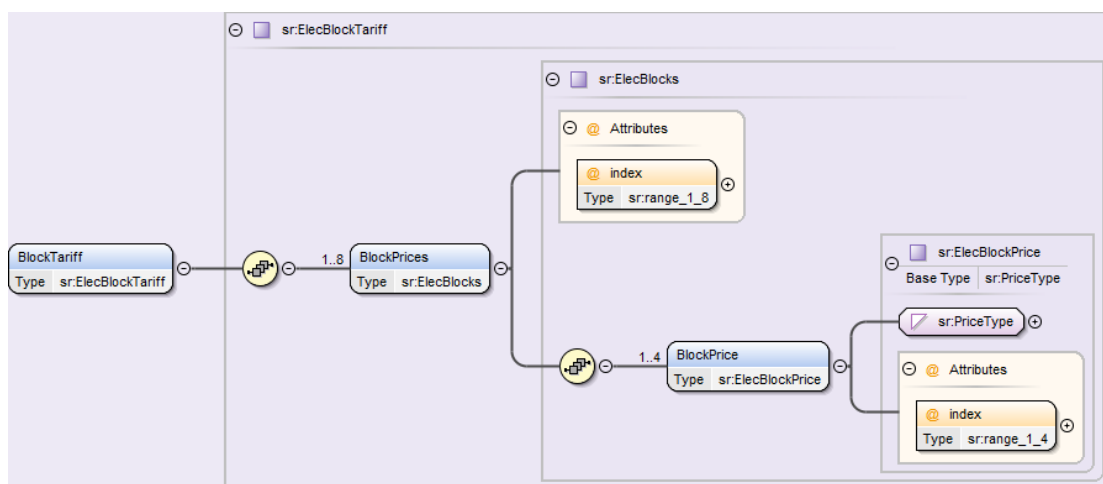


Figure 32 BlockTariff for Electricity

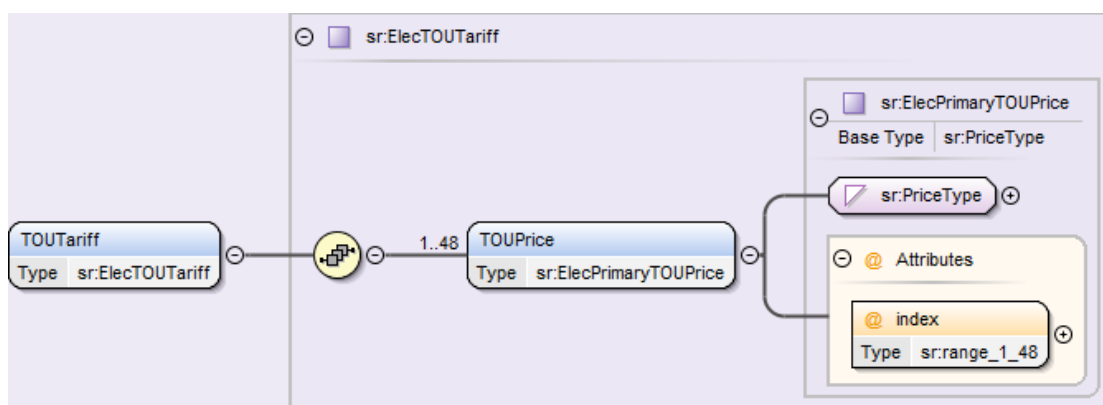


Figure 33 TOUTariff for Electricity

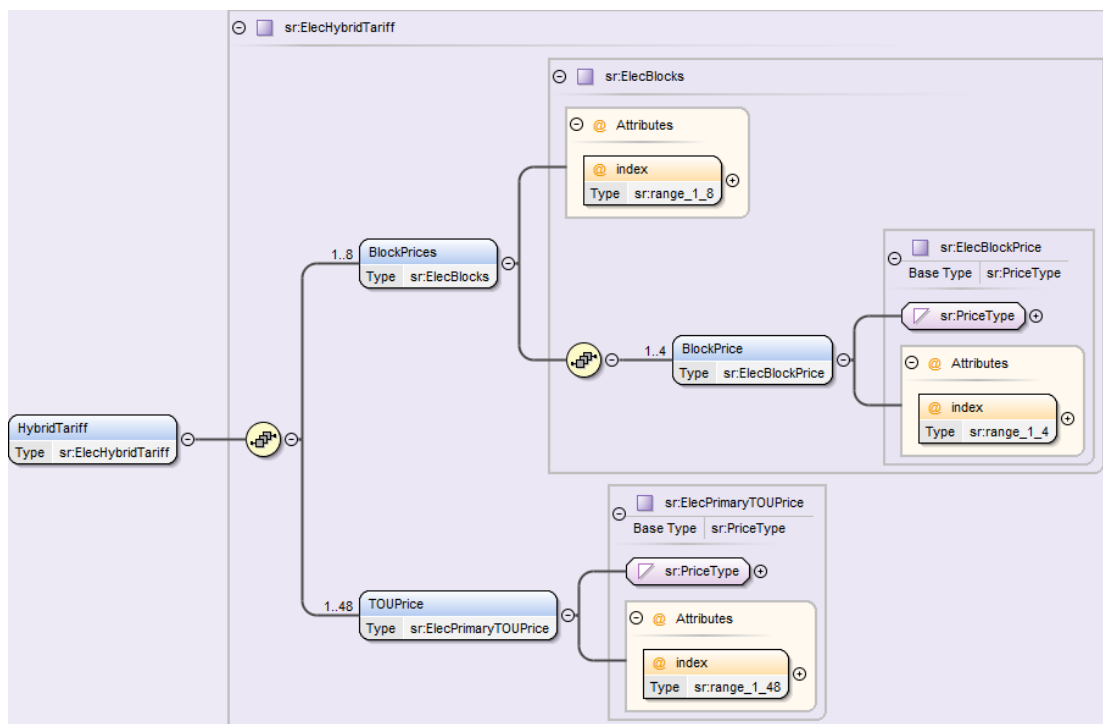


Figure 34 HybridTariff for Electricity

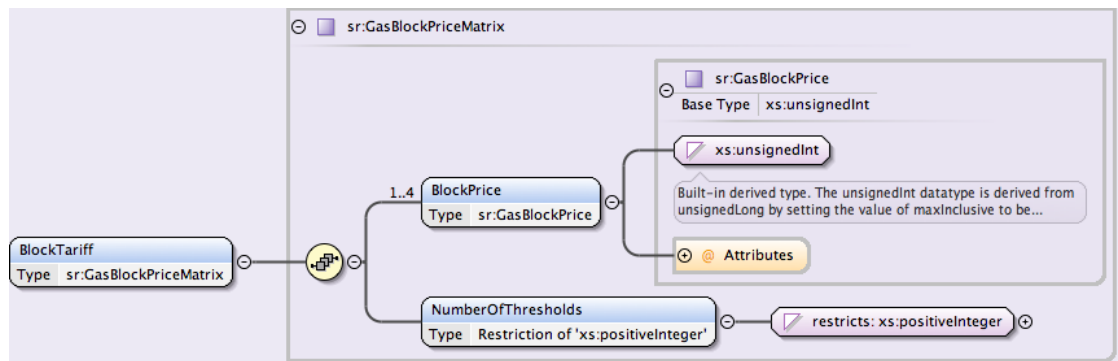


Figure 35 BlockTariff for Gas

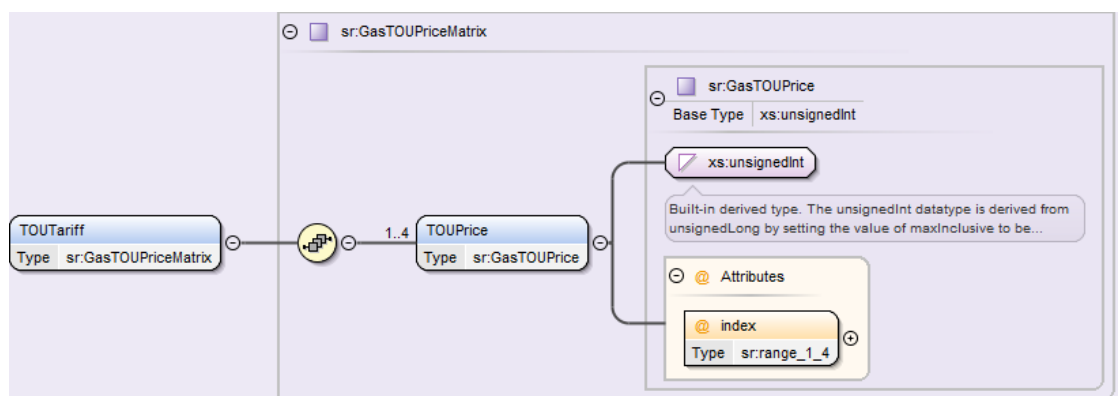


Figure 36 TOUTariff for Gas

1.2.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
PriceElements	All the Data Items required to update prices on the Primary Element of the Device	sr:PricePrimary (see section 1.2.1.1.3)	Yes	None	N/A	Non-Sensitive

Table 52 Update Price (Primary Element) Service Request Data Items

1.2.1.1.3 PriceElements Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ElectricityPriceElements	Electricity Smart Meter specific price elements	sr:ElecPriceElementsPrimary (see section 1.2.1.1.4)	Electricity Smart Meter: Yes Gas Smart Meter: N/A	None	N/A	Non-Sensitive
GasPriceElements	Gas Smart Meter specific price elements	sr:GasPriceElements (see section 1.2.1.1.9)	Electricity Smart Meter: N/A Gas Smart Meter: Yes	None	N/A	Non-Sensitive

Table 53 Update Price (Primary Element) Service Request - PriceElements Data Items

1.2.1.1.4 ElectricityPriceElements Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StandingCharge	A charge to be levied in Currency Units per unit time when operating in Credit Mode and Prepayment Mode Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour Note that the scale used for Electricity Meters is defined by StandingChargeScale value, Gas meters have a scale value of -5.	sr:PriceType (Restriction of xs:short)	Yes	None	Value when multiplied by the scale is GBP/EUROs This amount is collected daily	Non-Sensitive
StandingChargeScale	A multiplier applied to the StandingCharge value. Note this is the value of n in 10^n (10 to the power of n). For example a StandingCharge of 1 and a StandingChargeScale scale of -2 would result in a Standing Charge of £0.01	sr:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)	Yes	None	N/A	Non-Sensitive
PriceScale	A multiplier applied to the prices defined in this structure. Note this is the value of n in 10^n (10 to the power of n). For example a price of 1 and a Price scale of -2 would result in a price of £0.01	sr:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockTariff	<p>Up to 8 block price definitions, with 4 prices per block. A block tariff must have 1 to 8 block definitions, each definition can have at most 4 prices.</p> <p>Where a User does not provide a price value the DCC shall populate the associated GBCS Command with a value of Zero to ensure that all 80 price values are set in the associated Command. Users are not obligated to populate all 80 price values.</p> <p>SMETS1: Where a User does not provide a price value the S1SP shall populate SMETS1 format commands with zero to ensure that all 32 block tariff price values are set.</p>	sr:ElecBlockTariff (see section 1.2.1.1.5)	Yes – if Block Tariff	None	N/A	Non-Sensitive
TOUTariff	<p>Up to 48 TOU prices. A TOU tariff must have 1 to 48 TOU rates defined.</p> <p>Where a User does not provide a price value the DCC shall populate the associated GBCS Command with a value of Zero to ensure that all 80 price values are set in the associated Command. Users are not obligated to populate all 80 price values.</p> <p>SMETS1: Where a User does not provide a price value the S1SP shall populate SMETS1 format commands with zero to ensure that all 48 time of use tariff price values are set.</p>	sr:ElecTOUTariff (see section 1.2.1.1.7)	Yes – if TOU Tariff	None	N/A	Non-Sensitive
HybridTariff	<p>A combination of Block and TOU prices.</p> <p>Where a User does not provide a price value the DCC shall populate the associated GBCS Command with a value of Zero to ensure that all 80 price values are set in the associated Command. Users are not obligated to populate all 80 price values.</p> <p>SMETS1: Not applicable</p>	sr:ElecHybridTariff (see section 1.2.1.1.8)	Yes – if combination of TOU and Block Tariffs	None	N/A	Non-Sensitive

Table 54 Update Price (Primary Element) Service Request - ElectricityPriceElements Data Items

1.2.1.1.5BlockTariff Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockPrices	Price applicable to a TOU with Block Tariff	sr:ElecBlocks (see section 1.2.1.1.6)	Yes	None	N/A	Non-Sensitive
Index (Attribute of BlockPrices)	Provides an ordering for the BlockPrices elements.	sr:range_1_8 (xs:positiveInteger from 1 to 8)	Yes	None	N/A	N/A

Table 55 Update Price (Primary Element) Service Request - BlockTariff Data Items

1.2.1.1.6 BlockPrices Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockPrice	Up to 4 prices for each block.	srElecBlockPrice (sr:PriceType ,Restriction of xs:short) minOccurs = 1 maxOccurs = 4	Yes	None	Value when multiplied by the scale is GBP/EUROs This amount per kWh	Non-Sensitive
Index (Attribute of BlockPrice)	Provides an ordering for the BlockPrice elements.	sr:range_1_4 (xs:positiveInteger from 1 to 4)	Yes	None	N/A	N/A

Table 56 Update Price (Primary Element) Service Request - BlockPrices Data Items

1.2.1.1.7 TOUTariff Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
TOUPrice	Up to 48 prices for each TOU rate.	sr:ElecPrimaryTOUPrice (sr:PriceType Restriction of xs:short) minOccurs = 1 maxOccurs = 48	Yes	None	Value when multiplied by the scale is GBP/EUROs This amount per kWh	Non-Sensitive
Index (Attribute of TOUPrice)	Provides an ordering for the TOUPrice elements.	sr:range_1_48 (xs:positiveInteger from 1 to 48)	Yes	None	N/A	N/A

Table 57 Update Price (Primary Element) Service Request - TOUTariff Data Items

1.2.1.1.8 HybridTariff Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockPrices	Up to 4 prices for each block.	See 1.2.1.1.5	Yes	None	See 1.2.1.1.5	Non-Sensitive
TOUPrice	Up to 48 prices for each TOU rate.	See 1.2.1.1.7	Yes	None	See 1.2.1.1.7	Non-Sensitive

Table 58 Update Price (Primary Element) Service Request - TOUTariff Data Items

1.2.1.1.9 GasPriceElements Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CurrencyUnits	The Currency Units currently used by a Smart Meter for display purposes, which shall be GB Pounds Valid set: <ul style="list-style-type: none"> GBP. GB Pounds ECB. European Central Bank Euros SMETS1: This element cannot be used by SMETS1 Devices but must be supplied since it is mandatory in the Service Request.	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
StandingCharge	A charge to be levied in Currency Units per unit time when operating in Credit Mode and Prepayment Mode The value is interpreted as in millipence or milli-cents.	xs:unsignedInt	Yes	None	This amount is collected daily	Non-Sensitive
BlockTariff	Gas Smart Meter: A 4 x 1 matrix containing Prices for Block Pricing, plus the thresholds for the blocks. Where a User does not provide a price value the DCC shall populate the associated GBCS Command with a value of zero to ensure that all 4 price values are set in the associated Command. Users are not obligated to populate all 4 price values.	sr:GasBlockPriceMatrix (see section 1.2.1.1.10)	Yes – if block tariff	None	N/A	Non-Sensitive
TOUTariff	Gas Smart Meter: A 1 x 4 matrix containing Prices for Time-of-use Pricing Where a User does not provide a price value the DCC shall populate the associated GBCS Command with a value of zero to ensure that all 4 price values are set in the associated Command. Users are not obligated to populate all 4 price values.	sr:GasTOUPriceMatrix (see section 1.2.1.1.11)	Yes – if TOU tariff	None	N/A	Non-Sensitive

Table 59 Update Price (Primary Element) Service Request - GasPriceElements Data Items

1.2.1.1.10 BlockTariff Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BlockPrice	Up to 4 prices for each block.	sr:GasBlockPrice (xs:unsignedInt) minOccurs = 1 maxOccurs = 4	Yes	None	1000 th pence/cent per kWh	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Index (Attribute of BlockPrice)	Provides an ordering for the BlockPrice elements.	sr:range_1_4 (xs:positiveInteger from 1 to 4)	Yes	None	N/A	N/A
NumberOfThreshold	The number of thresholds in use on the GSME.	xs:positiveInteger minInclusive = 1 maxInclusive = 3	Yes	None	N/A	Non-Sensitive

Table 60 Update Price (Primary Element) Service Request - BlockTariff Data Items

1.2.1.1.11 TOUTariff Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
TOUPrice	Up to 4 Prices applicable to a TOU rate	sr:GasTOUPrice (xs:unsignedInt) minOccurs = 1 maxOccurs = 4	Yes	None	1000 th pence/ cent per kWh	Non-Sensitive
Index (Attribute of TOUPrice)	Provides an ordering for the TOUPrice elements.	sr:range_1_4 (xs:positiveInteger from 1 to 4)	Yes	None	N/A	N/A

Table 61 Update Price (Primary Element) Service Request - TOUTariff Data Items

1.2.1.1.12 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No
SMETS1	No	Yes	No	DSP	No

Table 62 Update Price (Primary Element) Modes of Operation

1.2.1.1.13 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 63 Update Price (Primary Element) Command Variant Values

1.2.1.1.14 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time) validation):

Validation Check	Process	Response Code
For SMETS1 Service Requests, does the Service Request contain both Block tariff and Time of Use tariff prices?	SMETS1 Service Requests are not permitted to populate both Block tariff and Time of Use tariff prices, as indicated by the use of the HybridTariff XML element.	E010201

Table 64 Update Price (Primary Element) Service Request Validation

1.2.1.1.15 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows (To include Electricity and Gas, the sample has been split into 3 figures):

```
<UpdatePricePrimaryElement>
  <ExecutionDateTime>2014-10-07T10:08:00.00Z</ExecutionDateTime>
  <PriceElements>

← See Figure 38 for details of ElectricityPriceElements →
← See Figure 39 for details of GasPriceElements →

  </PriceElements>
</UpdatePricePrimaryElement>
```

Figure 37 Update Price (Primary Element) Transform Request (Body) Format

```
<ElectricityPriceElements>
  <StandingCharge>5000</StandingCharge>
  <StandingChargeScale>-5</StandingChargeScale>
  <PriceScale>-5</PriceScale>
  <TOUTariff>
    <TOUPrice index="1">7000</TOUPrice>
    <TOUPrice index="2">8000</TOUPrice>
    <TOUPrice index="3">9000</TOUPrice>
  </TOUTariff>
</ElectricityPriceElements>
```

Figure 38 Update Price (Primary Element) Transform Request Format (ElectricityPriceElements Detail)

```
<GasPriceElements>
  <CurrencyUnits>GBP</CurrencyUnits>
  <StandingCharge>5000</StandingCharge>
  <BlockTariff>
    <BlockPrice index="1">100</BlockPrice>
    <BlockPrice index="2">200</BlockPrice>
    <BlockPrice index="3">250</BlockPrice>
    <NumberOfThresholds>2</NumberOfThresholds>
  </BlockTariff>
</GasPriceElements>
```

**Figure 39 Update Price (Primary Element) Transform Request Format
(GasPriceElements Detail)**

1.2.1.2 Responses

The response messages for an “Update Price (Primary Element)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.2.1.2.1 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request's Command contains a fixed number of instructions ('n' = 4) and activation date-time instructions ('m' = 2) for Electricity and a fixed number of instructions ('n' = 2) and activation date-time instructions ('m' = 2) for Gas. See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1 (Electricity) and 15.4.4.3.2 (Gas)

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

1.2.1.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdatePricePrimaryElementRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML Schema.

See section 1.2.1.2.1 for description of the responses to future dated execution requests.

1.2.1.2.2.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00A2	00A3
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS01b</i>	<i>GCS01b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Price on ESME</i>	<i>Set Price on GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 65 - Update Price (Primary Element) Parse/ SMETS1 Response Header Data Items

1.2.2 Update Price (Secondary Element) (1.2.2)

Service Request Name	UpdatePrice
Service Reference	1.2
Service Request Variant Name	UpdatePrice(SecondaryElement)
Service Reference Variant	1.2.2
Service Request Objective	To enable a DCC Service User to send a new currency unit price per time/unit of energy consumed to a meter such that the meter can update its configuration and confirm that the operation has either completed, or the reason for its failure.
Business Context Statement	The DCC Service User requires a new or updated pricing structure to be applied to a specified meter, e.g. following a supplier price change, without changing tariff structure. The price update must be effected within a reasonable period of time after the agreement or after the preceding event (e.g. CoS). This period may be the same day.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)
Security Classification	Critical and non-sensitive

	GBCS XREF: SME.C.C	
Service Request Narrative	1. This Service Request updates the price on the Secondary Element of an Electricity Smart Meter	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x00C7	N/A
GBCS Use Case	ECS01d	N/A
GBCS Use Case Name	Set Price on ESME secondary	N/A
SMETS1 Applicability	No	N/A

Table 66 Update Price (Secondary Element) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.2.2.1 Service Request

1.2.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdatePriceSecondaryElement XML element defines this Service Request and contains all the Data Items to set the price on the Secondary Element of the Device and, for Future Dated Requests, the Execution Date and Time.

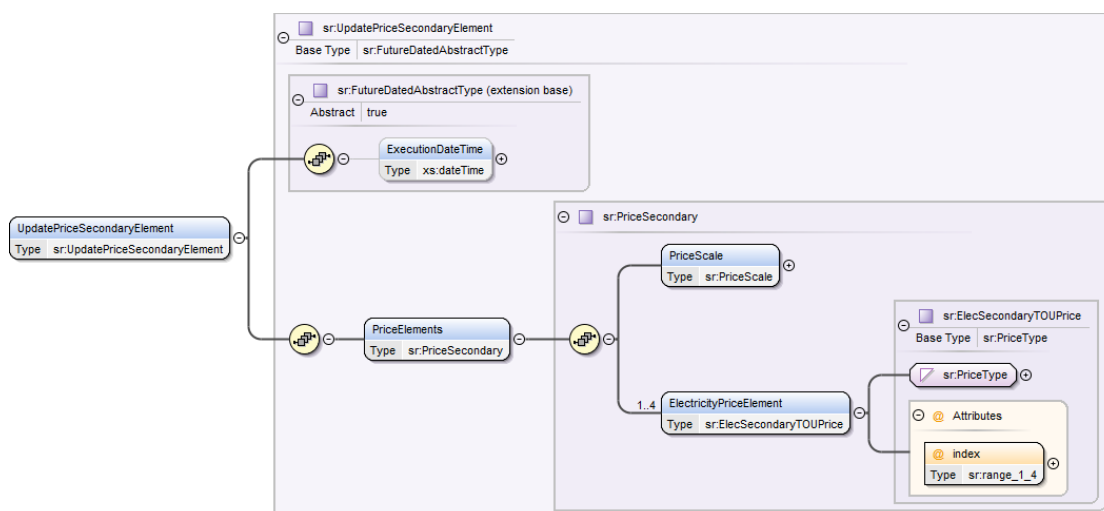


Figure 40 UpdatePriceSecondaryElement

1.2.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
PriceElements	All the Data Items required to update prices on the Secondary Element of the Device	sr:PriceSecondary (see section 1.2.2.1.3)	Yes	None	N/A	Non-Sensitive

Table 67 Update Price (Secondary Element) Service Request Data Items

1.2.2.1.3 PriceElements Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
PriceScale	A multiplier applied to the prices defined in this structure. Note this is the value of n in 10^n (10 to the power of n). For example a price of 1 and a Price scale of -2 would result in a price of £0.01	sr:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)	Yes	None	N/A	Non-Sensitive
ElectricityPriceElements	Up to 4 prices for each TOU rate.	sr:ElecSecondaryTOUPrice sr:PriceType (Restriction of xs:short) minOccurs = 1 maxOccurs = 4	Yes	None	Value when multiplied by the scale is GBP/EUROs This amount per kWh	Non-Sensitive
Index (Attribute of ElectricityPriceElement)	Provides an ordering for the ElectricityPriceElement elements.	sr:range_1_4 (xs:positiveInteger from 1 to 4)	Yes	None	N/A	N/A

Table 68 Update Price (Secondary Element) Service Request - PriceElements Data Items

1.2.2.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	Device	No

Table 69 Update Price (Secondary Element) Modes of Operation

1.2.2.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 70 Update Price (Secondary Element) Command Variant Values

1.2.2.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

1.2.2.1.7 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdatePriceSecondaryElement>
  <ExecutionDateTime>2014-10-07T10:08:00.00Z</ExecutionDateTime>
  <PriceElements>
    <PriceScale>-5</PriceScale>
    <ElectricityPriceElement index="1">1000</ElectricityPriceElement>
    <ElectricityPriceElement index="2">2000</ElectricityPriceElement>
  </PriceElements>
</UpdatePriceSecondaryElement>
```

Figure 41 Update Price (Secondary Element) Transform Request (Body) Format

1.2.2.2 Responses

The response messages for an "Update Price (Secondary Element)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.2.2.2.1 Device Responses and Future Dating

This Service Request's Command contains a fixed number of instructions ('n' = 2) and activation date-time instructions ('m' = 1). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload

- i. One Device Response (Command execution outcome containing 'n' results).
- 2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1

1.2.2.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdatePriceSecondaryElementRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

See section 1.2.2.2.1 for description of the responses to future dated execution requests.

1.2.2.2.2.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	00C7
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS01d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Price on ESME secondary</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 71 - Update Price (Secondary Element) Parse Response Header Data Items

1.3 Section 1.3

This section has been intentionally left blank as there is no Service Reference 1.3.

1.4 Section 1.4

This section has been intentionally left blank as there is no Service Reference 1.4.

1.5 Update Meter Balance (1.5)

Service Request Name	UpdateMeterBalance
Service Reference	1.5
Service Request Variant Name	UpdateMeterBalance
Service Reference Variant	1.5
Service Request Objective	To enable a DCC Service User to send a command to a meter at a specified ESME/GSME to adjust the amount of money in currency units accounted for by the Smart Meter.
Business Context Statement	The DCC Service User requires an update to be made to the current balance on a specified device, e.g. to adjust the balance to take into account such things as CV calculations made in a Supplier's billing systems.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> If operating in <i>Prepayment Mode</i>, the <i>Meter Balance</i> represents ESME / GSME's determination of the amount of credit available to the Consumer (excluding any <i>Emergency Credit Balance</i>). If operating in <i>Credit Mode</i>, it represents ESME/ GSME's determination of the amount of money due from the Consumer since the Meter Balance was last reset. The adjustment of this meter balance in this Service Request is a positive / negative adjustment, rather than an absolute setting of this meter balance. As the DSP does not maintain a record of the meter accounting state (prepayment/credit) then it is necessary for the Service User to choose the appropriate data items. This Service Request supports the following Meter Balance updates: <ul style="list-style-type: none"> Electricity Smart Meter <ul style="list-style-type: none"> Adjustment of balance Reset. The Accumulated Debt Register and the Emergency Credit Balance are also reset Gas Smart Meter <ul style="list-style-type: none"> Adjustment of balance

	<ul style="list-style-type: none">Reset The Accumulated Debt Register and the Emergency Credit Balance are also reset	
	6. Please Note – GBCS constraint. The prepayment mode meter balance is held in a separate ZigBee Cluster to the credit mode meter balance	
	<ul style="list-style-type: none">GBCS Use Cases GCS40a and GCS40b must be used for interacting with the GSME when it is operating in prepayment mode	
	<ul style="list-style-type: none">GBCS Use Cases GCS40c and GCS40d must be used for interacting with the GSME when it is operating in credit mode	
	7. Resetting the Meter Balance with the parameter "ResetMeterBalance" would set the balance to £0.00 and there is a risk that supply would be disabled. If the following conditions are true, this would cause supply to be disabled:	
<ul style="list-style-type: none">The Meter is in Prepayment Mode; AND		
<ul style="list-style-type: none">The Meter is NOT currently in a period of non-disablement; AND		
<ul style="list-style-type: none">The Disablement Threshold is £0.00 or greater.		
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	Adjust Meter Balance – 0x001C Reset Meter Balance – 0x00B3	Prepayment Mode / Adjust Meter Balance – 0x0086 Prepayment Mode / Reset Meter Balance – 0x00B4 Credit Mode / Adjust Meter Balance – 0x00C0 Credit Mode / Reset Meter Balance – 0x00C2
GBCS Use Case	Adjust Meter Balance – ECS04a Reset Meter Balance – ECS04b	Prepayment Mode / Adjust Meter Balance – GCS40a Prepayment Mode / Reset Meter Balance – GCS40b Credit Mode / Adjust Meter Balance – GCS40c Credit Mode / Reset Meter Balance – GCS40d
GBCS Use Case Name	Adjust Meter Balance on the ESME Reset Meter Balance on the ESME	Adjust Prepayment Mode Meter Balance on the GSME Reset Prepayment Mode Meter Balance on the GSME Adjust Credit Mode Meter Balance on the GSME Reset Credit Mode Meter Balance on the GSME

SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.</p> <p>Note that for continuity with the behaviour of SMETS2 or later Devices, SMETS1 Responses shall include message codes to correspond with the GBCS Use Cases identified in step 6 above.</p>	

Table 72 Update Meter Balance Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.5.1 Service Request

1.5.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateMeterBalance XML element defines this Service Request and contains the Update type (Adjustment or Reset) and, for Adjustment, the Amount to be added to / subtracted from the Balance.

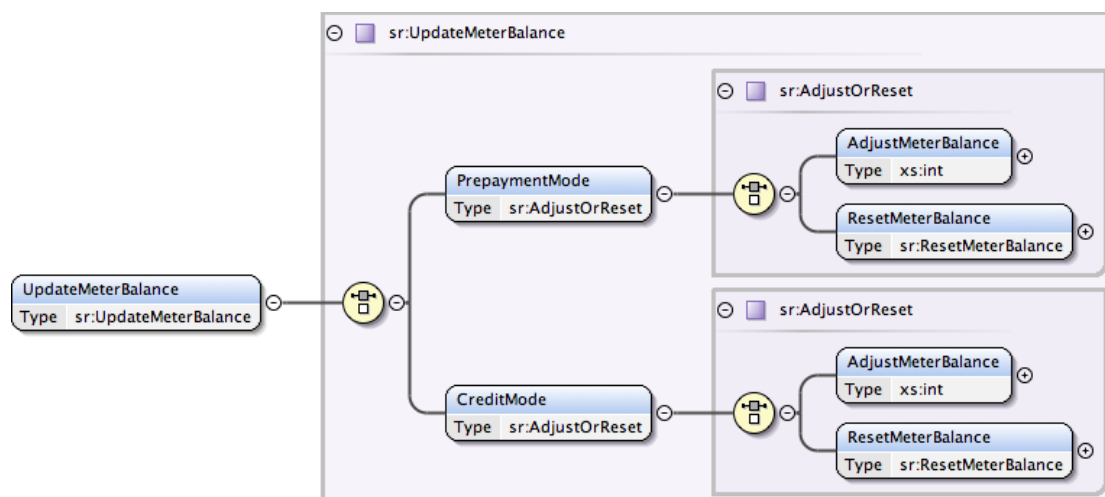


Figure 42 Update Meter Balance Service Request Structure

1.5.1.2 Specific Data Items Definition

Either PrepaymentMode or CreditMode must be defined in the request.

- When a Device is Operating in Prepayment Mode then the Prepayment Mode Data item must be included in the Service Request.
- When a Device is Operating in Credit Mode then the CreditMode Data item must be included in the Service Request.

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
PrepaymentMode	The Smart Meter is operating in Prepayment mode	sr: AdjustOrReset (see section 1.5.1.3)	Yes (if in Prepayment mode)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CreditMode	The Smart Meter is operating in Credit mode	sr:AdjustOrReset (see section 1.5.1.3)	Yes (if in Credit mode)	None	N/A	Non-Sensitive

Table 73 Update Meter Balance Service Request Data Items

1.5.1.3 AdjustOrReset Data Items Definition

Either AdjustMeterBalance or ResetMeterBalance must be defined in the request.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AdjustMeterBalance	The amount by which the Meter Balance is to be adjusted (which may be a positive or negative Integer).	xs:int	Yes if adjusting the balance	None	1000 th pence /cent	Non-Sensitive
ResetMeterBalance	Reset the Meter Balance to zero	sr:ResetMeterBalance This type has no definition	Yes if resetting the balance	None	N/A	Non-Sensitive

Table 74 Update Meter Balance Service Request - AdjustOrReset Items

1.5.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 75 Update Meter Balance Modes of Operation

1.5.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 76 Update Meter Balance Command Variant Values

1.5.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

1.5.1.7 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateMeterBalance>
  <PrepaymentMode>
    <AdjustMeterBalance>100000</AdjustMeterBalance>
  </PrepaymentMode>
</UpdateMeterBalance>
```

Figure 43 Update Meter Balance Transform Request (Body) Format

1.5.2 Responses

The response messages for an “Update Meter Balance” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.5.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateMeterBalanceRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML Schema.

1.5.2.1.1 Specific Header Data Items

This Service Request 1.5 will be implemented by a meter command in one of 6 different GBCS use cases, depending on the input parameters sent by the DCC Service User, so there are 6 different GBCS uses cases which may be returned in the response.

Data Item	ResetMeterBalance for ESME (both PrepaymentMode & CreditMode)	ResetMeterBalance for ESME (both PrepaymentMode & CreditMode)
GBCSHexadecimalMessageCode	001C	00B3
GBCS Use Case Number (for information only - not in header)	ECS40a	ECS40b
GBCS Use Case Name (for information only - not in header)	Adjust Meter Balance on the ESME	Reset Meter Balance on the ESME

Data Item	ResetMeterBalance for ESME (both PrepaymentMode & CreditMode)	ResetMeterBalance for ESME (both PrepaymentMode & CreditMode)
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 77 - Update Meter Balance Parse/ SMETS1 Response Header Data Items Electricity

Data Item	PrepaymentMode & AdjustMeterBalance for GSME	PrepaymentMode & ResetMeterBalance for GSME	CreditMode & AdjustMeterBalance for GSME	CreditMode & ResetMeterBalance for GSME
GBCSHexadecimalMessageCode	0086	00B4	00C0	00C2
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>GCS40a</i>	<i>GCS40b</i>	<i>GCS40c</i>	<i>GCS40d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Adjust Prepayment Mode Meter Balance on the GSME</i>	<i>Reset Prepayment Mode Meter Balance on the GSME</i>	<i>Adjust Credit Mode Meter Balance on the GSME</i>	<i>Reset Credit Mode Meter Balance on the GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present	Not Present

Table 78 - Update Meter Balance Parse/ SMETS1 Response Header Data Items - Gas

1.6 Update Payment Mode (1.6)

Service Request Name	UpdatePaymentMode
Service Reference	1.6
Service Request Variant Name	UpdatePaymentMode
Service Reference Variant	1.6

Service Request Objective	To enable a DCC Service User to send a command to a ESME or GSME to set the payment mode to either Prepayment Mode or Credit Mode such that the meter can update its configuration.	
Business Context Statement	The customer has requested, either as a result of a change of tenancy, change of supplier or out of personal choice, a change of payment mode to either Prepayment Mode or Credit Mode. The supplier is responsible for resolving accounts, providing means to vend, ensuring that a payment mode is safe and practicable prior to undertaking the mode change.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative (SMETS2 or later)	<p>On change of Payment Mode the device may create and store various snapshots on information and record in the Billing Data Log, as defined in SMETS.</p> <p>Update Payment Mode to Prepayment Mode</p> <p>This Service Request sets the following SMETS data items on the ESME/GSME;</p> <ul style="list-style-type: none"> Payment Mode Disablement Threshold Suspend Debt Disabled Suspend Debt Emergency <p>Update Payment Mode to Credit Mode</p> <p>This Service Request sets the following SMETS data items on the ESME/GSME;</p> <ul style="list-style-type: none"> Payment Mode 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	Payment Mode Credit – 0x001A Payment Mode Prepayment - 0x001B	Payment Mode Credit – 0x006C Payment Mode Prepayment - 0x006D
GBCS Use Case	Payment Mode Credit – ECS02 Payment Mode Prepayment – ECS03	Payment Mode Credit – GCS02 Payment Mode Prepayment – GCS03
GBCS Use Case Name	Set ESME Payment Mode to Credit Set ESME Payment Mode to Prepayment	Set GSME Payment Mode to Credit Set GSME Payment Mode to Prepayment
SMETS1 Applicability	Yes	Yes

Service Request Narrative (SMETS1)

The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:

1. Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document, and shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing values for the Total Consumption Register, Total Active Import Register or the Tariff TOU Block Register Matrix.
2. The meaning of the SuspendDebtDisabled and SuspendDebtEmergency values shall be as defined in the SMETS1 Supporting Requirements

Table 79 Update Price Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.6.1 Service Request

1.6.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdatePaymentMode XML element defines this Service Request and contains the Payment Mode and associated data to be set on the Device and, for Future Dated Requests, the Execution Date Time.

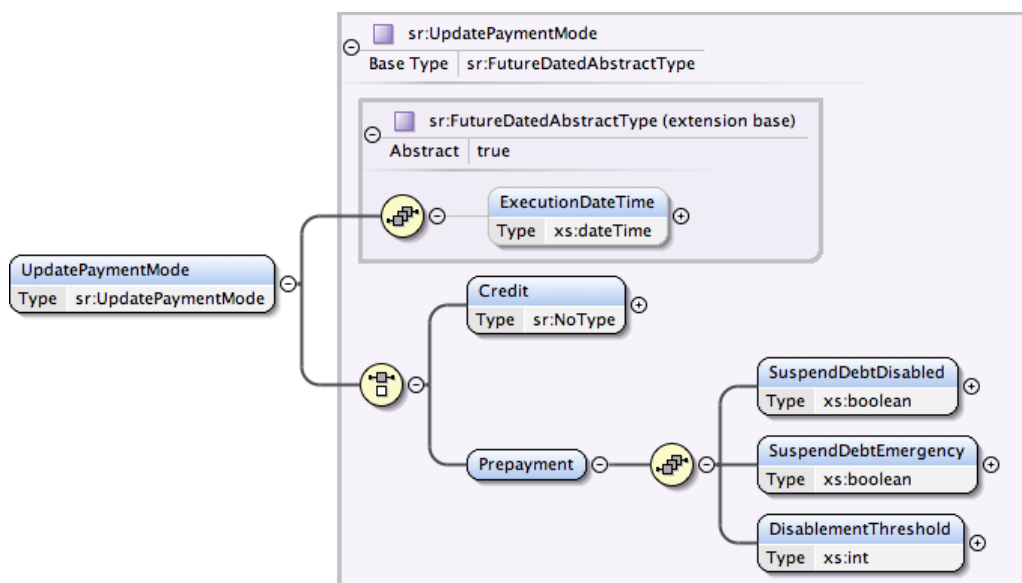


Figure 44 Update Payment Mode Service Request Structure

1.6.1.2 Specific Data Items Definition

Either Credit or Prepayment must be defined in the request.

- To set a Device into Credit mode then the Credit Data item must be included in the Service Request.

- To set a Device into Prepayment mode then the Prepayment Data item must be included in the Service Request.

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
Credit	Switch the device into Credit mode	sr:NoType (See Annex 17)	Yes for switching Device to Credit Mode	None	N/A	Non-Sensitive
Prepayment	Switch the device into Prepayment	See 1.6.1.3	Yes for switching Device to Prepayment Mode	None	N/A	Non-Sensitive

Table 80 Update Payment Mode Data Items

1.6.1.3 Prepayment Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SuspendDebtDisabled	A setting controlling whether debt should be collected when the Meter is operating in Prepayment Mode and Supply is Disabled. See SMETS for details. <ul style="list-style-type: none"> true: If the supply is disabled due to lack of credit, then the Meter shall not collect the Time Debts however the Standing Charge is still collected from the Meter Balance false: If the supply is disabled due to lack of credit, then the Meter shall collect the Time Debts and the Standing Charge from the Meter Balance SMETS1 only: the meaning of this value shall be as defined in the SMETS1 Supporting Requirements	xs:boolean	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SuspendDebtEmergency	<p>A setting controlling whether debt should be collected when the Meter is operating in Prepayment Mode and Emergency Credit has been activated. See SMETS for details.</p> <ul style="list-style-type: none"> true: If Emergency Credit is in use, then the Meter shall not collect the Standing Charge or Time Debts from the Emergency Credit Balance and will instead increment the Accumulated Debt Register false: If Emergency Credit is in use, then the Meter shall collect the Standing Charge and Time Debts from the Emergency Credit Balance <p>SMETS1 only: the meaning of this value shall be as defined in the SMETS1 Supporting Requirements</p>	xs:boolean	Yes	None	N/A	Non-Sensitive
DisablementThreshold	<p>The threshold in Currency Units for controlling when to Disable the Supply.</p> <p>Guidance note: Service Users are advised that if a disablement threshold is set to a value other than zero then devices may not behave consistently as expected.</p> <p>DCC notes that SMETS, GBCS and DUIS allows disablement thresholds to be set as negative, zero and positive values. The required behaviour in relation to the Disablement Threshold is the same regardless of whether its value is zero or not.</p> <p>To date, Suppliers have not yet identified a business scenario where they plan to use a value other than zero for Disablement Threshold. As a result, Service Users should note that Device manufacturers have not had an opportunity to test all permutations, and Manufacturers and Suppliers indicated there could be a range of unpredictable behaviour if a non-zero disablement threshold is set.</p>	xs:int	Yes	None	1000 th pence /cent	Non-Sensitive

Table 81 Update Payment Mode Service Request Data Items

1.6.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS1	No	Yes	No	DSP	No

Table 82 Update Payment Mode Modes of Operation

1.6.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 83 Update Payment Mode Command Variant Values

1.6.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

1.6.1.7 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdatePaymentMode>
  <Prepayment>
    <SuspendDebtDisabled>true</SuspendDebtDisabled>
    <SuspendDebtEmergency>true</SuspendDebtEmergency>
    <DisablementThreshold>10000</DisablementThreshold>
  </Prepayment>
</UpdatePaymentMode>
```

Figure 45 Update Payment Mode Transform Request (Body) Format

1.6.2 Responses

The response messages for an "Update Payment Mode" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.6.2.1 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request's Command contains a variable number of instructions ('n' = 3 for Credit and 'n' = 5 for Prepayment) and activation date-time instructions ('m' = 1 for Credit and 'n' = 2 for Prepayment) for Electricity and a fixed number of instructions ('n' = 1) and activation date-time instructions ('m' = 1) for Gas. See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1 (Electricity) and 15.4.4.3.2 (Gas)

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

1.6.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdatePaymentModeRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML Schema.

See section 1.6.2.1 for description of the responses to future dated execution requests.

1.6.2.2.1 Specific Header Data Items

This Service Request 1.6 will be implemented by a meter command in one of 4 different GBCS use cases, depending on the input parameters sent by the DCC Service User, so there are 4 different GBCS uses cases which may be returned in the response.

Input circumstances	GBCSHexadecimal MessageCode	GBCSUseCase Number	GBCSUseCaseName	Timestamp
PaymentMode Credit for ESME	0x001A	ECS02	Set ESME Payment Mode to Credit	Present
PaymentMode Prepayment for ESME	0x001B	ECS03	Set ESME Payment Mode to Prepayment	Present
PaymentMode Credit for GSME	0x006C	GCS02	Set GSME Payment Mode to Credit	Present
PaymentMode Prepayment for GSME	0x006D	GCS03	Set GSME Payment Mode to Prepayment	Present

Table 84 - Update Payment Mode Parse/ SMETS1 Response Header Data Items

1.7 Reset Tariff Block Counter Matrix (1.7)

Service Request Name	ResetTariffBlockCounterMatrix	
Service Reference	1.7	
Service Request Variant Name	ResetTariffBlockCounterMatrix	
Service Reference Variant	1.7	
Service Request Objective	To enable a DCC Service User to reset the Tariff Block Counter Matrix on an ESME.	
Business Context Statement	The DCC Service User wishes to reset the consumer's block consumption back to zero, such that their consumption will go back to being charged at the first block rate.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative	<ol style="list-style-type: none"> The Tariff Block Counter Matrix is defined by SMETS as "A 4 x 1 matrix for storing Block Counters for Block Pricing" This Matrix determines the switching between the Block Registers within each Time-of-use Band based on Consumption accumulated in the Tariff Block Counter Matrix The ESME automatically resets its tariff block counters at the end of the block period/billing period, therefore this Service Request should be avoided in favour of forcing an end of billing period, which will reset the block counter and provide a set of register reads at the time of reset 	
GBCS Cross Reference	Electricity	Gas

GBCS Message Code	0x001D	N/A
GBCS Use Case	ECS05	N/A
GBCS Use Case Name	Reset Tariff Block Counter Matrix	N/A
SMETS1 Applicability	No	N/A

Table 85 Reset Tariff Block Counter Matrix Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

1.7.1 Service Request

1.7.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ResetTariffBlockCounterMatrix XML element defines this Service Request and doesn't contain any data items.

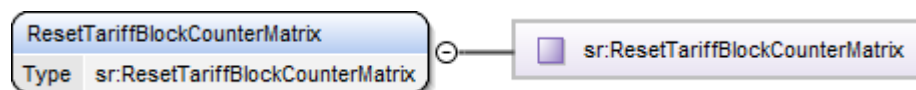


Figure 46 Reset Tariff Block Counter Matrix Service Request Structure

1.7.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 86 Reset Tariff Block Counter Matrix Modes of Operation

1.7.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 87 Reset Tariff Block Counter Matrix Command Variant Values

1.7.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

1.7.1.5 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request

- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ResetTariffBlockCounterMatrix/>
```

Figure 47 Reset Tariff Block Counter Matrix Transform Request (Body) Format

1.7.2 Responses

The response messages for a “Reset Tariff Block Counter Matrix” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

1.7.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is ResetTariffBlockCounterMatrixRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML Schema.

1.7.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	001D
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS05</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Reset Tariff Block Counter Matrix</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 88 - Reset Tariff Block Counter Matrix Parse Response Header Data Items

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 2 – Prepay Service

Author: DCC
Version: 5.2a
Date: June 2023

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2 Prepay Service (2 – PS)

This section sets out the full content of the DCC Prepay Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	PrepayService	Service Id	2
Service Objective	To enable a DCC Service User to manage their prepayment metering estate such that credit can be purchased, prepayment specific configurations can be amended and debt can be managed. The service also provides DCC Service Users with the ability to remove prepayment data when appropriate to protect customer privacy.		
Business Context Statement	<p>In managing their Prepayment metering estate, DCC Service Users may experience the following business events that initiate use of a Prepay service request:</p> <ul style="list-style-type: none"> Following a business event (such as CoT or CoS) a DCC Service User wishes to amend one or more of the following: <ul style="list-style-type: none"> Prepayment configuration (e.g. non-disconnection calendar) Debt register values A customer makes a top up credit purchase resulting in a request to send a UTRN to the device to apply the credit purchase to the device registers, or; Following CoT/CoS, the DCC Service User wishes to remove data from the SMS device which may be sensitive or private <p>NB – the Service request to change the Payment mode from Credit to Prepay and vice versa is contained within the 01. Product Management service (Annex Section 1)</p>		
User Roles	<p>This Service is only available to:</p> <ul style="list-style-type: none"> Electricity Import Suppliers (EIS) Gas Import Suppliers (GIS) <p>As it relates to the management of prepayment meters.</p>		

Table 1 Overview of Prepay Service

The mapping between the Prepay Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
2.1	2.1	Update Prepay Configuration	ESME GSME
2.2	2.2	Top Up Device	ESME GSME
2.3	2.3	Update Debt	ESME GSME
2.5	2.5	Activate Emergency Credit	ESME GSME

Table 2 PS - Service Requests / Devices

For each of the PS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

2.1 Update Prepay Configuration (2.1)

Service Request Name	UpdatePrepayConfiguration
Service Reference	2.1
Service Request Variant Name	UpdatePrepayConfiguration
Service Reference Variant	2.1
Service Request Objective	To enable a DCC Service User to update the prepayment configuration on a specified meter.
Business Context Statement	<ul style="list-style-type: none">• Supplier requires the prepayment device configuration to be updated subsequent to a successful change of mode from credit to prepayment• Supplier wishes to update the configuration parameters on a prepay device, to amend:<ul style="list-style-type: none">• the non-disablement calendar, as the periods change on an annual basis (e.g. different public holiday dates);• the emergency credit threshold or value (inflation may require changes to these);• update the debt recovery rate. <p>Any configuration changes of this nature will be pre-planned and thus will be required to be effected within a reasonable and agreed time e.g. a day.</p>
User Role Access	<ul style="list-style-type: none">• Electricity Import Supplier (EIS)• Gas Import Supplier (GIS)
Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>

<p>Service Request Narrative (SMETS2 or later)</p>	<ol style="list-style-type: none"> 1. This Service Request covers setting up the repayment rates, emergency credit functions, credit warning thresholds, and whether debt is collected when credit is exhausted or emergency credit is in use. 2. The Non Disablement Calendar is defined as a schedule for Electricity and as a calendar for Gas 3. If the ESME is at GBCS v1.0 the following workaround should be used: <ol style="list-style-type: none"> a. If the EIS <u>does not</u> wish to use Maximum Meter Balance Threshold as a control on Prepayment Top Ups: <ul style="list-style-type: none"> the MaxMeterBalance element in the Service Request 2.1 should be set to have a value of 2,147,483,647, so the relevant part of the Service Request would be: <MaxMeterBalance>2 147 483 647</MaxMeterBalance> b. If the EIS <u>does</u> wish to use Maximum Meter Balance Threshold as a control on Prepayment Top Ups: <ol style="list-style-type: none"> 1. a value for Maximum Meter Balance Threshold should be selected: MAX_BAL. [Note that this is a value in millipence]; 2. the MaxMeterBalance element in the Service Request 2.1 should be set to have a value of MAX_BAL so the relevant part of the Service Request would be: <MaxMeterBalance> MAX_BAL</MaxMeterBalance> 3. once the resulting Prepay Configurations have been activated on the ESME, a second Service Request 2.1 should be submitted with the same details as the first EXCEPT that ExecutionDateTime should be set to '3000-12-31T00:00:00Z' (the DUIS value for the 'End of Time'). Here the relevant part of the Service Request would be: <ExecutionDateTime>3000-12-31T00:00:00Z</ExecutionDateTime> 4. Whilst Emergency Credit is 'available', Suppliers should avoid adjusting the Emergency Credit Threshold. This is because this can, if the Emergency Credit has been activated, lead to the Smart Meter being in a state where: <ul style="list-style-type: none"> Emergency Credit is both 'unavailable' and 'activated'; and / or Devices cannot ascertain Emergency Credit Used. <p>In these states, Device behaviour is undefined.</p> <p>Several parameters in this service request are in units of 1000th pence. The parameters MaxMeterBalance and MaxCreditThreshold cannot be set on SMETS2 meters with resolution below whole pounds due to differences with the implementation of GBCS on some device models. Values for these two parameters should always be created with the five least significant digits set to 0 because any other values would be lost during the transformation to GBCS. The other parameters where the unit is 1000th pence may be created with full resolution down to a single 1000th of a penny,</p> 	
<p>GBCS Cross Reference</p>	<p>Electricity</p>	<p>Gas</p>

GBCS v1.0 Message Code	0x001F	0x006F
GBCS v1.0 Use Case	ECS08	GCS05
GBCS v1.0 Use Case Name	Update Prepayment Configuration on ESME	Update Prepayment Configuration on GSME
GBCS v2.0 Message Code	0x00DE	0x006F
GBCS v2.0 Use Case	ECS08a	GCS05
GBCS v2.0 Use Case Name	Update Prepayment Configuration on ESME	Update Prepayment Configuration on GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: 1. Processing shall not include the setting of values equivalent to the MaxMeterBalance and MaxCreditThreshold where the Device does not support such setting. 2. Point 5 regarding the resolution of the values of MaxMeterBalance and MaxCreditThreshold does not apply to SMETS1 meters.	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	ECS08	ECS08a
DUIS 2 or later: DEFAULT - No specific XML criteria	ECS08	ECS08a
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1 or later: DEFAULT - No specific XML criteria	GCS05	GCS05

Table 3 Update Prepay Configuration Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

2.1.1 Service Request

2.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdatePrepayConfiguration XML element defines this Service Request and contains the Prepay Configuration data to be applied to the Device and, for Future Dated Requests, the Execution Date and Time.

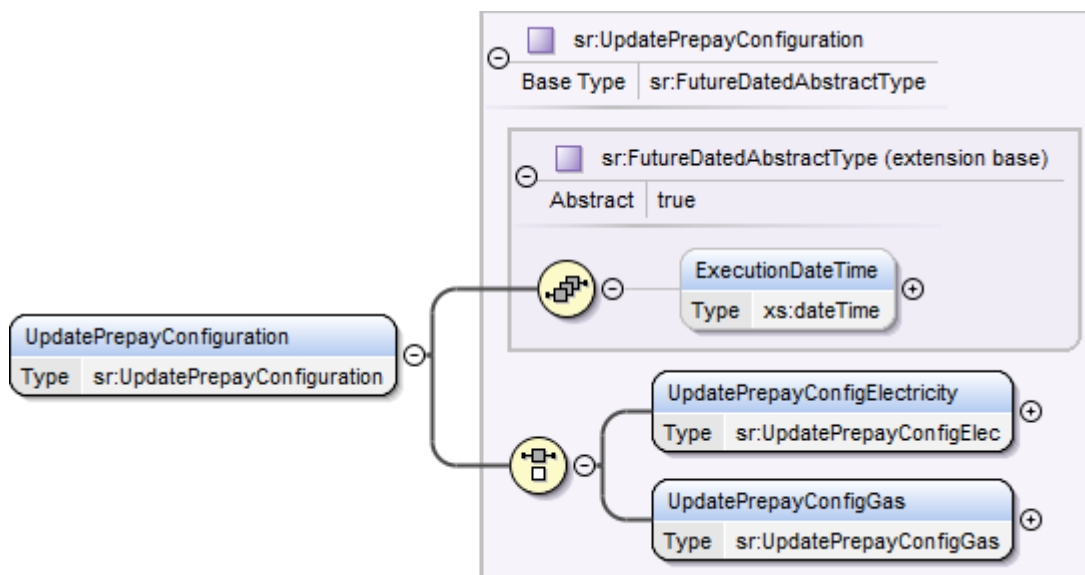


Figure 1 Update Prepay Configuration Service Request Structure

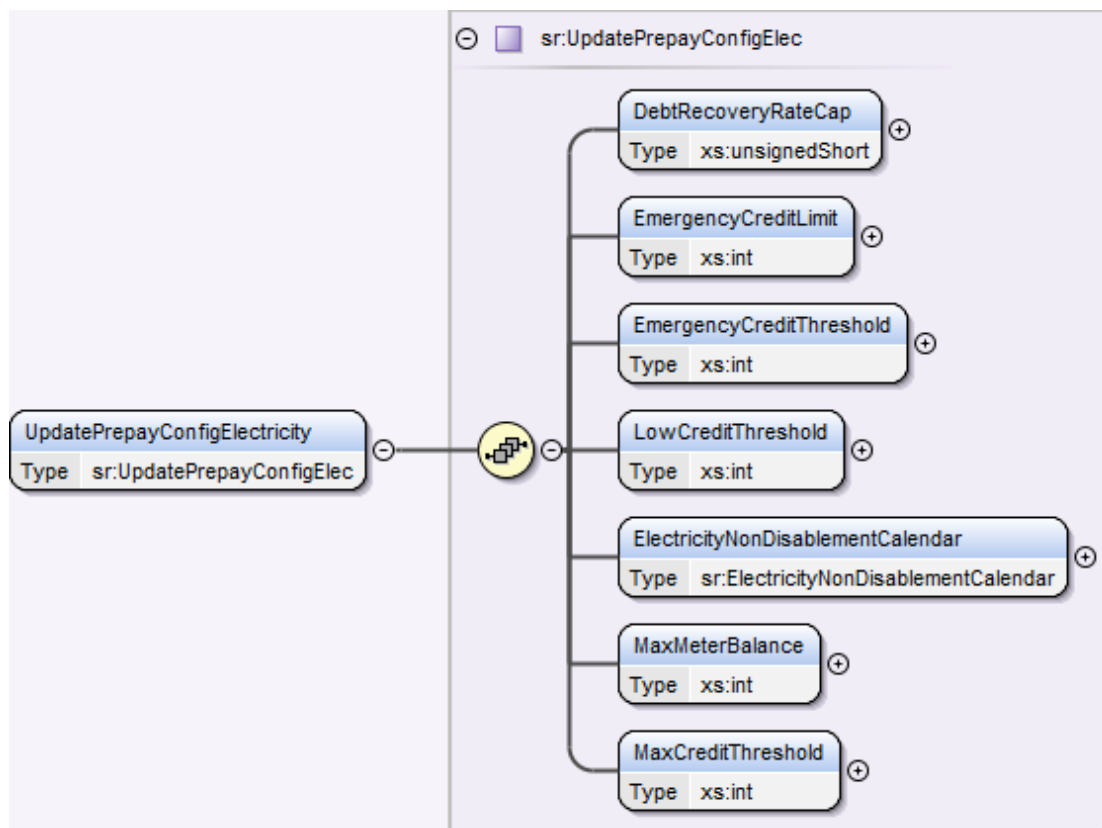


Figure 2 Update Prepay Configuration Service Request – Electricity

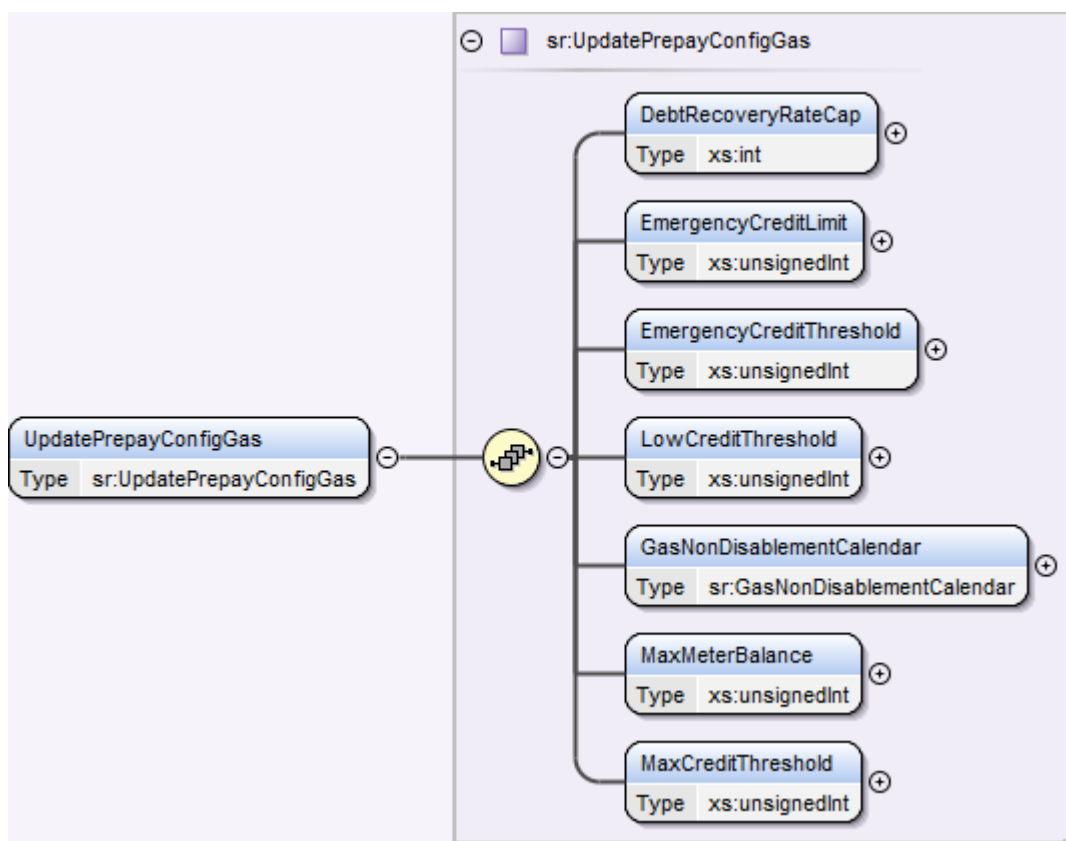


Figure 3 Update Prepay Configuration Service Request – Gas

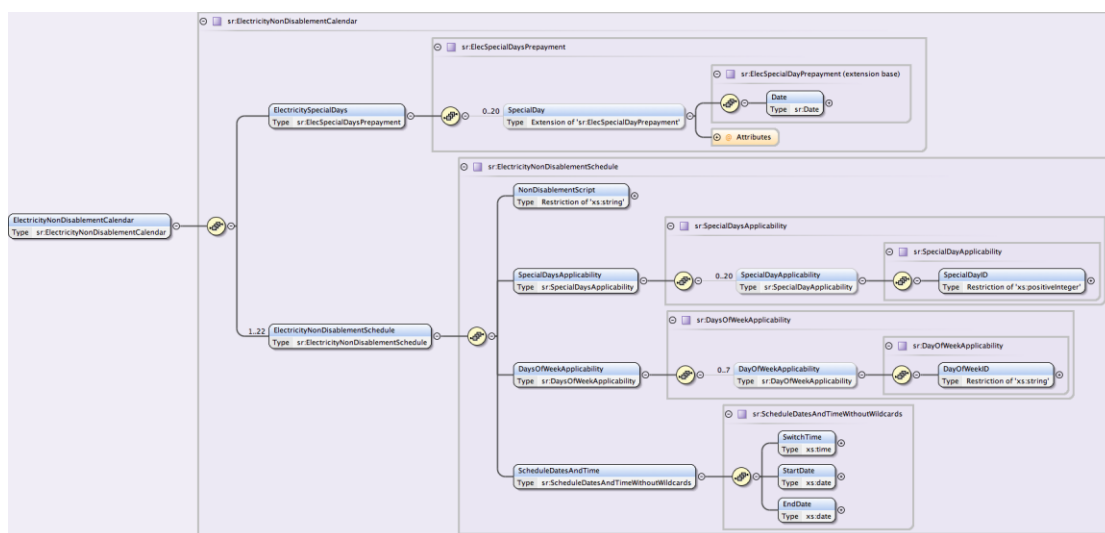


Figure 4 Update Prepay Configuration Service Request – Electricity Non Disablement Calendar Structure

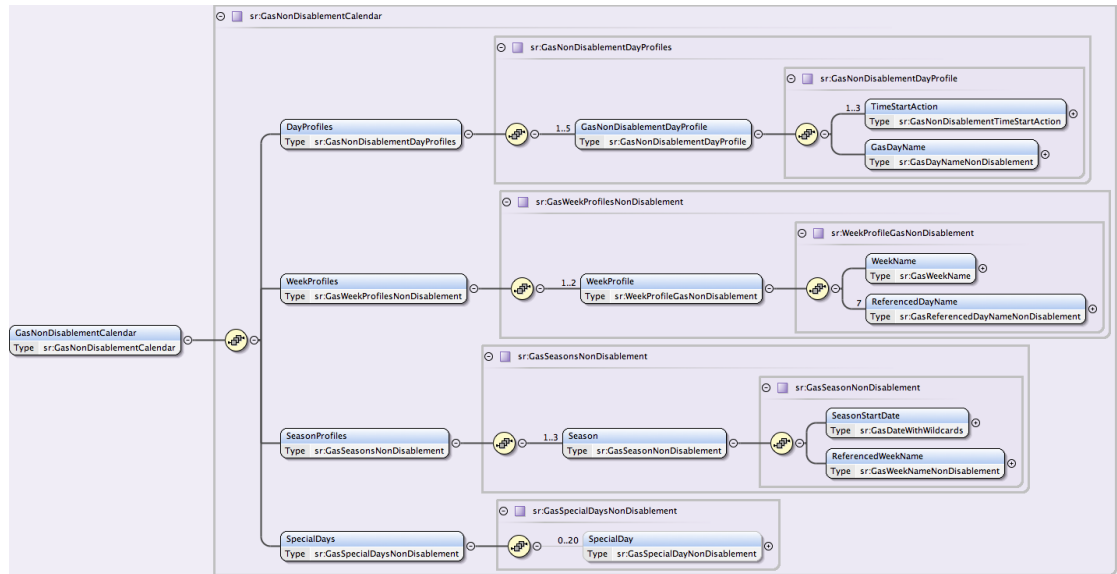


Figure 5 Update Prepay Configuration Service Request – Gas Non Disablement Calendar Structure

2.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
UpdatePrepayConfigElectricity	ESME Prepay configuration elements	sr:UpdatePrepayConfigurationElectricity (see section 2.1.1.3)	Device Type = ESME, Yes Otherwise, N/A	None	N/A	Non-Sensitive
UpdatePrepayConfigGas	GSME Prepay configuration elements	sr:UpdatePrepayConfigurationGas (see section 2.1.1.4)	Device Type = GSME, Yes Otherwise, N/A	None	N/A	Non-Sensitive

Table 4 Update Prepay Configuration Service Request Data Items

2.1.1.3 UpdatePrepayConfigElectricity Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DebtRecoveryRateCap	The maximum amount in Currency Units per unit time (week) that can be recovered through Payment-based Debt Recovery when the Meter is operating in Prepayment Mode.	xs:unsignedShort	Yes	None	GBP / ECB per week	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
EmergencyCreditLimit	The amount of Emergency Credit in Currency Units to be made available to a Consumer when Emergency Credit is activated by the Consumer. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
EmergencyCreditThreshold	The threshold in Currency Units below which Emergency Credit may be activated by the Consumer, if so configured, when the Meter is operating in Prepayment Mode. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
LowCreditThreshold	The threshold in Currency Units below which a low credit Alert is signalled. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
ElectricityNonDisablingCalendar	A calendar defining UTC times, days and dates that specify periods during which the Supply will not be Disabled when the meter is operating in Prepayment Mode, in on and off dates/times. Structure defining the Non Disabling schedules	sr:ElectricityNonDisablingCalendar (see section 2.1.1.5)	Yes	None	N/A	Non-Sensitive
MaxMeterBalance	The Meter Balance threshold in Currency Units above which an Add Credit Command is rejected. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour. SMETS1: the DCC shall not send this value to SMETS1 Devices which do not support it. SMETS2: values should be created with the five least significant digits set to 0 because any other values would be lost during the transformation to GBCS.	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MaxCreditThreshold	<p>The maximum credit which can be applied by any Add Credit Command.</p> <p>Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.</p> <p>SMETS1: the DCC shall not send this value to SMETS1 Devices which do not support it.</p> <p>SMETS2: values should be created with the five least significant digits set to 0 because any other values would be lost during the transformation to GBCS.</p>	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive

Table 5 Update Prepay Configuration Service Request - UpdatePrepayConfigElectricity Data Items

2.1.1.4 UpdatePrepayConfigGas Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DebtRecoveryRateCap	<p>The maximum amount in Currency Units per unit time (week) that can be recovered through Payment-based Debt Recovery when the Meter is operating in Prepayment Mode.</p> <p>Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.</p>	xs:int	Yes	None	1000 th pence / cent per week	Non-Sensitive
EmergencyCreditLimit	The amount of Emergency Credit in Currency Units to be made available to a Consumer when Emergency Credit is activated by the Consumer.	xs:unsignedInt	Yes	None	1000 th pence / cent	Non-Sensitive
EmergencyCreditThreshold	The threshold in Currency Units below which Emergency Credit may be activated by the Consumer, if so configured, when the Meter is operating in Prepayment Mode.	xs:unsignedInt	Yes	None	1000 th pence / cent	Non-Sensitive
LowCreditThreshold	The threshold in Currency Units below which a low credit Alert is signalled.	xs:unsignedInt	Yes	None	1000 th pence / cent	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GasNonDisablementCalendar	<p>A calendar defining UTC times, days and dates that specify periods during which the Supply will not be Disabled when the meter is operating in Prepayment Mode, in on and off dates/times.</p> <p>Calendar defining the time periods when Non-Disablement applies or doesn't apply.</p> <p>The calendar includes the definition of:</p> <ul style="list-style-type: none"> Day Identifiers. Array of up to 5 elements, each including a Day ID and up to 3 times of day to run a script to start or end a disablement period Weeks. Array of up to 2 elements, each including a Week ID and the Day ID associated to each day of that Week ID Seasons. Array of up to 3 elements, each including a Season Start Date and the Week ID associated to that Season Special Days. Array of up to 20 Special Day elements, defined as a date and Referenced Day Name. Special Days (e.g. public holidays) are used to apply different switching rules to those defined in the corresponding season. 	sr:GasNonDisablementCalendar (see section 2.1.1.13)	Yes	None	N/A	Non-Sensitive
MaxMeterBalance	<p>The Meter Balance threshold in Currency Units above which an Add Credit Command is rejected.</p> <p>SMETS1: the DCC shall not send this value to SMETS1 Devices which do not support it.</p> <p>SMETS2: values should be created with the five least significant digits set to 0 because any other values would be lost during the transformation to GBCS.</p>	xs:unsignedInt	Yes	None	1000 th pence / cent	Non-Sensitive
MaxCreditThreshold	<p>The maximum credit which can be applied by any Add Credit Command.</p> <p>SMETS1: the DCC shall not send this value to SMETS1 Devices which do not support it.</p> <p>SMETS2: values should be created with the five least significant digits set to 0 because any other values would be lost during the transformation to GBCS.</p>	xs:unsignedInt	Yes	None	1000 th pence / cent	Non-Sensitive

Table 6 Update Prepay Configuration Service Request - UpdatePrepayConfigGas Data Items

2.1.1.5 ElectricityNonDisablementCalendar Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ElectricitySpecialDays	An array of between 0 and 20 Special Days	sr:ElecSpecialDaysPrepayment (see section 2.1.1.6)	Yes ¹	None	N/A	Non-Sensitive
ElectricityNonDisablementSchedule	List of up to 22 schedules defining the time periods when Non-Disablement applies or doesn't apply	sr:ElectricityNonDisablementSchedule (see section 2.1.1.8)	Yes ²	None	N/A	Non-Sensitive

Table 7 Update Prepay Configuration Service Request - ElectricityNonDisablementCalendar Data Items

¹ Minimum of 0 and maximum of 20 Special Days. If there are no Special Days, this XML element will be present, but empty, i.e. it will contain 0 SpecialDay elements

² Minimum of 1 and maximum of 22 Schedules

2.1.1.6 ElectricitySpecialDays Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDay	A collection of SpecialDay items	sr:ElecSpecialDayPrepayment (see section 2.1.1.7)	No	None	N/A	Non-Sensitive
Index (Attribute of SpecialDay)	The attribute index provides an ordering for these elements	sr:range_1_20 (xs:positiveInteger)	No (Required if SpecialDay has been defined)	N/A	N/A	Non-Sensitive

Table 8 Update Prepay Configuration Service Request - ElectricitySpecialDays Data Items

2.1.1.7 SpecialDay Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Date	The date on which the special day applies.	sr:Date (with wildcards) (see Annex Section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 9 Update Prepay Configuration Service Request - SpecialDay Data Items

2.1.1.8 ElectricityNonDisablementSchedule Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
NonDisablementScript	Identifier to establish whether to begin (START) or end (STOP) the non-disablement period. Valid set: <ul style="list-style-type: none"> START STOP 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
SpecialDaysApplicability	Special Days to which the schedule applies	sr:SpecialDaysApplicability (see section 2.1.1.9)	Yes ¹	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DaysOfWeekApplicability	The days of the week to which the schedule applies defined as an array of up to 7 Day IDs (Monday ID = 1, Sunday ID = 7)	sr:DaysOfWeekID (see section 2.1.1.11)	Yes ²	None	N/A	Non-Sensitive
ScheduleDatesAndTime	The switch time and date range (without wildcards) when the script is to be run	sr:ScheduleDatesAndTimeWithoutWildcards (see Annex Section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 10 Update Prepay Configuration Service Request - ElectricityNonDisablementSchedule Data Items

¹ Minimum of 0 and maximum of 20 Special Days Applicability. If there are no Special Days, this XML element will be present, but empty, i.e. it will contain 0 SpecialDayApplicability elements

² Minimum of 0 and maximum of 7 Days Of Week Applicability. If there are no Days Of Week Applicability, this XML element will be present, but empty, i.e. it will contain 0 DayOfWeekApplicability elements

2.1.1.9 SpecialDaysApplicability Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDayApplicability	Array of between 0 and 20 Special Day ID elements	sr:SpecialDayApplicability (see section 2.1.1.10)	No	None	N/A	Non-Sensitive

Table 11 Update Prepay Configuration Service Request - SpecialDaysApplicability Data Items

2.1.1.10 SpecialDayApplicability Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDayID	Identifier of the Special Day, which correspond to the indices in SpecialDay (see section 2.1.1.6) Valid set: Value between 1 and 20	Restriction of xs:positiveInteger (min inclusive = 1 max inclusive = 20)	Yes	None	N/A	Non-Sensitive

Table 12 Update Prepay Configuration Service Request - SpecialDayApplicability Data Items

2.1.1.11 DaysOfWeekApplicability Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayOfWeekApplicability	Array of Day Of Week IDs This indicates the days on which the ElectricityNonDisablementSchedule is active.	sr:DayOfWeekID (see section 2.1.1.12)	No	None	N/A	Non-Sensitive

Table 13 Update Prepay Configuration Service Request - DaysOfWeekApplicability Data Items

2.1.1.12 DayOfWeekApplicability Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayOfWeekAplicability	The days of the week to which the schedule applies defined as an array of 7 Day IDs Valid set: <ul style="list-style-type: none"> Monday Tuesday Wednesday Thursday Friday Saturday Sunday 	sr:DayOfWeekID restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 14 Update Prepay Configuration Service Request - DayOfWeekApplicability Data Items

2.1.1.13 GasNonDisablementCalendar Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayProfiles	Array of up to 5 Day Profiles defining a Day Identifier ID and a list of 3 actions (script IDs) and start times during that day when an action (script ID) to either start or end a Non-Disablement period The actions (script IDs) applicable to this Service Request are: <ul style="list-style-type: none"> START STOP 	sr:GasNonDisablementDayProfiles (see section 2.1.1.14)	Yes	None	N/A	Non-Sensitive
WeekProfiles	Array of up to 2 elements, each including a Week ID and the Referenced Day Name associated to each day (Monday to Sunday) of that Week Name	sr:GasWeekProfilesNonDisablement (see section 2.1.1.17)	Yes	None	N/A	Non-Sensitive
SeasonProfiles	Array of up to 3 elements, each including a Season Start Date and the Week ID associated to that Season	sr:GasSeasonsNonDisablement (see section 2.1.1.19)	Yes	None	N/A	Non-Sensitive
SpecialDays	Set of between 0 and 20 days when special Non-Disablement rules (rather than those defined in the Seasons) apply.	sr:GasSpecialDaysNonDisablement (see section 2.1.1.21)	Yes ¹	None	N/A	Non-Sensitive

Table 15 Update Prepay Configuration Service Request - GasNonDisablementCalendar Data Items

¹ Minimum of 0 and maximum of 20 Special Days. If there are no Special Days, this XML element will be present, but empty, i.e. it will contain 0 SpecialDay elements

2.1.1.14 GasNonDisablementDayProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GasNonDisablementDayProfile	Array of up to 5 Gas Non Disablement day Profile	sr:GasNonDisablementDayProfile (see section 2.1.1.15)	Yes ¹	None	N/A	Non-Sensitive

Table 16 Update Prepay Configuration Service Request - GasNonDisablementDayProfiles Data Items

¹ Minimum of 1 and maximum of 5 elements

2.1.1.15 GasNonDisablementDayProfile Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
TimeStartAction	List of Actions (script) to be taken and at what start times	sr:GasNonDisablementTimeStartAction (see section 2.1.1.16)	Yes ¹	None	N/A	Non-Sensitive
GasDayName	Identifier of the day to which the Time Start Action list applies	sr:DayNameGasNonDisablement Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 5)	Yes	None	N/A	Non-Sensitive

Table 17 Update Prepay Configuration Service Request - GasNonDisablementDayProfile Data Items

¹ Minimum of 1 and maximum of 3 elements

2.1.1.16 GasNonDisablementTimeStartAction Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartTime	Time when a specific Action is to be taken (script to be run) The first one for each Day Profile has to be set to 00:00:00	xs:time	Yes	None	N/A	Non-Sensitive
NonDisablementAction	Identifier of the Script to be run to apply or not apply Non-Disablement Valid set: <ul style="list-style-type: none"> START STOP 	Restriction of xs:string	Yes	None	N/A	Non-Sensitive

Table 18 Update Prepay Configuration Service Request - GasNonDisablementTimeStartAction Data Items

2.1.1.17 WeekProfilesGas Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekProfile	Array of 2 Week Profile elements	sr:WeekProfileGasNonDisablement (see section 2.1.1.18)	Yes ¹	None	N/A	Non-Sensitive

Table 19 Update Prepay Configuration Service Request - WeekProfilesGas Data Items

¹ Minimum of 1 and maximum of 2 elements

2.1.1.18 WeekProfileGas Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
WeekName	An identifier for the week. Up to 2 weeks may be defined, each week has 7 days, and each day may point to one of the 5 ReferencedDayNames defined.	sr:GasWeekName Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 2)	Yes	None	N/A	Non-Sensitive
ReferencedDayName	Day Identifier as defined in 2.1.1.15 Note that the attribute index provides an ordering for these elements.	sr:GasReferencedDayNameNonDisablement Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 5)	Yes ¹	None	N/A	Non-Sensitive
Index (Attribute of ReferencedDayName)	The attribute index provides an ordering for these elements 1 = Monday 7 = Sunday	sr:range_1_7 (xs:positiveInteger)	Yes	N/A	N/A	Non-Sensitive

Table 20 Update Prepay Configuration Service Request - WeekProfileGas Data Items

¹ 7 elements, one for each day of the week (1: Monday, 7: Sunday)

2.1.1.19 SeasonProfiles Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Season	Array of up to 3 Season elements	sr:GasSeasonNonDisablement (see section 2.1.1.20)	Yes ¹	None	N/A	Non-Sensitive

Table 21 Update Prepay Configuration Service Request - GasSeasons Data Items

¹ Minimum of 1 and maximum of 3 elements

2.1.1.20 GasSeasons Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SeasonStartDate	The date from which this season is defined to start	sr:GasDateWithWildcards (See Annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedWeekName	Week name as defined in 2.1.1.18	Week name as defined in 2.1.1.18	Yes	None	N/A	Non-Sensitive

Table 22 Update Prepay Configuration Service Request - GasSeasons Data Items

2.1.1.21 SpecialDays Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SpecialDay	Array of between 0 and 20 Gas SpecialDay elements	sr:GasSpecialDayNonDisablement (see section 2.1.1.22)	No	None	N/A	Non-Sensitive

Table 23 Update Prepay Configuration Service Request - GasNonDisablementSpecialDays Data Items

2.1.1.22 SpecialDay Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Date	The date on which the special day applies	sr:GasDateWithWildcards (See Annex 17)	Yes	None	N/A	Non-Sensitive
ReferencedDayName	Day Identifier as defined in 2.1.1.15	sr:GasDayNameNonDisabling	Yes	None	N/A	Non-Sensitive

Table 24 Update Prepay Configuration Service Request - GasSpecialDay Data Items

2.1.1.23 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No
SMETS1	No	Yes	No	DSP	No

Table 25 Update Prepay Configuration Mode Modes of Operation

2.1.1.24 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 26 Update Prepay Configuration Command Variant Values

2.1.1.25 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

2.1.1.26 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Transform Service Request (Body) is as follows:

Please note only a subset of the possible Non Disabling Calendar records have been included for illustration purposes. Due to its size and to include Electricity and Gas details, the sample has been split into 4 figures.

```
<UpdatePrepayConfiguration>
  <UpdatePrepayConfigElectricity>
    <DebtRecoveryRateCap>50</DebtRecoveryRateCap>
    <EmergencyCreditLimit>5000000</EmergencyCreditLimit>
    <EmergencyCreditThreshold>5000000</EmergencyCreditThreshold>
    <LowCreditThreshold>5000000</LowCreditThreshold>

    ← See Figure 8 for details of ElectricityNonDisablementCalendar elements for Electricity →

    <MaxMeterBalance>5000000</MaxMeterBalance>
    <MaxCreditThreshold>5000000</MaxCreditThreshold>
  </UpdatePrepayConfigElectricity>
</UpdatePrepayConfiguration>
```

Figure 6 Update Prepay Configuration Transform Service Request (Body) Format – Electricity

```
<UpdatePrepayConfiguration>
  <UpdatePrepayConfigGas>
    <DebtRecoveryRateCap>5000000</DebtRecoveryRateCap>
    <EmergencyCreditLimit>5000000</EmergencyCreditLimit>
    <EmergencyCreditThreshold>5000000</EmergencyCreditThreshold>
    <LowCreditThreshold>5000000</LowCreditThreshold>

    ← See Figure 9 for details of GasNonDisablementCalendar elements for Gas →

    <MaxMeterBalance>500000</MaxMeterBalance>
    <MaxCreditThreshold>5000000</MaxCreditThreshold>
  </UpdatePrepayConfigGas>
</UpdatePrepayConfiguration>
```

Figure 7 Update Prepay Configuration Transform Service Request (Body) Format - Gas

```
<ElectricityNonDisablementCalendar>
  <ElectricitySpecialDays>
    <SpecialDay index="1">
      <Date>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>12</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>25</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek></NonSpecifiedDayOfWeek></DayOfWeek>
      </Date>
    </SpecialDay>
  </ElectricitySpecialDays>
  <ElectricityNonDisablementSchedule>
    <NonDisablementScript>START</NonDisablementScript>
    <SpecialDaysApplicability>
      <SpecialDayApplicability>
        <SpecialDayID>1</SpecialDayID>
      </SpecialDayApplicability>
    </SpecialDaysApplicability>
    <DaysOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Sunday</DayOfWeekID>
      </DayOfWeekApplicability>
    </DaysOfWeekApplicability>
    <ScheduleDatesAndTime>
      <SwitchTime>00:00:00.00Z</SwitchTime>
      <StartDate>2015-09-07Z</StartDate>
      <EndDate>2020-12-31Z</EndDate>
    </ScheduleDatesAndTime>
  </ElectricityNonDisablementSchedule>
  <ElectricityNonDisablementSchedule>
    <NonDisablementScript>STOP</NonDisablementScript>
    <SpecialDaysApplicability>
      <SpecialDayApplicability>
        <SpecialDayID>1</SpecialDayID>
      </SpecialDayApplicability>
    </SpecialDaysApplicability>
    <DaysOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Sunday</DayOfWeekID>
      </DayOfWeekApplicability>
    </DaysOfWeekApplicability>
    <ScheduleDatesAndTime>
      <SwitchTime>23:59:59.00Z</SwitchTime>
      <StartDate>2015-09-07</StartDate>
      <EndDate>2020-12-31Z</EndDate>
    </ScheduleDatesAndTime>
  </ElectricityNonDisablementSchedule>
</ElectricityNonDisablementCalendar>
```

Figure 8 Update Prepay Configuration Transform Service Request Format (Detail - Electricity)

In this example:

- Special Days include Christmas of every year
- Only 2 of the 22 possible schedules are included
- In the first schedule the script to start Non-Disablement is run at 00:00:00.05Z every Sunday of every month and year and on Christmas day of every year between the 7th of September 2015 and the 31st of December 2020
- In the second schedule the script to end Non-Disablement is run at 23:59:59.05Z every Sunday of every month and year and on Christmas day of every year between the 7th of September 2015 and the 31st of December 2020

```

<GasNonDisablementCalendar>
  <DayProfiles>
    <GasNonDisablementDayProfile>
      <TimeStartAction>
        <StartTime>00:00:00.00Z</StartTime>
        <NonDisablementAction>START</NonDisablementAction>
      </TimeStartAction>
      <TimeStartAction>
        <StartTime>07:00:00.00Z</StartTime>
        <NonDisablementAction>STOP</NonDisablementAction>
      </TimeStartAction>
      <TimeStartAction>
        <StartTime>22:00:00.00Z</StartTime>
        <NonDisablementAction>START</NonDisablementAction>
      </TimeStartAction>
      <GasDayName>1</GasDayName>
    </GasNonDisablementDayProfile>
    <GasNonDisablementDayProfile>
      <TimeStartAction>
        <StartTime>00:00:00.00Z</StartTime>
        <NonDisablementAction>START</NonDisablementAction>
      </TimeStartAction>
      <TimeStartAction>
        <StartTime>23:59:59.00Z</StartTime>
        <NonDisablementAction>STOP</NonDisablementAction>
      </TimeStartAction>
      <GasDayName>2</GasDayName>
    </GasNonDisablementDayProfile>
  </DayProfiles>
  <WeekProfiles>
    <WeekProfile>
      <WeekName>1</WeekName>
      <ReferencedDayName index="1">1</ReferencedDayName>
      <ReferencedDayName index="2">1</ReferencedDayName>
      <ReferencedDayName index="3">1</ReferencedDayName>
      <ReferencedDayName index="4">1</ReferencedDayName>
      <ReferencedDayName index="5">1</ReferencedDayName>
      <ReferencedDayName index="6">2</ReferencedDayName>
      <ReferencedDayName index="7">2</ReferencedDayName>
    </WeekProfile>
  </WeekProfiles>
  <SeasonProfiles>
    <Season>
      <SeasonStartDate>
        <GasYearWithWildcards><SpecifiedYear>2015</SpecifiedYear></GasYearWithWildcards>
        <GasMonthWithWildcards><SpecifiedMonth>12</SpecifiedMonth></GasMonthWithWildcards>
        <GasDayOfMonthWithWildcards><SpecifiedDayOfMonth>1</SpecifiedDayOfMonth></GasDayOfMonthWithWildcards>
        <GasDayOfWeekWithWildcards><NonSpecifiedDayOfWeek></NonSpecifiedDayOfWeek></GasDayOfWeekWithWildcards>
      </SeasonStartDate>
      <ReferencedWeekName>1</ReferencedWeekName>
    </Season>
  </SeasonProfiles>
  <SpecialDays>
    <SpecialDay>
      <Date>
        <GasYearWithWildcards><NonSpecifiedYear></GasYearWithWildcards>
        <GasMonthWithWildcards><SpecifiedMonth>12</SpecifiedMonth></GasMonthWithWildcards>
        <GasDayOfMonthWithWildcards><SpecifiedDayOfMonth>25</SpecifiedDayOfMonth></GasDayOfMonthWithWildcards>
        <GasDayOfWeekWithWildcards><NonSpecifiedDayOfWeek></GasDayOfWeekWithWildcards>
      </Date>
      <ReferencedDayName>2</ReferencedDayName>
    </SpecialDay>
  </SpecialDays>
</GasNonDisablementCalendar>

```

Figure 9 Update Prepay Configuration Transform Service Request Format (Detail - Gas)

In this example:

- Special Days include Christmas of every year, with a Referenced Day set to 2.
- Day Profiles; Only Day Identifier 1 (weekday – 3 switching actions / start times) and 2 (weekend – 2 switching actions / start times) are defined.
- Weeks. Only Week Identifier 1 has been defined.
- Seasons. Only one Season starting on the 1st of December 2015 has been defined.

2.1.2 Responses

The response messages for an "Update Prepay Configuration" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

2.1.2.1 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request's Command contains a fixed number of instructions ('n' = 18) and activation date-time instructions ('m' = 9) for Electricity and a variable number of instructions (9 <= 'n' <= 14) and a fixed number of activation date-time instructions ('m' = 6) for Gas. See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1 (Electricity) and 15.4.4.3.2 (Gas)

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

2.1.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdatePrepayConfigurationRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

See section 2.1.2.1 for description of the responses to future dated execution requests.

2.1.2.2.1 Specific Header Data Items Definition

GBCS v1.0:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	001F	006F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS08</i>	<i>GCS05</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Update Prepayment Configuration on ESME</i>	<i>Update Prepayment Configuration on GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 27 - Update Prepay Configuration Parse Response Header Data Items – GBCS v1.0

GBCS v2.0 and SMETS1:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00DE	006F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS08a</i>	<i>GCS05</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Update Prepayment Configuration on ESME</i>	<i>Update Prepayment Configuration on GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 28 - Update Prepay Configuration Parse Response Header Data Items – GBCS v2.0 and SMETS1

2.2 Top Up Device (2.2)

Service Request Name	TopUpDevice	
Service Reference	2.2	
Service Request Variant Name	TopUpDevice	
Service Reference Variant	2.2	
Service Request Objective	To enable a DCC Service User to add prepayment credit, via a UTRN to be applied, to a specified ESME or GSME to top up the meter balance.	
Business Context Statement	<p>SMETS2 or later: This service request is used when a DCC Service User receives notification that a customer has vended prepay credit. The DCC Service User now needs to ensure that the credit is applied to the appropriate ESME or GSME.</p> <p>SMETS1 only: this Service Request shall enable a DCC Service User to request the generation of a Prepayment Top Up UTRN by the appropriate S1SP, the sending of the resulting UTRN to the Device and the returning of the resulting UTRN to the requesting Service User. Alternative implementations of Command Variants 2 and 3 are implemented to achieve this functionality for SMETS1 Devices (see section 2.2.1.4).</p>	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later: <i>GBCS XREF: SME.C.NC</i></p>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> Logically, the target ESME or GSME specified in this Service Request should have its <i>Payment Mode</i> as defined in SMETS set to "<i>Prepayment Mode</i>" to use this Service Request. This Service Request doesn't support a negative top up process. To decrease a Meter balance, Service Request 1.5 Update Meter Balance has to be used. See Annex section 1. This Service Request's Originator Counter is the Supplier's Prepayment Top Up Originator Counter, which is a special case. This Prepayment Top Up Originator Counter and the Originator Counter used in all other Commands can't collide because their range of values are exclusive. See GBCS for details. Bits 41-32 of this Originator Counter are also included in the UTRN's PTUT (Prepayment Top Up Token). The UTRN's PTUT includes a Supplier MAC which uses the Supplier's Prepayment Top Up Private Key Agreement Key. See GBCS for details of UTRN format. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0007	0x0097

GBCS Use Case	CS01a	CS01b
GBCS Use Case Name	Apply Prepayment Top Up to an ESME	Apply Prepayment Top Up to an GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> For SMETS1 Devices this Service Request uses the attributes and Command Variants in a different way to SMETS2 or later behaviour. For CV 2 and CV 3 the "UTRN" data item shall contain a value in pence from which the appropriate S1SP will generate a UTRN to perform a Prepayment Top Up. The Command Variants are used as follows: <ul style="list-style-type: none"> CV = 1: the appropriate S1SP will send the UTRN from the Supplier to the required SMETS1 Device; CV = 2: the appropriate S1SP will generate a UTRN and return it to the requesting Service User in a DCC Alert with Alert code N56; CV = 3: the appropriate S1SP will generate a UTRN and both send it to the required SMETS1 Device as well as return it to the requesting Service User in a DCC Alert with Alert code N56. As specified in the SMETS1 Supporting Requirements Document, processing shall be as specified for an Add Credit WAN Interface Command. 	

Table 29 Top Up Device Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

2.2.1 Service Request

2.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its TopUpDevice XML element defines this Service Request and contains the UTRN to be applied to the Device.

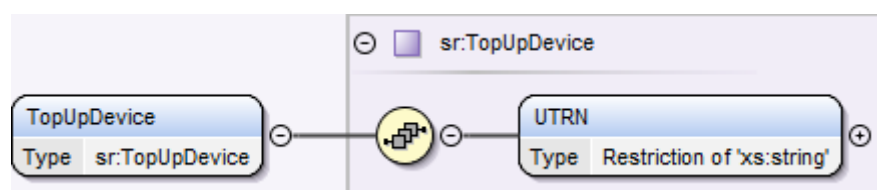


Figure 10 Top Up Device Service Request Structure

2.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UTRN	<p>SMETS2 or later or SMETS1 (CV 1): the Unique Transaction Reference Number which conveys the vend amount securely to the meter to allow it to increment the meter balance on a prepay meter. The UTRN must protect against replay, whether entered locally or sent electronically.</p> <p>SMETS1 (CV 2 or CV 3): the UTRN data item shall contain a 20 digit string (each digit taking a value of 0-9) representing value in pence, using leading zeros as necessary to give a 20 digit length. The data item will be used by the S1SP to generate a Prepayment Top Up UTRN which can be applied to the SMETS1 Meter.</p>	Restriction of xs:string (minLength = 20, maxLength = 20, pattern = "[0-9]{20}")	Yes	None	N/A	Non-Sensitive

Table 30 Top Up Device Service Request Data Items

2.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 31 Top Up Device Mode Modes of Operation

2.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are in the table below. See Main Document of this documentation set section 3 for Command Variant definitions, however note that CV = 2 and CV = 3 cause different behaviour for SMETS1 Devices, as detailed below:

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	Yes ¹	Yes ²	No	No	No	No	No

Table 32 Top Up Device Command Variant Values

¹ For this SRV 2.2, for SMETS1 Devices only, use of Command Variant CV = 2 shall be processed as follows:

- the DCC shall send a synchronous response using response code I99 if the Service Request has passed initial validation;
- where successfully validated, the DCC shall, using use the On Demand mode of operation, send the request to the appropriate S1SP to generate a SMETS1 UTRN;
- the DCC shall then return the resulting SMETS1 UTRN to the requesting User in the form of a DCC Alert with DCC Alert code N56.

² For this SRV 2.2, for SMETS1 Devices only, use of Command Variant CV = 3 shall be processed as follows:

- the DCC shall send a synchronous response using response code I99 if the Service Request has passed initial validation;
- where successfully validated, the DCC shall, using use the On Demand mode of operation, send the request to the appropriate S1SP to generate a SMETS1 UTRN and send the resulting SMETS1 UTRN to the Device;
- the DCC shall also return the resulting SMETS1 UTRN to the requesting User in the form of a DCC Alert with DCC Alert code N56.

2.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

2.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<TopUpDevice>  
<UTRN>75345678901234567893</UTRN>  
</TopUpDevice>
```

Figure 11 Top Up Device Service Request (Body) Format

2.2.2 Responses

The response messages for a “Top Up Device” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

2.2.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is TopUpDeviceRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

2.2.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0007	0097
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS01a</i>	<i>CS01b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Apply Prepayment Top Up to an ESME</i>	<i>Apply Prepayment Top Up to a GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 33 - Top Up Device Parse/ SMETS1 Response Header Data Items

2.3 Update Debt (2.3)

Service Request Name	UpdateDebt
Service Reference	2.3
Service Request Variant Name	UpdateDebt
Service Reference Variant	2.3
Service Request Objective	To enable a DCC Service User to manage a consumers debt by updating debt settings and values on a specified ESME or GSME.
Business Context Statement	<p>The DCC Service User requires that an update is made to the debt register settings or debt recovery rates currently held within a specific device, e.g. to add additional time based debt to the prepayment meter.</p> <p>Where debt data is no longer required, DCC Service Users may use this Service Request to overwrite the existing values with appropriate defaults.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Critical and non-sensitive</p> <p>SMETS2 or later: <i>GBCS XREF: SME.C.C</i></p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request will apply positive and negative adjustments to the <i>Time Debt Registers</i> [1 ... 2] and the <i>Payment Debt Register</i>, as defined in SMETS, when operating in "Prepayment Mode" and also configure the two debt recovery rates on the Smart Meter.

	<p>2. The target ESME or GSME specified in this Service Request should have its <i>Payment Mode</i>, as defined in SMETS, set to “<i>Prepayment Mode</i>” to use this Service Request. If the device is set to “Credit Mode”, the device will not execute the command and a response shall be returned to that effect.</p> <p>3. Debt can be managed on an ESME or GSME using either Time-based Debt Recovery and/or Payment-based Debt Recovery.</p> <p><u>Time Based Debt Recovery</u></p> <p>4. <i>Time Debt Registers</i> [1 ... 2] as defined in SMETS are two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery on an ESME or GSME in Prepayment Mode.</p> <p>5. <i>Debt Recovery Rates</i> [1 ... 2], as defined in SMETS are two debt recovery rates in Currency Units per unit time for when ESME/GSME is using Time-based Debt Recovery in Prepayment Mode.</p> <p><u>Payment-based Debt Recovery</u></p> <p>6. <i>Payment Debt Register</i> as defined by SMETS, records the Debt value to be recovered as a percentage of payment when using Payment-based Debt Recovery in Prepayment Mode.</p> <p>7. Debt Recovery per Payment as defined in SMETS controls the percentage of a payment to be recovered against debt when ESME/GSME is operating Payment-based Debt Recovery in Prepayment Mode</p>		
	GBCS Cross Reference	Electricity	Gas
	GBCS Message Code	0x001E	0x006E
	GBCS Use Case	ECS07	GCS04
	GBCS Use Case Name	Manage Debt on the ESME	Manage Debt on the GSME
	SMETS1 Applicability	Yes	Yes
	Service Request Narrative (SMETS1)	<p>The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> As specified in the SMETS1 Supporting Requirements Document, where any one or more of TimeDebtRegister1, TimeDebtRegister2 and PaymentDebtRegister values is not zero, debt adjustment related processing shall be as specified for an Adjust Debt WAN Interface Command; otherwise it shall be as for SMETS2 or later Devices. A SMETS1 device does not necessarily need to be in Prepayment mode to be able to use this Service Request. Guidance note (FOC only): When Sending SRV 2.3 to an L+G GSME, wait at least one wakeup cycle (30 minutes) after sending SRV 2.1. FOC Comms Hubs can only handle 3 ZigBee commands of the same command type at 	

any one time, and if exceeded then the Comms Hub will generate a failure response. In normal operation, this would not cause an issue, as most commands only result in 1 ZigBee call. However, SRV 2.3 results in 3 separate ZigBee commands of the same type being sent to the device, and SRV 2.1 results in another ZigBee command of the same type which would cause an issue on the comms hub if they are run consecutively with each other, and the user would receive a failure response.

Table 34 Update Debt Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

2.3.1 Service Request

2.3.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDebt XML element defines this Service Request and contains the adjustment values to be applied to the Device's Debt Registers.

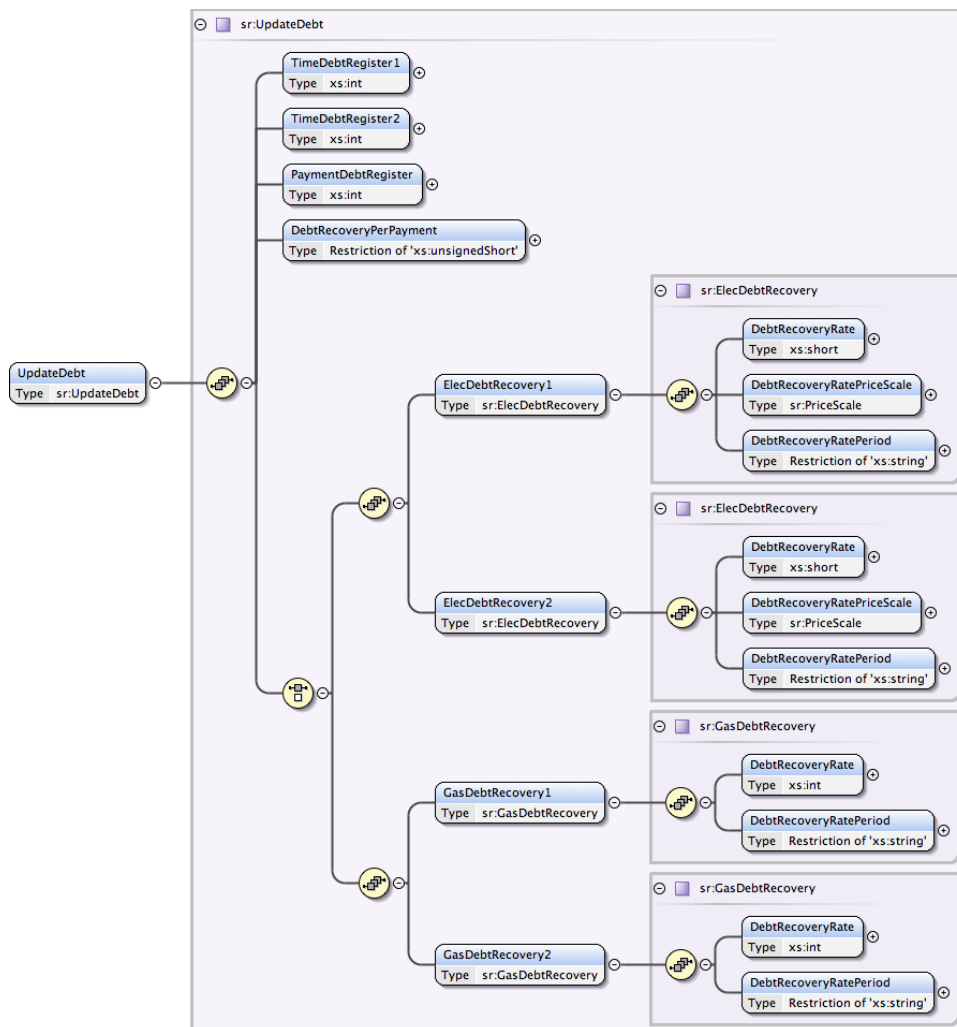


Figure 12 Update Debt Service Request Structure

2.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
TimeDebtRegister1	The (positive or negative) integer adjustment to apply to the first time-based debt register.	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
TimeDebtRegister2	The (positive or negative) integer adjustment to apply to the second time-based debt register.	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
PaymentDebtRegister	The (positive or negative) integer adjustment to apply to the PaymentDebtRegister	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
DebtRecoveryPerPayment	The percentage of a payment to be recovered against debt when the Meter is operating Payment-based Debt Recovery in Prepayment Mode. Valid set: >= 0 and <= 10000 (100.00%)	Restriction of xs:unsignedShort (min Inclusive = 0, max Inclusive = 10000)	Yes	None	Hundredth of a percentage point	Non-Sensitive
ElecDebtRecovery1	Debt recovery parameters for debt register 1 on an ESME	sr:ElecDebtRecovery	Yes (if ESME)	None	N/A	Non-Sensitive
ElecDebtRecovery2	Debt recovery parameters for debt register 2 on an ESME	sr:ElecDebtRecovery	Yes (if ESME)	None	N/A	Non-Sensitive
GasDebtRecovery1	Debt recovery parameters for debt register 1 on an GSME	sr:GasDebtRecovery	Yes (if GSME)	None	N/A	Non-Sensitive
GasDebtRecovery2	Debt recovery parameters for debt register 2 on an GSME	sr:GasDebtRecovery	Yes (if GSME)	None	N/A	Non-Sensitive

Table 35 Update Debt Service Request Data Items

2.3.1.3 ElecDebtRecovery1 / ElecDebtRecovery2 Item Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DebtRecoveryRate	Debt recovery rate in Currency Units per unit time for the first time-based debt recovery register when the Meter is using Time-based Debt Recovery in Prepayment Mode. The period over which this debt is recovered is set in the DebtRecoveryRatePeriod field. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.	xs:short	Yes	None	Value when multiplied by the scale is GBP/EUROs	Non-Sensitive
DebtRecoveryRatePriceScale	A multiplier applied to the DebtRecoveryRatevalue. Note this is the value of n in 10 ⁿ (10 to the power of n). For example a DebtRecoveryRate of 1 and a DebtRecoveryRatePriceScale of -2 would result in a DebtRecoveryRate of £0.01	sr:PriceScale	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DebtRecoveryRatePeriod	<p>The period after which the debt is recovered.</p> <p>For an Electricity meter this can be;</p> <ul style="list-style-type: none"> HOURLY DAILY <p>Although DUIS 1 enables the selection of WEEKLY, MONTHLY and QUARTERLY, these values are not valid in GBCS and should not be selected by the User. If one of these is selected there will be a Correlate error.</p>	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

2.3.1.4 GasDebtRecovery1 / GasDebtRecovery2 Item Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DebtRecoveryRate	<p>Debt recovery rate in Currency Units per unit time for the first time-based debt recovery register when the Meter is using Time-based Debt Recovery in Prepayment Mode. The period over which this debt is recovered is set in the following field.</p> <p>Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.</p>	xs:int	Yes	None	1000 th pence / cent	Non-Sensitive
DebtRecoveryRatePeriod	<p>The period after which the debt is recovered.</p> <p>For a Gas meter this period can be;</p> <ul style="list-style-type: none"> HOURLY DAILY 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

2.3.1.5 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 36 Update Debt Mode Modes of Operation

2.3.1.6 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 37 Update Debt Command Variant Values

2.3.1.7 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

2.3.1.8 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Transform Service Request (Body) is as follows:

```
<UpdateDebt>
  <TimeDebtRegister1>10000</TimeDebtRegister1>
  <TimeDebtRegister2>17000</TimeDebtRegister2>
  <PaymentDebtRegister>5000</PaymentDebtRegister>
  <DebtRecoveryPerPayment>200</DebtRecoveryPerPayment>
  <ElecDebtRecovery1>
    <DebtRecoveryRate>12345</DebtRecoveryRate>
    <DebtRecoveryRatePriceScale>-5</DebtRecoveryRatePriceScale>
    <DebtRecoveryRatePeriod> DAILY </DebtRecoveryRatePeriod>
  </ElecDebtRecovery1>
  <ElecDebtRecovery2>
    <DebtRecoveryRate>25678</DebtRecoveryRate>
    <DebtRecoveryRatePriceScale>-5</DebtRecoveryRatePriceScale>
    <DebtRecoveryRatePeriod>DAILY</DebtRecoveryRatePeriod>
  </ElecDebtRecovery2>
</UpdateDebt>
```

Figure 13 Update Debt Transform Service Request (Body) Format

2.3.2 Responses

The response messages for an "Update Debt" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

2.3.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDebtRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

2.3.2.1.1 Specific Header Data Items Definition

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	001E	006E
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS07</i>	<i>GCS04</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Manage Debt on the ESME</i>	<i>Manage Debt on the GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 38 - Update Debt Parse Response Header Data Items

2.4 Section 2.4

This section has been intentionally left blank as there is no Service Reference 2.4.

2.5 Activate Emergency Credit (2.5)

Service Request Name	ActivateEmergencyCredit
Service Reference	2.5
Service Request Variant Name	ActivateEmergencyCredit
Service Reference Variant	2.5
Service Request Objective	<p>To enable a DCC Service User to activate emergency credit on a specified ESME or GSME.</p> <p>To allow a DCC Service User to remotely activate the Emergency Credit on an installed meter that is operating in prepayment mode and where Emergency Credit is available.</p>

Business Context Statement	Emergency Credit may be activated as part of the initial change to Prepayment Mode command. This service request covers scenarios where the mode change has successfully completed and the DCC Service User subsequently requires the Emergency Credit to be activated.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative (SMETS2 or later)	<ul style="list-style-type: none"> The target ESME or GSME specified in this Service Request should have its Payment Mode, as defined in SMETS, set to "Prepayment Mode" to use this Service Request. The target ESME or GSME specified in this Service Request should have its Emergency Credit Balance, as defined in SMETS, set to an appropriate positive value so that the Emergency credit can be successfully activated for use by the consumer. The Emergency Credit Balance is implemented as XML element EmergencyCreditLimit and is configured as part of Service Request 2.1 Update Prepay Configuration. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0020	0x0070
GBCS Use Case	ECS09	GCS06
GBCS Use Case Name	Activate Emergency Credit Remotely on ESME	Activate Emergency Credit Remotely on GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> As specified in the SMETS1 Supporting Requirements Document, processing shall be as specified for an Activate Emergency Credit WAN Interface Command. If, after the Device has executed the associated instructions, emergency credit is activated on the Device then the S1SP shall return a SMETS1 Response indicating the Command executed successfully, regardless of whether it had been activated by this request or an earlier action. 	

Table 39 Activate Emergency Credit Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

2.5.1 Service Request

2.5.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ActivateEmergencyCredit XML element defines this Service Request and it doesn't contain any data items.

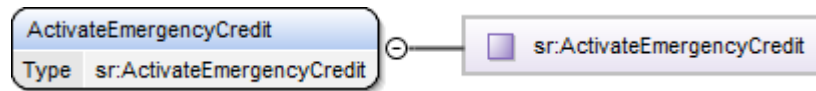


Figure 14 Activate Emergency Credit Service Request Structure

2.5.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 40 Activate Emergency Credit Modes of Operation

2.5.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 41 Activate Emergency Credit Command Variant Values

2.5.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

2.5.1.5 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Transform Service Request (Body) is as follows:

```
<ActivateEmergencyCredit/>
```

Figure 15 Activate Emergency Credit Transform Service Request (Body) Format

2.5.2 Responses

The Service Response messages for an “Activate Emergency Credit” Request follow the generic format for all “Device” response messages, the generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

2.5.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is ActivateEmergencyCreditRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

2.5.2.1.1 Specific Header Data Items Definition

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0020	0070
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS09</i>	<i>GCS06</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Activate Emergency Credit Remotely on ESME</i>	<i>Activate Emergency Credit Remotely on GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 42 – Activate Emergency Credit Parse Response Header Data Items

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

3 – Customer Management Service

Author: DCC
Version: 5.2a
Date: June 2023

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3 Customer Management Service (3 – CMS)

This section sets out the full content of the DCC Customer Management Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	CustomerManagement	Service Id	3
Service Objective	To enable DCC Service Users to manage customer facing elements of a device at a specified Meter ID, such that the meter can confirm that the operation has either completed successfully or the reason for its failure.		
Business Context Statement	The DCC Service User requires an action to be completed on a device that relates to a specific customer management activity, for example restrict data visibility following a Change of Tenancy		
User Roles	<p>The following user roles have access to the list of service requests which make up the Customer Management Service:</p> <ul style="list-style-type: none"> Electricity Import Suppliers (EIS) Gas Import Suppliers (GIS) 		

Table 1 Overview of Customer Management Service

The mapping between the Customer Management Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
3.1	3.1	Display Message	ESME GSME
3.2	3.2	Restrict Access For Change Of Tenancy	ESME GPF
3.3	3.3	Clear Event Log	ESME GPF GSME
3.4	3.4	Update Supplier Name	ESME GSME
3.5	3.5	Disable Privacy PIN	ESME GSME

Table 2 CMS - Service Requests / Devices

For each of the CMS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

3.1 Display Message (3.1)

Service Request Name	DisplayMessage	
Service Reference	3.1	
Service Request Variant Name	DisplayMessage	
Service Request Type	3.1	
Service Request Objective	To enable a DCC Service User to be able to send a consumer message for display on a specified Smart Meter.	
Business Context Statement	The DCC Service User requires a message to be sent to a specified device for display to the Consumer	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive: <i>GBCS XREF: SME.C.NC</i>	
Service Request Narrative	<ol style="list-style-type: none"> The maximum length of any message sent to a Smart Meter is 116 characters. There is no validation by the DCC on the content of the message specified in this Service Request . 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0021	0x0071
GBCS Use Case	ECS10	GCS07
GBCS Use Case Name	Send Message to ESME	Send Message to GSME
SMETS1 Applicability	No	No

Table 3 Display Message Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

3.1.1 Service Request

3.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its DisplayMessage XML element defines this Service Request and includes the message to be displayed to the Consumer and, for Future Dated Requests, the Execution Date Time.

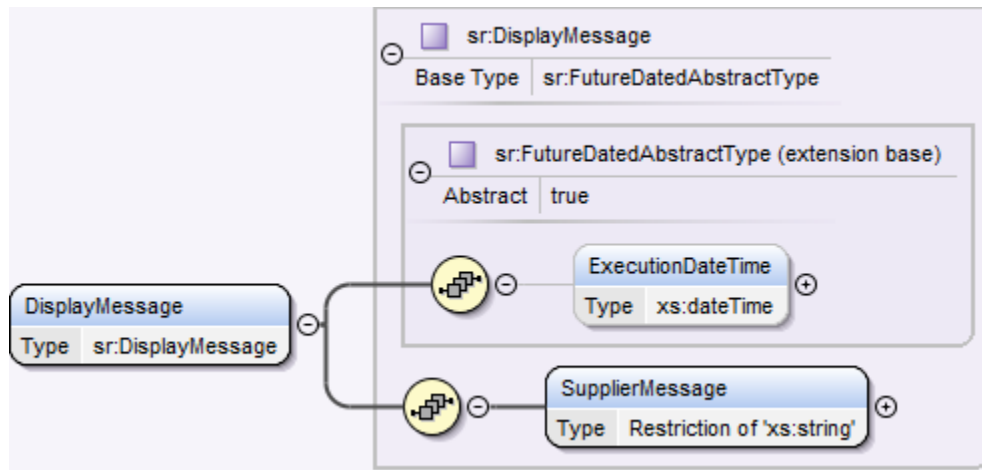


Figure 1 Display Message Service Request Structure

3.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
SupplierMessage ¹	Text content of message to be displayed to customer Valid set: <ul style="list-style-type: none"> All printable characters, i.e. characters with ASCII values of 32 (space) to 126 (tilde) inclusive 	Restriction of xs:string (minLength = 1, maxLength = 116, pattern = "[-~]+")	Yes	None	N/A	Non-Sensitive

Table 4 Display Message Service Request Data Items

¹ SupplierMessage is restricted by the XML Schema to only include displayable characters

3.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 5 Display Message Modes of Operation

3.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 6 Display Message Command Variant Values

3.1.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

3.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<DisplayMessage>
  <SupplierMessage>Supplier Message 1</SupplierMessage>
</DisplayMessage>
```

Figure 2 Display Message Service Request (Body) Format

3.1.2 Responses

The response messages for a "Display Message" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

3.1.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is DisplayMessageRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

3.1.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0021	0071
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS10</i>	<i>GCS07</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Send Message to ESME</i>	<i>Send Message to GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present

Data Item	Electricity Response	Gas Response
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 7 - Display Message Parse Response Header Items

3.2 Restrict Access For Change Of Tenancy (3.2)

Service Request Name	RestrictAccessForChangeOfTenancy
Service Reference	3.2
Service Request Variant Name	RestrictAccessForChangeOfTenancy
Service Request Type	3.2
Service Request Objective	To enable a DCC Service Users to set the <i>Data Restriction Flag</i> on a specified Device as defined in SMETS..
Business Context Statement	When a change of tenancy event occurs there is an obligation for the Energy Supplier to ensure that the incoming tenant does not have access to personal data that pertains to the outgoing tenant. This obligation is discharged by restricting the availability of data over the HAN from a certain date-time point.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. Data Restricted as defined in the GBCS Use Case, which sets a date for a Change of Tenancy on the ESME or GPF and restricting access to data based on this date. 2. The restriction date in the Service Request may be in the future or in the past, and the Command will be executed on receipt. The restriction is applied as soon as the command is executed, which means that the current householder will be restricted from access to their own data if the restriction date is in the future. DCC Service Users are advised not to set an execution date prior to the restriction date if the restriction is not intended to apply to the current tenant. Once set, the date is used by the ESME or GPF to restrict the householder's access to the following information: <ol style="list-style-type: none"> a. Profile data log; b. Cumulative and Historical Value Store; c. Daily Read Log; d. Prepayment Daily Read Log; e. Billing Data Log; and f. Daily Consumption Log 3. On successful completion of the Service Request <ol style="list-style-type: none"> a. All active DSP Schedules on that Device (and in the case of the GPF also those on the corresponding GSME) owned by an Other User will be automatically deleted by the DCC Data Systems. For each deleted DSP Schedule A DCC Alert N4 will be sent to the Other User (this action is a post-processing step after the Service Response has been sent to the User) b. All "Other User" Future Dated (DSP) Requests on that Device's Smart Metering System not yet sent to the Device will be automatically cancelled by the DCC Data Systems. For each cancelled Future Dated (DSP) Request a DCC Alert N3 will be sent to the "Other User" that had sent the Service Request being cancelled (this action is a post-processing step after the Service Response has been sent to the User). 4. When setting the dateTime of the restriction, the use of wildcards are not permitted. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0022	0x0072
GBCS Use Case	ECS12	GCS09
GBCS Use Case Name	Set Change of Tenancy date on ESME	Set Change of Tenancy date on GPF
SMETS1 Applicability	Yes	Yes

Service Request Narrative (SMETS1)	<p>The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.</p> <p>As specified in the SEC SMETS1 Supporting Requirement Document, SMETS1 processing will use SMETS1 Restrict Data WAN Interface Commands, and where the target is a SMETS1 GPF according to the SMI, processing by the S1SP will be carried out with regard to the corresponding SMETS1 GSME Device.</p>
---	--

Table 8 Restrict Access For Change of Tenancy Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

3.2.1 Service Request

3.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RestrictAccessForChangeOfTenancy XML element defines this Service Request and includes the date and time from when the restriction applies and, for Future Dated Requests, the Execution Date Time.

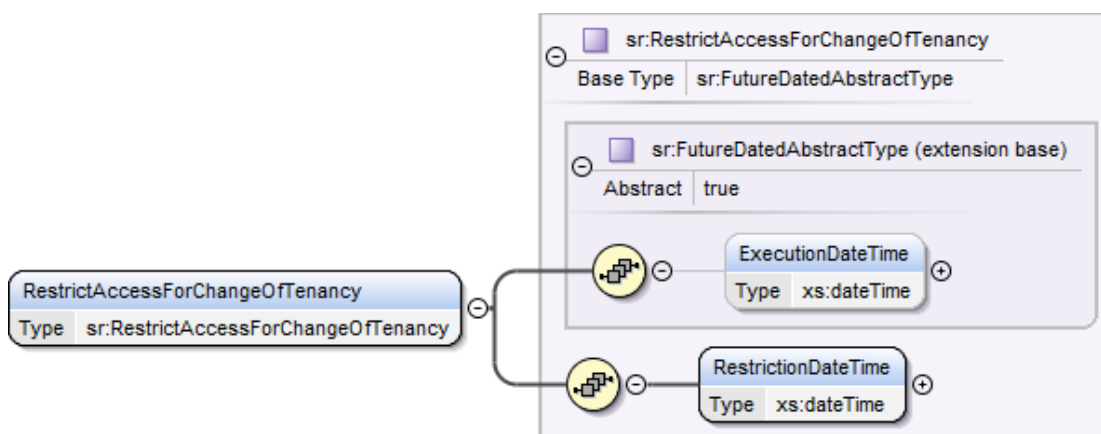


Figure 3 Restrict Access For Change of Tenancy Service Request Structure

3.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC Service User requires the command to be executed on the Device ID</p> <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RestrictionDateTime	The UTC date and time the DCC Service User requires the restriction to be applied from (so no personal data held in the device for a period prior to this date and time will be available over the HAN / via a User Interface) <ul style="list-style-type: none"> Valid date-time 	xs:dateTime (Wildcards not permitted)	Yes	None	UTC Date-Time	Non-Sensitive

Table 9 Restrict Access For Change of Tenancy Service Request Data Items

3.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 10 Restrict Access For Change of Tenancy Modes of Operation

3.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 11 Restrict Access For Change of Tenancy Command Variant Values

3.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

3.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RestrictAccessForChangeOfTenancy>
  <RestrictionDateTime>2014-05-04T18:13:51.00Z</RestrictionDateTime>
</RestrictAccessForChangeOfTenancy>
```

Figure 4 Restrict Access For Change of Tenancy Service Request (Body) Format

3.2.2 Responses

The response messages for a "Restrict Access For Change of Tenancy" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

3.2.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is RestrictAccessForChangeOfTenancyRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

3.2.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0022	0072
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS12</i>	<i>GCS09</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Change of Tenancy date on ESME</i>	<i>Set Change of Tenancy date on GPF</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 12 – Restrict Access For Change of Tenancy Parse Response Header Items

3.3 Clear Event Log (3.3)

Service Request Name	ClearEventLog
Service Reference	3.3
Service Request Variant Name	ClearEventLog
Service Request Type	3.3
Service Request Objective	To enable a DCC Service User to clear the Event Log, as defined by SMETS on a specified Device.

Business Context Statement	A Supplier may want to clear the Event Log of a Device before it is decommissioned or prior to completion of a Change of Tenancy event or for some other reason on an ad hoc basis.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.NC</i>	
Service Request Narrative	<ol style="list-style-type: none"> The Event Log is cleared once the Command is activated on the Device Because the Gas Smart Meter Equipment and Gas Proxy Function Device Types only include one Event Log, the Service Request doesn't contain any data items for these Device Types The Electricity Smart Meter Equipment includes several Event Logs, but only the Device's own Event Log and the Auxiliary Controller (formerly known as ALCS) Event Log can be cleared via this Service Request. For this Device Type, the Request has to specify whether the ESME or the Auxiliary Controller Event Log is to be cleared The <i>Power Event Log</i> and <i>Boost Function Event Log</i> within the ESME cannot be cleared using this Service Request as there are no commands defined in GBCS to perform this action. HCALCS do not have separate Event Logs as part of their SMETS definition. This Service Request covers clearing the Event Log only; the Security Log is not allowed to be cleared via a remote Command. From GBCS v4.0 the GBCS Use Case Clear ALCS Event Log was renamed to Clear Auxiliary Controller Event Log, in order to generalise the terminology to include APC as well as ALCS functionality. There is no change in the GBCS command other than the name, so the GBCS command can apply to both ALCS functionality prior to GBCS v4.0 and ALCS and APC functionality from GBCS v4.0. The "ALCS" event log option in the command should be used regardless of the GBCS version of the Device. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	ESME Event Log – 0x0024 ALCS (Auxiliary Controller) Event Log – 0x00C1	0x0015
GBCS Use Case	ESME Event Log – ECS15a ALCS (Auxiliary Controller) Event Log – ECS15c	CS11

GBCS Use Case Name	Clear ESME Event Log Clear ALCS Event Log (prior to GBCS v4.0); Clear Auxiliary Controller Event Log (GBCS v4.0 or later)	Clear ZigBee Device Event Log
SMETS1 Applicability	Yes – ESME Event Log only	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. Auxiliary Controller (ALCS) logs do not apply to SMETS1 Devices 2. As specified in the SEC SMETS1 Supporting Requirement Document, SMETS1 processing will use SMETS1 Clear Event Log WAN Interface Commands. 	

Table 13 Clear Event Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

3.3.1 Service Request

3.3.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ClearEventLog XML element defines this Service Request: For Device Types Gas Smart Meter or Gas Proxy Function it doesn't include any data items. For Device Type Electricity Smart Meter it contains the Event Log Type to clear.

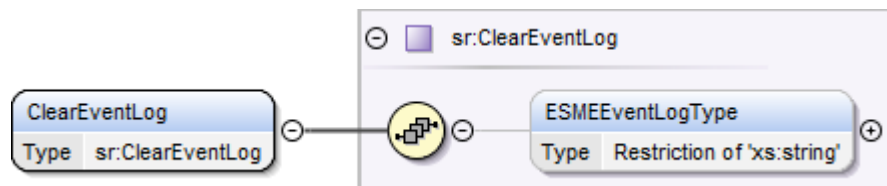


Figure 5 Clear Event Log Service Request Structure

3.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ESMEEEventLogType	<p>It specifies which of the two Event Logs included in an Electricity Smart Meter is to be cleared.</p> <p>Note that the "ALCS" choice will clear the event log of event data relating to APC as well as ALCS load control functionality, and regardless of the GBCS version of the Device.</p> <p>Valid set:</p> <ul style="list-style-type: none"> ESME ALCS 	Restriction of xs:string (Enumeration)	Device Type = ESME: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 14 Clear Event Log Service Request Data Items

3.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 15 Clear Event Log Modes of Operation

3.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 16 Clear Event Log Command Variant Values

3.3.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the combination of Device Type and Event Log Type correct?	Check that if the Device Type is Electricity Smart Meter the Event Log Type is included and for other Device Types it isn't	E030301
Is the event log type valid for a SMETS1 Device?	SMETS1 only: Check that if the ESMEEEventLogType is ALCS then the target Device is not a SMETS1 Device according to the Smart Metering Inventory. For clarity, SMETS1 ESME Devices are not required to support such logs.	E030302

Table 17 Clear Event Log Service Request Validation

3.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ClearEventLog/>
```

Figure 6 Clear Event Log Service Request (Body) Format

3.3.2 Responses

The response messages for a "Clear Event Log" Request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

3.3.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E030301	Failed Validation – Device Type / Event Log Type mismatch	Error	The combination of Device Type and Event Log Type is incorrect

Table 18 Clear Event Log Service Request Response Codes

3.3.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is ClearEventLogRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

3.3.2.2.1 Specific Header Data Items

Data Item	Electricity Response	Auxiliary Controller Response (N/A for SMETS1)	Gas Response
GBCSHexadecimalMessageCode	0024	00C1	0015
GBCS Use Case Number (for information only - not in header)	ECS15a	ECS15c	CS11

Data Item	Electricity Response	Auxiliary Controller Response (N/A for SMETS1)	Gas Response
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Clear ESME Event Log</i>	<i>Clear ALCS Event Log (prior to GBCS v4.0) Clear Auxiliary Controller Event Log (GBCS v4.0 or later)</i>	<i>Clear ZigBee Device Event Log</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 19 – Clear Event Log Parse Response Header Items

3.4 Update Supplier Name (3.4)

Service Request Name	UpdateSupplierName	
Service Reference	3.4	
Service Request Variant Name	UpdateSupplierName	
Service Request Type	3.4	
Service Request Objective	To enable a DCC Service User to write the Supplier contact details on a specified ESME or GSME for display to the consumer.	
Business Context Statement	A Supplier may wish to provide their name and contact details to a device for customer use. These details will require update at change of supplier by the gaining Supplier.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	Contact details as defined by SMETS include the name and contact telephone number of the Supplier.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0025	0x0088
GBCS Use Case	ECS16	GCS44
GBCS Use Case Name	Write Supplier Contact Details on ESME	Write Contact Details on GSME

SMETS1 Applicability	No	No
----------------------	----	----

Table 20 Update Supplier Name Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

3.4.1 Service Request

3.4.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateSupplierName XML element defines this Service Request and includes the Supplier Name and Telephone Number and, for Future Dated Requests, the Execution Date and Time.

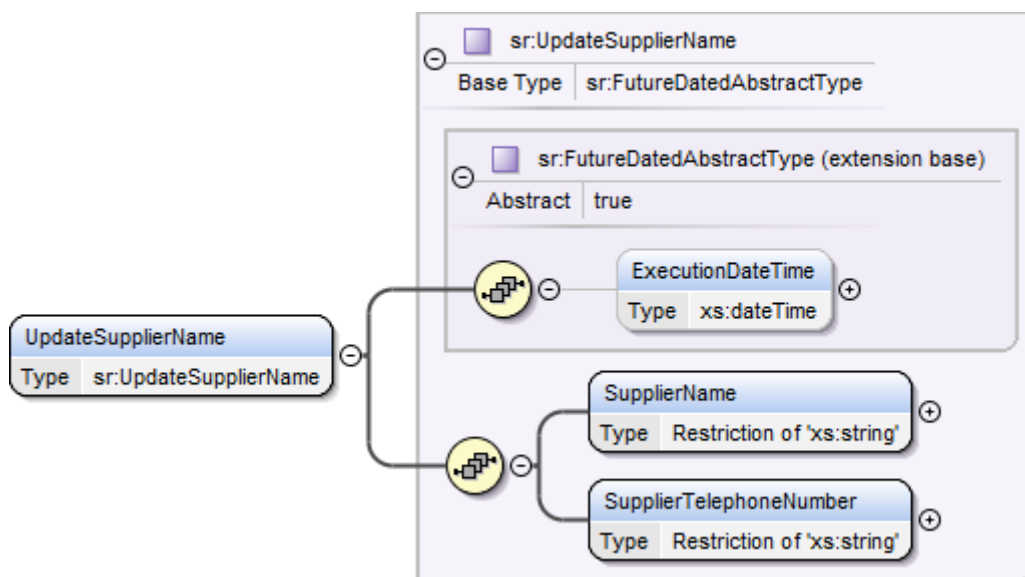


Figure 7 Update Supplier Name Service Request Structure

3.4.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SupplierName ¹	Defined format Supplier name Valid set: All printable characters, i.e. characters with ASCII values of 32 (space) to 126 (tilde) inclusive	Restriction of xs:string (maxLength = 15 pattern = "[-~]+")	Yes	None	N/A	Non-Sensitive
SupplierTelephoneNumber ²	Defined format Supplier name and telephone number	Restriction of xs:string (maxLength = 18 pattern = "[0-9]+")	Yes	None	N/A	Non-Sensitive

Table 21 Update Supplier Name Service Request Data Items

¹ SupplierName is restricted by the XML Schema to only include displayable characters

² SupplierTelephoneNumber is restricted by the XML Schema to only include numbers and spaces

3.4.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 22 Update Supplier Name Modes of Operation

3.4.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 23 Update Supplier Name Command Variant Values

3.4.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

3.4.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateSupplierName>
  <ExecutionDateTime>2014-10-24T04:03:05.00Z</ExecutionDateTime>
  <SupplierName>Supplier Name 1</SupplierName>
  <SupplierTelephoneNumber>0123 456 789</SupplierTelephoneNumber>
</UpdateSupplierName>
```

Figure 8 Update Supplier Name Service Request (Body) Format

3.4.2 Responses

The response messages for an “Update Supplier Name” request follow the generic format for all “Device” response messages. The generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

3.4.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdateSupplierNameRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

3.4.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0025	0088
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS16</i>	<i>GCS44</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Write Supplier Contact Details on ESME</i>	<i>Write Contact Details on GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 24 – Update Supplier Name Parse Response Header Items

3.5 Disable Privacy PIN (3.5)

Service Request Name	DisablePrivacyPIN
Service Reference	3.5
Service Request Variant Name	DisablePrivacyPIN
Service Request Type	3.5
Service Request Objective	To enable a DCC Service User to disable the Privacy PIN protection on a specified ESME or GSME.

Business Context Statement	A consumer may wish to protect a specified set of display items and Commands via the User Interface. To do so requires the use of a Privacy PIN set by the consumer directly on to the ESME or GSME. Only the Registered Supplier can disable this PIN at a consumers request using this Service Request.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	Privacy PIN, as defined in SMETS, is a number comprising four digits used by the Consumer to enable temporary access to a specified set of display items and Commands via the User Interface of ESME or GSME.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0023	0x0073
GBCS Use Case	ECS14	GCS11
GBCS Use Case Name	Disable Privacy PIN Protection on ESME	Disable Privacy PIN Protection on GSME
SMETS1 Applicability	No	No

Table 25 Disable Privacy PIN Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

3.5.1 Service Request

3.5.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its DisablePrivacyPIN XML element defines this Service Request and it doesn't contain any data items.



Figure 9 Disable Privacy PIN Service Request Structure

3.5.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 26 Disable Privacy PIN Modes of Operation

3.5.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 27 Disable Privacy PIN Command Variant Values

3.5.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

3.5.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<DisablePrivacyPIN/>

Figure 10 Disable Privacy PIN Service Request (Body) Format

3.5.2 Responses

The response messages for a “Disable Privacy PIN” request follow the generic format for all “Device” response messages. The generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below

3.5.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is DisablePrivacyPINRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

3.5.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0023	0073
GBCS Use Case Number (for information only - not in header)	ECS14	GCS11
GBCS Use Case Name (for information only - not in header)	Disable Privacy PIN Protection on ESME	Disable Privacy PIN Protection on GSME

Data Item	Electricity Response	Gas Response
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 28 – Disable Privacy Pin Parse Response Header Items

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 4 – Reading Service

Author: DCC
Version: v5.2a
Date: June 2023

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4 Reading Service (4 – RS)

This section sets out the full content of the DCC Reading Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	Reading	Service Id	4
Service Objective	<p>To enable a DCC Service User to retrieve an entry from:</p> <ul style="list-style-type: none"> the Billing Data Log the Daily Read Log Daily Consumption Log the Network Data Log the Profile Data Log the Average RMS Profile Data Log Prepayment configuration and register values Average RMS Over Voltage Counter Average RMS Under Voltage Counter Cumulative and Historical Value Store Maximum Demand Active Energy Import Value Maximum Demand (Configurable Time) Active Energy Import Value Maximum Demand Active Energy Export Value <p>or, to read the import or export register values at a point in time, of a specific device associated to a specified device ID, such that the DCC Service User can obtain Electricity or Gas Smart Metering Equipment consumption and usage details and confirm that the operation has either completed or receive the reason for its failure.</p> <p>NB – where a Service Request response returns a Log or data structure, parts of the data may be classified as sensitive data.</p>		
Business Context Statement	<p>The DCC Service User requires the ability to be able to read and obtain Electricity or Gas meter register or log details at a specified device ID. The device may be an Electricity Smart Meter or Gas Smart Meter / Gas Proxy Function.</p>		
User Roles	<p>The following user roles have access to the list of service requests which make up the Reading Service:</p> <ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU) 		

Table 1 Overview of Reading Service

The mapping between the Reading Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
4.1	4.1.1	Read Instantaneous Import Registers	ESME, GPF, GSME
4.1	4.1.2	Read Instantaneous Import TOU Matrices	ESME, GPF, GSME
4.1	4.1.3	Read Instantaneous Import TOU With Blocks Matrices	ESME
4.1	4.1.4	Read Instantaneous Import Block Counters	GPF, GSME
4.2	4.2	Read Instantaneous Export Registers	ESME
4.3	4.3	Read Instantaneous Prepay Values	ESME, GPF, GSME
4.4	4.4.2	Retrieve Change Of Mode / Tariff Triggered Billing Data Log	ESME, GPF, GSME
4.4	4.4.3	Retrieve Billing Calendar Triggered Billing Data Log	ESME, GPF, GSME
4.4	4.4.4	Retrieve Billing Data Log (Payment Based Debt Payments)	ESME, GPF, GSME
4.4	4.4.5	Retrieve Billing Data Log (Prepayment Credits)	ESME, GPF, GSME
4.6	4.6.1	Retrieve Import Daily Read Log	ESME, GPF, GSME
4.6	4.6.2	Retrieve Export Daily Read Log	ESME
4.8	4.8.1	Read Active Import Profile Data	ESME, GPF, GSME
4.8	4.8.2	Read Reactive Import Profile Data	ESME
4.8	4.8.3	Read Export Profile Data	ESME
4.10	4.10	Read Network Data	ESME, GSME
4.11	4.11.1	Read Tariff (Primary Element)	ESME, GPF, GSME
4.11	4.11.2	Read Tariff (Secondary Element)	ESME (Twin Element)
4.12	4.12.1	Read Maximum Demand Import Registers	ESME
4.12	4.12.2	Read Maximum Demand Export Registers	ESME
4.13	4.13	Read Prepayment Configuration	ESME, GPF, GSME
4.14	4.14	Read Prepayment Daily Read Log	ESME, GPF, GSME
4.15	4.15	Read Load Limit Data	ESME
4.16	4.16	Read Active Power Import	ESME
4.17	4.17	Retrieve Daily Consumption Log	ESME, GPF
4.18	4.18	Read Meter Balance	ESME, GPF, GSME

Table 2 RS - Service Requests / Devices

For each of the RS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)

- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.1 Read Instantaneous Import Registers (4.1)

SMETS2 or later

This Service Request maps to three Electricity and three Gas GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 4.1 Service Request has been broken into four parts: 4.1.1 (Registers) – applicable to Electricity and Gas, 4.1.2 (TOU Matrices) – applicable to Electricity and Gas, 4.1.3 (TOU with Blocks Matrices) – applicable to Electricity and 4.1.4 (Block Counters) – applicable to Gas.

SMETS1

This Service Request maps to Service Reference Variant 4.1.1 (Registers) – applicable to Electricity and Gas, 4.1.2 (TOU Matrices) – applicable to Electricity and Gas, 4.1.3 (TOU with Blocks Matrices) – applicable to Electricity and 4.1.4 (Block Counters) – applicable to Gas.

4.1.1 Read Instantaneous Import Registers (4.1.1)

Service Request Name	ReadInstantaneousImportRegisters
Service Reference	4.1
Service Request Variant Name	ReadInstantaneousImportRegisters
Service Reference Variant	4.1.1
Service Request Objective	To enable a DCC Service User to read the instantaneous import energy register on an ESME or GPF / GSME.
Business Context Statement	The DCC Service User requires an immediate view of the current import register read values on an Electricity Smart Meter or Gas Proxy Function / Smart Meter, e.g. to respond to a customer telephone enquiry
User Role Access	<ul style="list-style-type: none">• Electricity Import Supplier (EIS)• Gas Import Supplier (GIS)• Electricity Network Operator (ENO)• Gas Network Operator (GNO)
Security Classification	Non-critical and sensitive (the request is non-sensitive and the device response register content is sensitive) SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<div>1. The data items being read in this Service Request as defined by SMETS are the <i>Active Import Register</i>, <i>Secondary Active Import Register</i> and <i>Reactive Import Register</i> for the ESME and the <i>Consumption Register</i> for the GSME. All of these registers record cumulative Consumption on the device.</div> <div>2. For reading the instantaneous import energy registers values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users.</div> <div>3. This Service Request returns all the Import Energy Registers available at the ESME or GPF/GSME. It isn't possible to request a subset of them.</div> <div>4. This Service Request if targeted to Gas Devices (GPF/GSME) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. This means that any subsequent sequenced command could not be sent by the DCC as the success of the preceding Service Request cannot be established.</div> <div>5. Because this Service Request is only available to KRP the GNO can only read Instantaneous Import Registers from the GPF. The GSME does not contain Security Credentials for the Gas Network Operator.</div>	
	GBCS Cross Reference	<div>Electricity</div> <div>Gas</div>
	GBCS Message Code	<div>0x0027</div> <div>0x0074</div>
	GBCS Use Case	<div>ECS17b</div> <div>GCS13a</div>
	GBCS Use Case Name	<div>Read ESME Energy Registers (Import Energy)</div> <div>Read GSME Consumption Register</div>
SMETS1 Applicability	<div>Yes</div> <div>Yes</div>	
Service Request Narrative (SMETS1)	<div>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</div> <div>1. Secondary element values are not applicable to SMETS1.</div> <div>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</div>	

Table 3 Read Instantaneous Import Registers Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.1.1.1 Service Request

4.1.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInstantaneousImportRegisters XML element defines this Service Request and only contains the Execution Date Time for Future Dated Requests.

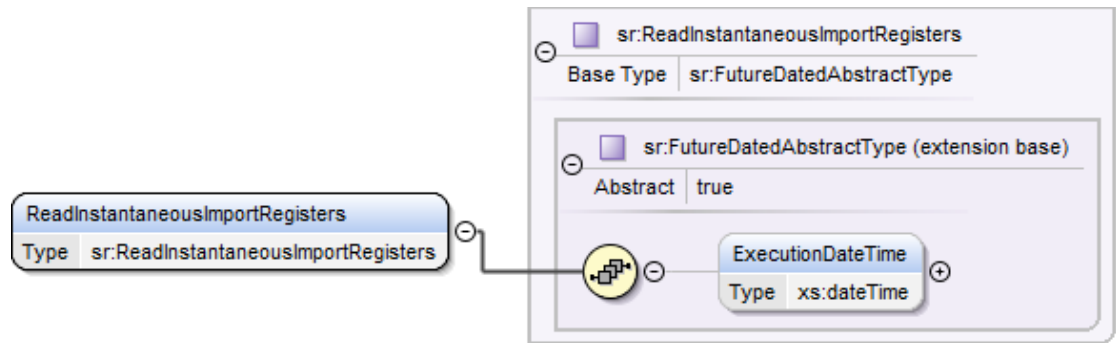


Figure 1 Read Instantaneous Import Registers Service Request Structure

4.1.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the device. <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 4 Read Instantaneous Import Registers Service Request Data Items

4.1.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 5 Read Instantaneous Import Registers Modes of Operation

4.1.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 6 Read Instantaneous Import Registers Command Variant Values

4.1.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Is the Service Request valid?	Check that if the Business Target ID Device Type is GSME the DCC Service User Role is GIS	E040101

Table 7 Read Instantaneous Import Registers Service Request Validation

4.1.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadInstantaneousImportRegisters/>
```

Figure 2 Sample Read Instantaneous Import Registers Service Request Format

4.1.1.2 Responses

The response messages for a "Read Instantaneous Import Registers" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.1.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E040101	Failed Validation – Device Type / User Role mismatch	Error	The Gas Network Operator can only read Instantaneous Import Registers from the GPF and not the GSME.

Table 8 Failed Read Instantaneous Import Registers Service Request Response Codes

4.1.1.2.2 Parse Output / SMETS1 Response Format

4.1.1.2.2.1 Format – ReadInstantaneousImportRegistersRsp

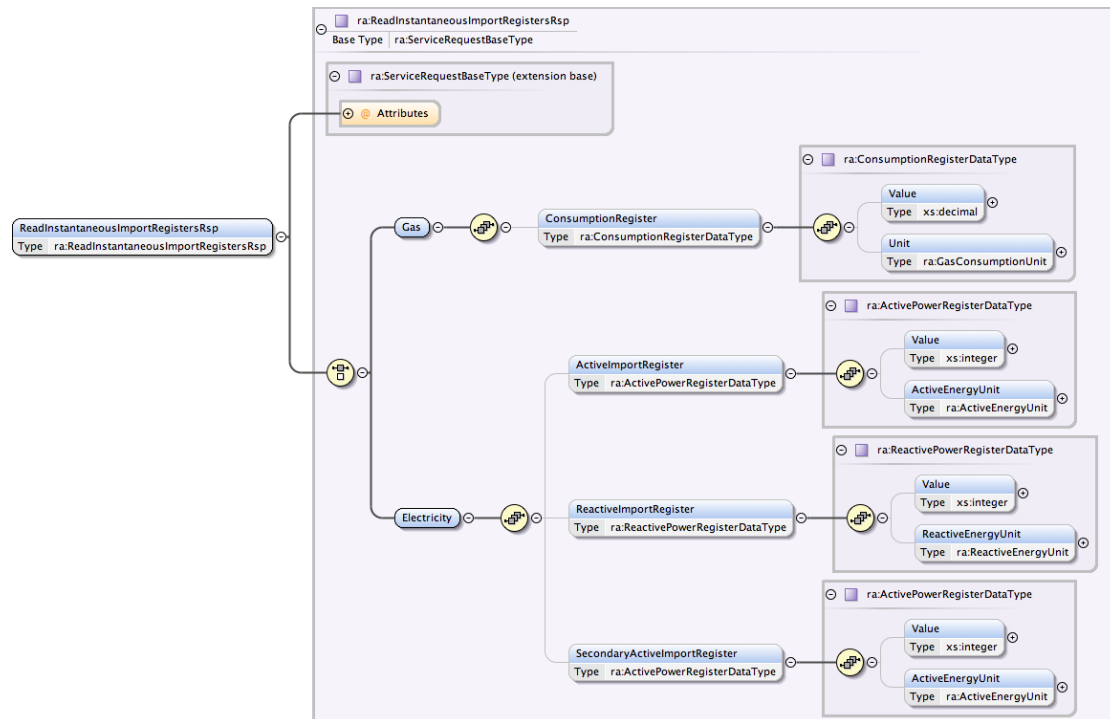


Figure 3 - Read Instantaneous Import Registers Parse Response / SMETS1 Response Structure

4.1.1.2.2.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0027	0074
GBCS Use Case Number (for information only - not in header)	ECS17b	GCS13a
GBCS Use Case Name (for information only - not in header)	Read ESME Energy Registers (Import Energy)	Read GSME Consumption Register
SupplementaryRemotePartyID	Not present	Not present
SupplementaryRemotePartyCounter	Not present	Not present
SupplementaryOriginatorCounter	Not present	Not present
Timestamp	Present	Present ¹

Table 9 - Read Instantaneous Import Registers Parse/ SMETS1 Response Header Data Items

¹ (SMETS2 only) Includes IsFromGSME and ClockStatus as described in Annex 18.

4.1.1.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Consumption Register	Gas Only				

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Value	The total gas imported Parse Response: Note that the Multiplier (value of 1) and Divisor (value of 1000) values have been automatically applied by the P&C software.	xs:decimal	None	m ³	Sensitive
Unit	Unit of measure – m ³	xs:string	m ³	N/A	Sensitive
ActiveImport Register	Electricity Only				
Value	The active energy imported, as measured by the measuring element(s)	xs:integer	None	Wh	Sensitive
ActiveEnergyUnit	Unit of measure – Wh	xs:string	Wh	N/A	Sensitive
ReactiveImport Register	Electricity Only				
Value	The reactive energy imported, as measured by the measuring element	xs:integer	None	varh	Sensitive
ReactiveEnergyUnit	Unit of measure – varh	xs:string	varh	N/A	Sensitive
SecondaryActiveImportRegister	Electricity Only Optional N/A to SMETS1				
Value	The active energy imported, as measured by the secondary measuring element	xs:integer	None	Wh	Sensitive
ActiveEnergyUnit	Unit of measure – wh	xs:string	Wh	N/A	Sensitive

Table 10 - Read Instantaneous Import Registers Parse Response / SMETS1 Response Body Data Items

4.1.1.2.2.4 Sample Response

```
<ra:ReadInstantaneousImportRegistersRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:ActiveImportRegister>
      <ra:Value>10</ra:Value>
      <ra:ActiveEnergyUnit>Wh</ra:ActiveEnergyUnit>
    </ra:ActiveImportRegister>
    <ra:ReactiveImportRegister>
      <ra:Value>20</ra:Value>
      <ra:ReactiveEnergyUnit>varh</ra:ReactiveEnergyUnit>
    </ra:ReactiveImportRegister>
    <ra:SecondaryActiveImportRegister>1
      <ra:Value>30</ra:Value>
      <ra:ActiveEnergyUnit>Wh</ra:ActiveEnergyUnit>
    </ra:SecondaryActiveImportRegister>
  </ra:Electricity>
</ra:ReadInstantaneousImportRegistersRsp>
```

Figure 4 - Read Instantaneous Import Registers Parse Response Sample

¹ N/A to SMETS1

4.1.2 Read Instantaneous Import TOU Matrices (4.1.2)

Service Request Name	ReadInstantaneousImportRegisters
Service Reference	4.1
Service Request Variant Name	ReadInstantaneousImportTOUMatrices
Service Reference Variant	4.1.2
Service Request Objective	To enable a DCC Service User to obtain an instantaneous import TOU (time of use) matrix read on an Electricity Smart Meter or Gas Proxy Function / Gas Smart Meter.
Business Context Statement	The DCC Service User requires an immediate view of the current import TOU matrix read values on an Electricity Smart Meter or Gas Proxy Function / Smart Meter, e.g. to respond to a customer telephone enquiry
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO)
Security Classification	<p>Non-critical and sensitive (the request is non-sensitive and the device response matrix content is sensitive)</p> <p>SMETS2 or later:</p> <p>GBCS XREF: <i>SME.C.NC</i></p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The data items being read in this Service Request as defined by SMETS are the <i>Tariff TOU Register Matrix</i>, and <i>Secondary Tariff TOU Register Matrix</i> for the ESME and the <i>Tariff TOU Register Matrix</i> for the GSME. <p>ESME <i>Tariff TOU Register Matrix</i> is defined in SMETS as a 1 x 48 matrix for storing Tariff Registers for Time-of-use Pricing</p> <p>ESME <i>Secondary Tariff TOU Register Matrix</i> is defined in SMETS as a 1 x 4 matrix for storing Tariff Registers for Time-of-use Pricing relating to supply via the secondary measuring element of the Electricity Meter.</p> <p>GSME <i>Tariff TOU Register Matrix</i> is defined in SMETS as a 1 x 4 matrix for storing Tariff Registers for Time-of-use Pricing</p> This Service Request returns all the Import TOU Matrices available at the Meter / Gas Proxy Function in full. It isn't possible to request a subset of them. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. This means that any subsequent sequenced command could not be sent by the DCC

	<p>as the success of the preceding Service Request cannot be established.</p> <p>4. For reading the instantaneous import TOU matrices values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users.</p> <p>5. Because this Service Request is only available to KRP the GNO can only read Instantaneous Import TOU Matrices from the GPF. The GSME does not contain Security Credentials for the Gas Network Operator.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0029	0x00B6
GBCS Use Case	ECS17d	GCS13c
GBCS Use Case Name	Read ESME Energy Register (TOU)	Read GSME Register (TOU)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <p>1. Secondary element values are not applicable to SMETS1.</p> <p>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</p>	

Table 11 Read Instantaneous Import TOU Matrices Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.1.2.1 Service Request

4.1.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInstantaneousImportTOUMatrices XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

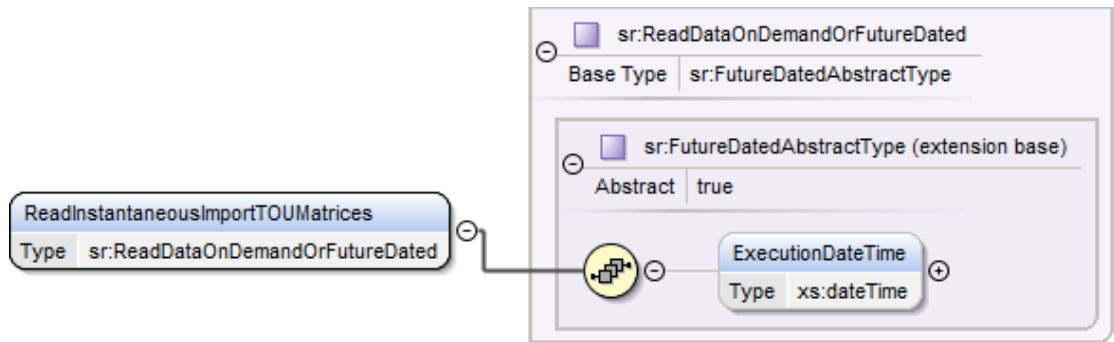


Figure 5 Read Instantaneous Import TOU Matrices Service Request Structure

4.1.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the device. <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 12 Read Instantaneous Import TOU Matrices Service Request Data Items

4.1.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 13 Read Instantaneous Import TOU Matrices Modes of Operation

4.1.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 14 Read Instantaneous Import TOU Matrices Command Variant Values

4.1.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Is the Service Request valid?	Check that if the Business Target ID Device Type is GSME the DCC Service User Role is GIS	E040101

Table 15 Read Instantaneous Import TOU Matrices Service Request Validation

4.1.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadInstantaneousImportTOUMatrices/>

Figure 6 Sample Read Instantaneous Import TOU Matrices Service Request Format

4.1.2.2 Responses

The response messages for a “Read Instantaneous Import TOU Matrices” request follow the generic format for all “Device” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.1.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E040101	Failed Validation – Device Type / User Role mismatch	Error	The Gas Network Operator can only read Instantaneous Import Registers from the GPF and not the GSME

Table 16 Failed Read Instantaneous Import TOU Matrices Service Request Response Codes

4.1.2.2.2 Parse Output / SMETS1 Response Format

4.1.2.2.2.1 Format - ReadInstantaneousImportTOUMatricesRsp

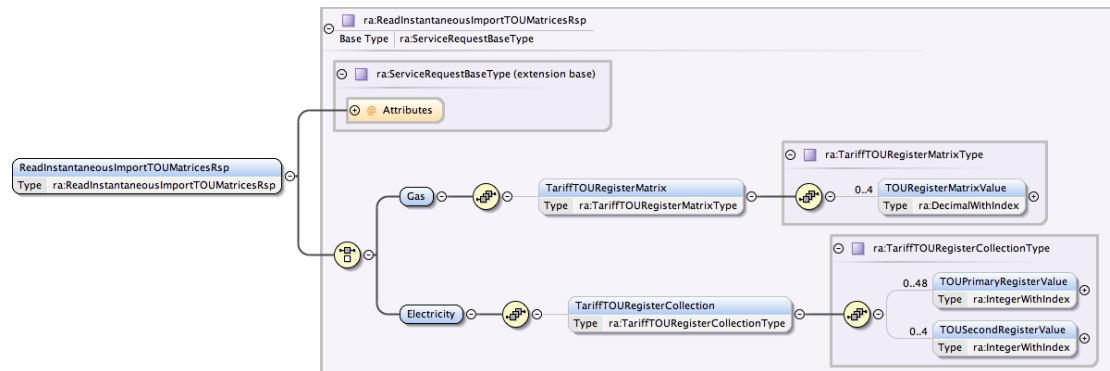


Figure 7 - Read Instantaneous Import TOU Matrices Parse Response / SMETS1 Response Structure

4.1.2.2.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0029	00B6
GBCS Use Case Number (for information only - not in header)	ECS17d	GCS13c
GBCS Use Case Name (for information only - not in header)	Read ESME Energy Register (TOU)	Read GSME Register (TOU)
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present ¹

Table 17 - Read Instantaneous Import TOU Matrices Parse/ SMETS1 Response Header Data Items

¹ (SMETS2 only) Includes IsFromGSME and ClockStatus as described in Annex 18.

4.1.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
TOURegisterMatrix Value	Accumulated consumption for each TOU rate register (max 4). Gas Only Parse Response: Note that the Multiplier (value of 1) and Divisor (value of 1000) values have been automatically applied by the P&C software.	xs:DecimalWithIndex	None	M ³	Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
TOUPrimaryRegisterValue	Tariff Registers for Time-of-use Pricing for the primary element (max 48). Electricity Only	ra:IntegerWithIndex	None	Wh	Sensitive
TOUSecondRegisterValue	Tariff Registers for Time-of-use Pricing for the secondary element (max 4) Electricity Only Optional N/A to SMETS1	ra:IntegerWithIndex	None	Wh	Sensitive

Table 18 - Read Instantaneous Import TOU Matrices Parse Response / SMETS1 Response Body Data Items

4.1.2.2.4 Sample Response body

```
<ra:ReadInstantaneousImportTOUMatricesRsp MessageSuccess="true">
  <ra:Gas>
    <ra:TariffTOURegisterMatrix>
      <ra:TOURegisterMatrixValue index="1">10.1</ra:TOURegisterMatrixValue>
      <ra:TOURegisterMatrixValue index="2">20.2</ra:TOURegisterMatrixValue>
      <ra:TOURegisterMatrixValue index="3">30.3</ra:TOURegisterMatrixValue>
      <ra:TOURegisterMatrixValue index="4">40.4</ra:TOURegisterMatrixValue>
    </ra:TariffTOURegisterMatrix>
  </ra:Gas>
</ra:ReadInstantaneousImportTOUMatricesRsp>
```

Figure 8 - Read Instantaneous Import TOU Matrices Parse Response Sample

4.1.3 Read Instantaneous Import TOU With Blocks Matrices (4.1.3)

Service Request Name	ReadInstantaneousImportRegisters
Service Reference	4.1
Service Request Variant Name	ReadInstantaneousImportTOUWithBlocksMatrices
Service Reference Variant	4.1.3
Service Request Objective	To enable a DCC Service User to read the instantaneous import TOU with Block Register matrix read on an Electricity Smart Meter.
Business Context Statement	The DCC Service User requires an immediate view of the current import TOU with Blocks matrix read values on an Electricity Smart Meter, e.g. to respond to a customer telephone enquiry
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO)
Security Classification	Non-critical and sensitive (the request is non-sensitive and the device response matrix content is sensitive) SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<p>1. The data items being read in this Service Request, as defined by SMETS, are the <i>Tariff TOU Block Register Matrix</i> and <i>Tariff Block Counter Matrix</i> for the ESME.</p> <p><i>Tariff TOU Block Register Matrix</i>, as defined in SMETS, is a 4 x 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing.</p> <p><i>Tariff Block Counter Matrix</i>, as defined in SMETS, is a 4 x 8 matrix for storing Block Counters for Block Pricing.</p> <p>2. This Service Request returns all the Import TOU with Blocks Matrices available at the Meter in full. It isn't possible to request a subset of them.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x002A	N/A
GBCS Use Case	ECS17e	N/A
GBCS Use Case Name	Read ESME Energy Register (TOU with Blocks)	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <p>1. In any SMETS1 Response, the DCC shall set each of the integer values in the "RegisterMatrixTOUValue" to the relevant Unsupported Value (see section 19.9), since SMETS1 does not require an ESME to support such registers.</p>	

Table 19 Read Instantaneous Import TOU With Blocks Matrices Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.1.3.1 Service Request

4.1.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInstantaneousImportTOUWithBlocksMatrices XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

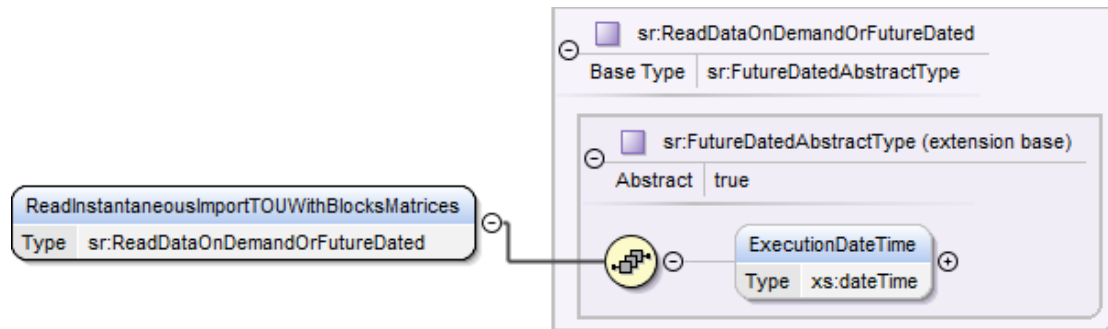


Figure 9 Read Instantaneous Import TOU With Blocks Matrices Service Request Structure

4.1.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the device. <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 20 Read Instantaneous Import TOU With Block Matrices Service Request Data Items

4.1.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 21 Read Instantaneous Import TOU With Blocks Matrices Modes of Operation

4.1.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 22 Read Instantaneous Import TOU With Blocks Matrices Command Variant Values

4.1.3.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

4.1.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadInstantaneousImportTOUWithBlocksMatrices/>
```

Figure 10 Sample Read Instantaneous Import TOU With Blocks Matrices Service Request Format

4.1.3.2 Responses

The response messages for a “Read Instantaneous Import TOU With Blocks Matrices” request follow the generic format for all “Device” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.1.3.2.1 Parse Output / SMETS1 Response Format

4.1.3.2.1.1 Format - ReadInstantaneousImportTOUWithBlocksMatricesRsp

Data in this response is organised as two sets of 8 values, one each for the block primary registers and the block counter registers, within a repeating group of up to 4 Tariff Blocks.

Block 1
 Register Matrix 1
 Register Matrix 2
 :
 Register Matrix 8
 Counter Matrix 1
 Counter Matrix 2
 :
 Counter Matrix 8
Block 2
 Register Matrix 1
 etc.

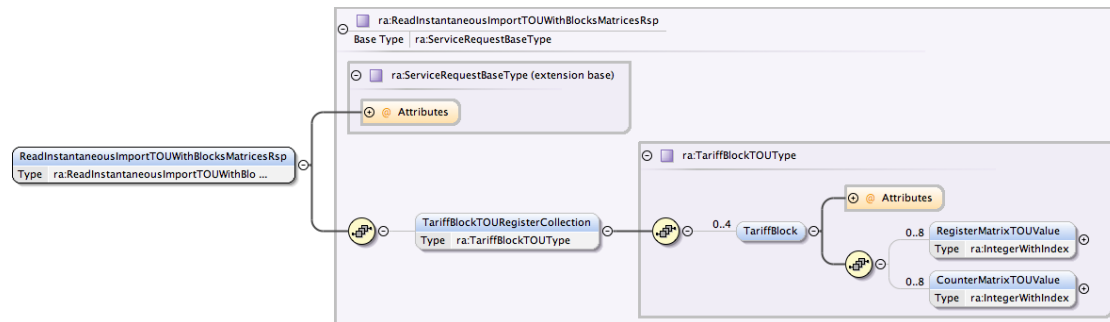


Figure 11 - Read Instantaneous Import TOU With Blocks Matrices Parse Response / SMETS1 Response Structure

4.1.3.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	002A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS17e</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Energy Register (TOU with Blocks)</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 23 - Read Instantaneous Import TOU With Blocks Matrices Parse/ SMETS1 Response Header Data Items

4.1.3.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RegisterMatrixTOU Value ¹	Tariff Registers for Time-of-use with Block Pricing. SMETS1: In any SMETS1 Response, the DCC shall set each of the integer values in the "RegisterMatrixTOUValue" to the relevant Unsupported Value (see section 19.9), since SMETS1 does not require an ESME to support such registers.	ra:IntegerWithIndex	None	Wh	Sensitive
CounterMatrixTOU Value ¹	Tariff Registers for Time-of-use with Block Pricing.	ra:IntegerWithIndex	None	Wh	Sensitive

Table 24 - Read Instantaneous Import TOU With Blocks Matrices Parse Response / SMETS1 Response Body Data Items

¹Maximum 8

4.1.3.2.1.4 Sample Response body

```
<ra:ReadInstantaneousImportTOUWithBlocksMatricesRsp MessageSuccess="true">
  <ra:TariffBlockTOURegisterCollection>
    <ra:TariffBlock index="1">
      <ra:RegisterMatrixTOUValue index="1">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="2">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="3">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="4">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="5">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="6">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="7">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="8">0</ra:RegisterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="1">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="2">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="3">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="4">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="5">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="6">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="7">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="8">0</ra:CounterMatrixTOUValue>
    </ra:TariffBlock>
    <ra:TariffBlock index="2">
      <ra:RegisterMatrixTOUValue index="1">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="2">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="3">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="4">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="5">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="6">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="7">0</ra:RegisterMatrixTOUValue>
      <ra:RegisterMatrixTOUValue index="8">0</ra:RegisterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="1">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="2">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="3">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="4">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="5">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="6">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="7">0</ra:CounterMatrixTOUValue>
      <ra:CounterMatrixTOUValue index="8">0</ra:CounterMatrixTOUValue>
    </ra:TariffBlock>
  </ra:TariffBlockTOURegisterCollection>
</ra:ReadInstantaneousImportTOUWithBlocksMatricesRsp>
```

Figure 12 - Read Instantaneous Import TOU With Blocks Matrices Parse Response Sample

4.1.4 Read Instantaneous Import Block Counters (4.1.4)

Service Request Name	ReadInstantaneousImportRegisters
Service Reference	4.1
Service Request Variant Name	ReadInstantaneousImportBlockCounters
Service Reference Variant	4.1.4
Service Request Objective	To enable a DCC Service User to read the Gas Smart Meter instantaneous import Block Counters matrix held on a Gas Proxy Function / Smart Meter.

Business Context Statement	The DCC Service User requires an immediate view of the current import Block Counters matrix read values on a Gas Proxy Function / Smart Meter, e.g. to respond to a customer telephone enquiry	
User Role Access	<ul style="list-style-type: none"> Gas Import Supplier (GIS) 	
Security Classification	<p>Non-critical and sensitive (the request is non-sensitive and the device response matrix content is sensitive)</p> <p>SMETS2 or later:</p> <p>GBCS XREF: <i>SME.C.NC</i></p>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The data item being read in this Service Request, as defined by SMETS, is the <i>Tariff Block Counter Matrix</i> for the GSME. Tariff Block Counter Matrix, as defined in SMETS, is a 4 x 1 matrix for storing Block Counters for Block Pricing. This Service Request returns all the Block Counter Matrix values available at the Meter in full. It isn't possible to request a subset of them. This Service Request can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. This means that any subsequent sequenced command could not be sent by the DCC as the success of the preceding Service Request cannot be established. For reading the instantaneous import block counter register values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	0x00B8
GBCS Use Case	N/A	GCS13b
GBCS Use Case Name	N/A	Read GSME Block Counters
SMETS1 Applicability	N/A	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <p>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</p>	

Table 25 Read Instantaneous Import Block Counters Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.1.4.1 Service Request

4.1.4.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInstantaneousImportBlockCounters XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

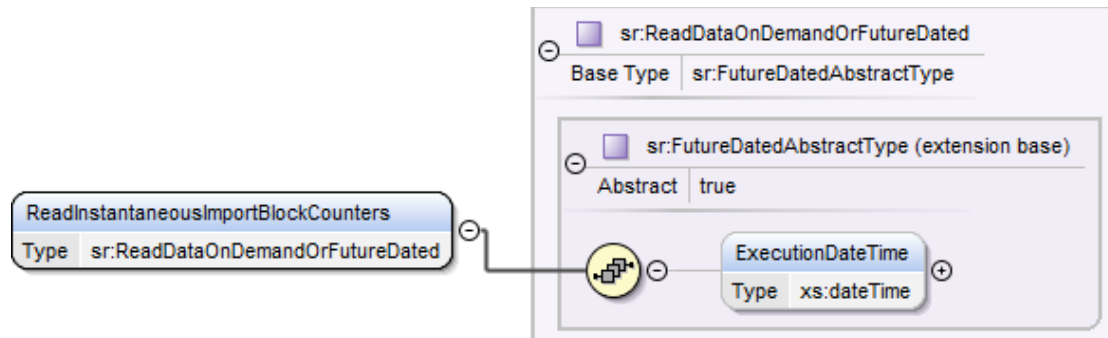


Figure 13 Read Instantaneous Import Block Counters Service Request Structure

4.1.4.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the device. <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 26 Read Instantaneous Import Block Counters Service Request Data Items

4.1.4.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 27 Read Instantaneous Import Block Counters Modes of Operation

4.1.4.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 28 Read Instantaneous Import Block Counters Command Variant Values

4.1.4.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

4.1.4.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadInstantaneousImportBlockCounters/>
```

Figure 14 Sample Read Instantaneous Import Block Counters Service Request Format

4.1.4.2 Responses

The response messages for a "Read Instantaneous Import Block Counters" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

4.1.4.2.1 Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below. Parse Output / SMETS1 Response Format

4.1.4.2.1.1 Format - ReadInstantaneousImportBlockCountersRsp

The Tariff Block Counter Values are presented as a group of up to four values, repeating within the ImportBlockCounters group. Since GBCS only defines a value and no identifier, the parse response includes an "index" attribute against each value (defined as part of the "DecimalWithIndex" type) to differentiate them. Please see the sample in section 4.1.4.2.1.4 below for an example.

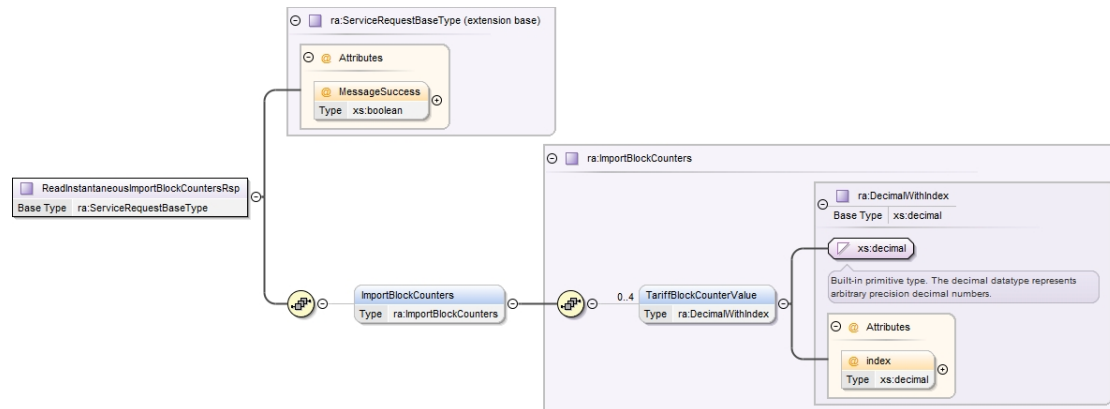


Figure 15 - Read Instantaneous Import Block Counters Parse Response / SMETS1 Response Structure

4.1.4.2.1.2 Specific Header Data Items

Data Item	Gas Response
GBCSHexadecimalMessageCode	00B8
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>GCS13b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read GSME Block Counters</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present ¹

Table 29 - Read Instantaneous Import Block Counters Parse Response Header Data Items

¹ (SMETS2 only) Includes IsFromGSME and ClockStatus as described in Annex 18.

4.1.4.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
TariffBlockCounterValue ¹	Accumulated consumption within each block (max 4). Parse Response: Note that the Multiplier (value of 1) and Divisor (value of 1000) values have been automatically applied by the P&C software.	ra:DecimalWithIndex	None	m ³	Sensitive

Table 30 - Read Instantaneous Import Block Counters Parse Response / SMETS1 Response Body Data Items

¹Maximum 4

4.1.4.2.1.4 Sample Response

```
<ra:ReadInstantaneousImportBlockCountersRsp MessageSuccess="true">
  <ra:ImportBlockCounters>
    <ra:TariffBlockCounterValue index="1">10.1</ra:TariffBlockCounterValue>
    <ra:TariffBlockCounterValue index="2">20.2</ra:TariffBlockCounterValue>
    <ra:TariffBlockCounterValue index="3">30.3</ra:TariffBlockCounterValue>
    <ra:TariffBlockCounterValue index="4">40.4</ra:TariffBlockCounterValue>
  </ra:ImportBlockCounters>
</ra:ReadInstantaneousImportBlockCountersRsp>
```

Figure 16 - Read Instantaneous Import Block Counters Parse Response Sample

4.2 Read Instantaneous Export Registers (4.2)

Service Request Name	ReadInstantaneousExportRegisters	
Service Reference	4.2	
Service Request Variant Name	ReadInstantaneousExportRegisters	
Service Reference Variant	4.2	
Service Request Objective	To enable a DCC Service User to read the instantaneous export register values on an Electricity Smart Meter.	
Business Context Statement	The DCC Service User requires an immediate view of the current export register read values on an Electricity Smart Meter, e.g. to respond to a customer telephone enquiry.	
User Role Access	<ul style="list-style-type: none"> Electricity Export Supplier (EES) Electricity Network Operator (ENO) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: <i>SME.C.NC</i>	
Service Request Narrative (SMETS2 or later)	<p><i>The data items being read in this Service Request, as defined by SMETS, are the Active Export Register and Reactive Export Register for the ESME.</i></p> <p><i>Active Export Register</i>, as defined by SMETS, is the register recording the cumulative Active Energy Exported.</p> <p><i>Reactive Export Register</i>, as defined by SMETS, is the register recording the cumulative Reactive Energy Exported.</p> <p>This Service Request returns all the Export Registers available at the Meter. It isn't possible to request a subset of them.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0026	N/A

GBCS Use Case	ECS17a	N/A
GBCS Use Case Name	Read ESME Energy Registers (Export Energy)	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 31 Read Instantaneous Export Registers Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.2.1 Service Request

4.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInstantaneousExportRegisters XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

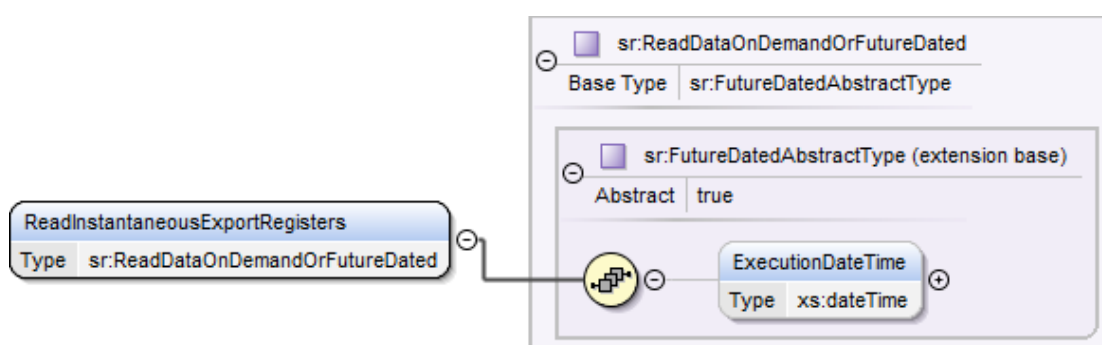


Figure 17 Read Instantaneous Export Registers Service Request Structure

4.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the device. <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 32 Read Instantaneous Export Registers Service Request Data Items

4.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 33 Read Instantaneous Export Registers Modes of Operation

4.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 34 Read Instantaneous Export Registers Command Variant Values

4.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

4.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadInstantaneousExportRegisters/>
```

Figure 18 Sample Read Instantaneous Export Registers Service Request Format

4.2.2 Responses

The response messages for a "Read Instantaneous Export Registers" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response.

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.2.2.1 Parse Output / SMETS1 Response Format

4.2.2.1.1 Format - ReadInstantaneousExportRegistersRsp

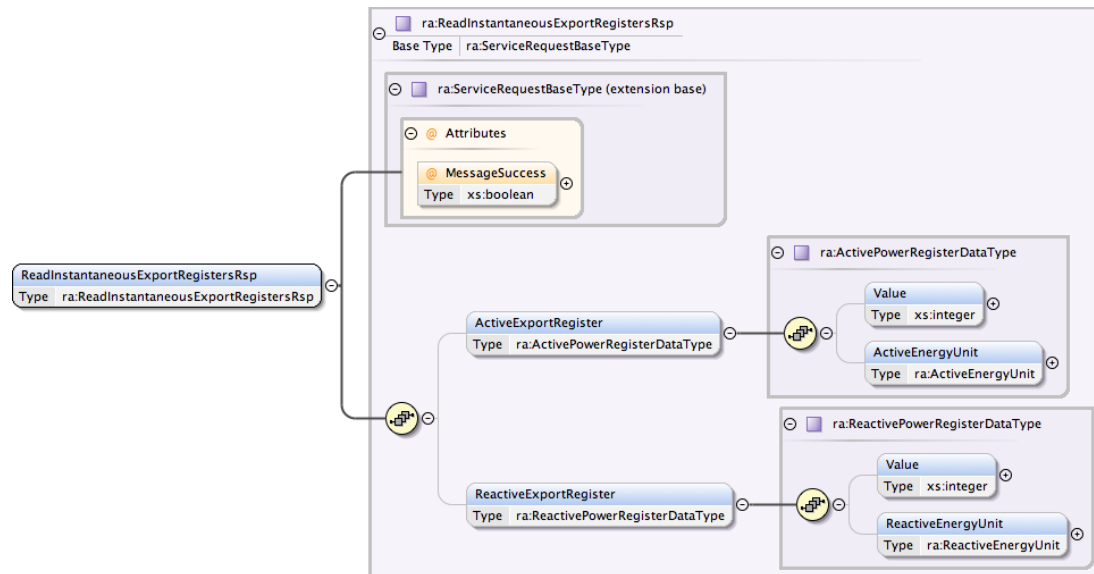


Figure 19 - Read Instantaneous Export Registers Parse Response / SMETS1 Response Structure

4.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0026
GBCS Use Case Number (for information only - not in header)	ECS17a
GBCS Use Case Name (for information only - not in header)	Read ESME Energy Registers (Export Energy)
SupplementaryRemotePartyID	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP
SupplementaryOriginatorCounter	Not present
Timestamp	Present

Table 35 - Read Instantaneous Export Registers Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.2.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Units	Sensitivity
ActiveExportRegister				
Value	The register recording the active energy exported, as measured by the measuring element	xs:integer	Wh	Non-sensitive

Data Item	Description / Valid Set	Type	Units	Sensitivity
ActiveEnergyUnit	Unit of measure - Wh	xs:string	N/A	Non-sensitive
ReactiveExportRegister				
Value	The register recording the cumulative Reactive Energy Exported.	xs:integer	varh	Non-sensitive
ReactiveEnergyUnit	Unit of measure – varh	xs:string	N/A	Non-sensitive

Table 36 - Read Instantaneous Export Registers Parse Response / SMETS1 Response Body Data Items

4.2.2.1.4 Sample Response

```
<ra:ReadInstantaneousExportRegistersRsp MessageSuccess="true">
  <ra:ActiveExportRegister>
    <ra:Value>100</ra:Value>
    <ra:ActiveEnergyUnit>Wh</ra:ActiveEnergyUnit>
  </ra:ActiveExportRegister>
  <ra:ReactiveExportRegister>
    <ra:Value>20</ra:Value>
    <ra:ReactiveEnergyUnit>varh</ra:ReactiveEnergyUnit>
  </ra:ReactiveExportRegister>
</ra:ReadInstantaneousExportRegistersRsp>
```

Figure 20 - Read Instantaneous Export Registers Parse Response Sample

4.3 Read Instantaneous Prepay Values (4.3)

Service Request Name	ReadInstantaneousPrepayValues
Service Reference	4.3
Service Request Variant Name	ReadInstantaneousPrepayValues
Service Reference Variant	4.3
Service Request Objective	To enable a DCC Service User to read instantaneous prepayment register values on an Electricity Smart Meter or Gas Smart Meter.
Business Context Statement	The DCC Service User requires an immediate view of the current prepayment values on an electricity Smart Meter / Gas Proxy Function, e.g. to respond to a customer telephone enquiry. •
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)

Security Classification	Non-critical, Request is non-sensitive, Response non-debt data is non-sensitive and Response debt data is sensitive SMETS2 or later: GBCS XREF: <i>SME.C.NC</i>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The data items being read in this Service Request, as defined by SMETS are ; <i>Meter Balance</i> <i>Emergency Credit Balance</i> <i>Accumulated Debt Register</i> <i>Payment Debt Register</i> <i>Debt To Clear</i> <i>Time Debt Registers [1...2]</i> This Service Request returns all the Prepayment Registers available at the meter / Gas Proxy Function. It isn't possible to request a subset of them. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. This means that any subsequent sequenced command could not be sent by the DCC as the success of the preceding Service Request cannot be established. When reading the read instantaneous prepayment register values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x002D	0x0075
GBCS Use Case	ECS19	GCS14
GBCS Use Case Name	Read ESME Prepayment Registers	Read GSME Prepayment Register(s)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.</p> <p>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</p>	

Table 37 Read Instantaneous Prepay Values Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.3.1 Service Request

4.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInstantaneousPrepayValues XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

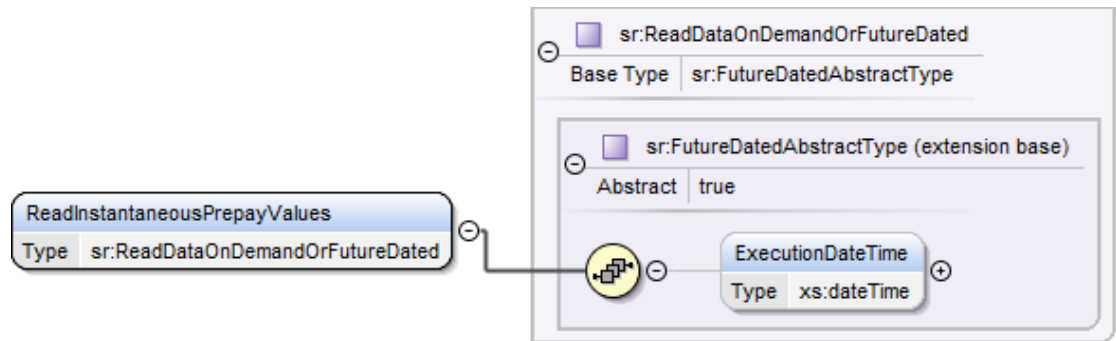


Figure 21 Read Instantaneous Prepay Values Service Request Structure

4.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the device. <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 38 Read Instantaneous Import Prepay Values Service Request Data Items

4.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 39 Read Instantaneous Prepay Values Modes of Operation

4.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS1	Yes	No	No	No	No	No	No	No

Table 40 Read Instantaneous Prepay Values Command Variant Values

4.3.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

4.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadInstantaneousPrepayValues/>

Figure 22 Sample Read Instantaneous Prepay Values Service Request Format

4.3.2 Responses

The response messages for a "Read Instantaneous Prepay Values" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.3.2.1 Parse Output / SMETS1 Response Format

4.3.2.1.1 Format - ReadInstantaneousPrepayValuesRsp

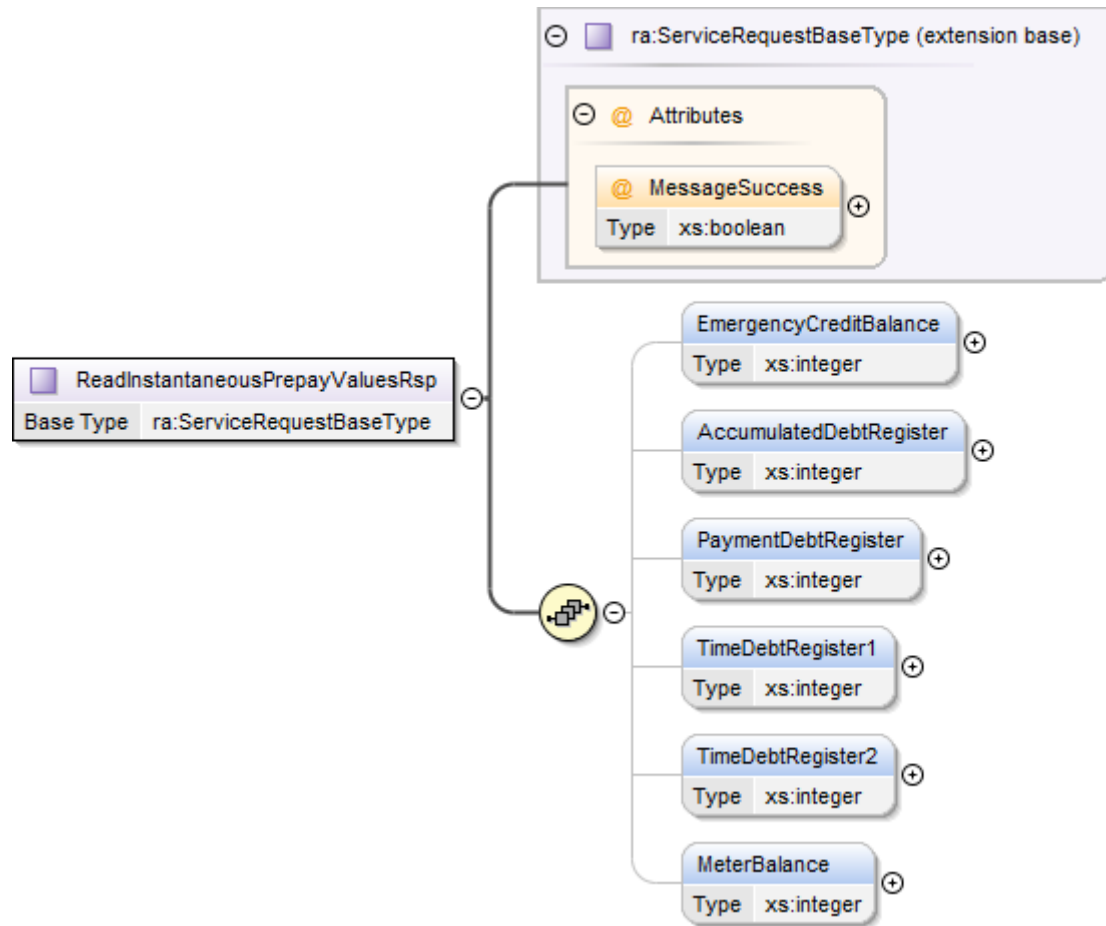


Figure 23 - Read Instantaneous Prepay Values Parse Response / SMETS1 Response Structure

4.3.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	002D	0075
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS19</i>	<i>GCS14</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Prepayment Registers</i>	<i>Read GSME Prepayment Register(s)</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present ¹

Table 41 - Read Instantaneous Prepay Values Parse Response Header Data Items

¹ (SMETS2 only) Includes IsFromGSME and ClockStatus as described in Annex 18.

4.3.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
EmergencyCreditBalance	Amount of emergency credit remaining	xs:integer	None	1000 th pence / cent	ESME - Sensitive GSME – Non-Sensitive
AccumulatedDebtRegister	Debt accumulated on the meter for time based charges (standing charge and time based debt recovery) but only used whilst EmergencyCredit is in use, and where SuspendDebtEmergency.value = true	xs:integer	None	1000 th pence / cent	ESME - Sensitive GSME – Non-Sensitive
PaymentDebtRegister	The remaining payment-based debt to be recovered	xs:integer	None	1000 th pence / cent	ESME - Sensitive GSME – Sensitive
TimeDebtRegister1	Amount remaining to be recovered through time based debt recovery using DebtRecoveryRate[1..2]	xs:integer	None	1000 th pence / cent	ESME - Sensitive GSME – Sensitive
TimeDebtRegister2	Amount remaining to be recovered through time based debt recovery using DebtRecoveryRate[1..2]	xs:integer	None	1000 th pence / cent	ESME – Sensitive GSME – Sensitive
MeterBalance	Credit available to the consumer	xs:integer	None	1000 th pence / cent	ESME – Sensitive GSME – Non-Sensitive

Table 42 - Read Instantaneous Prepay Values Parse Response / SMETS1 Response Body Data Items

4.3.2.1.4 Sample Response body

```
<ra:ReadInstantaneousPrepayValuesRsp MessageSuccess="true">
  <ra:EmergencyCreditBalance>10</ra:EmergencyCreditBalance>
  <ra:AccumulatedDebtRegister>20</ra:AccumulatedDebtRegister>
  <ra:PaymentDebtRegister>10</ra:PaymentDebtRegister>
  <ra:TimeDebtRegister1>30</ra:TimeDebtRegister1>
  <ra:TimeDebtRegister2>40</ra:TimeDebtRegister2>
  <ra:MeterBalance>100</ra:MeterBalance>
</ra:ReadInstantaneousPrepayValuesRsp>
```

Figure 24 - Read Instantaneous Prepayment Values Parse Response Sample

4.4 Retrieve Billing Data Log (4.4)

SMETS2 or later

This Service Request maps to four Electricity and four GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 4.4 Service Request has been broken into four parts: 4.4.2 (Electricity and Gas Change of Mode / Tariff Triggered), 4.4.3 (Electricity and Gas Billing Calendar Triggered), 4.4.4 (Electricity and Gas Payment Debt) and 4.4.5 (Electricity and Gas Prepayment Credits).

The following table maps the Service Requests to the SMETS data items defined on each device, the SMETS reference is given in brackets after the name.

	Service Request	4.4.2	4.4.3	4.4.4	4.4.5

		GBCS Use Case	ECS20b	GCS15b	ECS20c	GCS15c	ECS20a	GCS15d	ECS20d	GCS15e
Gas	Billing data log (4.6.5.3)									
	12 entries	Tariff TOU Register Matrix (4.6.5.20)		y		y				
		Consumption Register (4.6.5.4)		y		y				
		Tariff Block Counter Matrix (4.6.5.19)		y		y				
	if in Prepayment Mode									
	5 entries	Value of prepayment credits								y
	5 entries	Debt adjustments (4.5.3.5)								
	10 entries	Payment-based debt payments						y		
	12 entries	Meter balance (4.6.5.11)		y		y				
		Emergency credit balance (4.6.5.8)		y		y				
		Accumulated debt register (4.6.5.1)		y		y				
		Payment debt register (4.6.5.13)		y		y				
		Time debt registers [1..2] (4.6.5.21)		y		y				
Electricity - single element	Billing data log (5.7.5.10)									
	12 entries	Tariff TOU Register Matrix (5.7.5.34)	y		y					
		Tariff TOU Block Register Matrix (5.7.5.35)	y		y					
		Active import register (5.7.5.3)	y		y					
	if in Prepayment Mode									
	5 entries	Value of prepayment credits							y	
	5 entries	Debt adjustments (5.6.3.5)								
	10 entries	Payment-based debt payments					y			
	12 entries	Meter balance (5.7.5.22)	y		y					
		Emergency credit balance (5.7.5.15)	y		y					
		Accumulated debt register (5.7.5.1)	y		y					
		Payment debt register (5.7.5.23)	y		y					
		Time debt registers [1..2] (5.7.5.36)	y		y					
Electricity - twin element	Billing data log (5.13.2.3)									
	12 entries	Tariff TOU Register Matrix (5.7.5.34)	y		y					
		Secondary Tariff TOU Register Matrix (5.13.2.10)	y		y					
		Tariff TOU Block Register Matrix (5.7.5.35)	y		y					
		Active import register (5.7.5.3)	y		y					
		Secondary Active import register (5.13.2.11)	y		y					

Table 43 Service Requests to read Billing Data Log

This Service Request maps to Service Reference Variant 4.4.2 (Electricity and Gas Change of Mode / Tariff Triggered), 4.4.3 (Electricity and Gas Billing Calendar Triggered), 4.4.4 (Electricity and Gas Payment Debt) and 4.4.5 (Electricity and Gas Prepayment Credits).

This section has been intentionally left blank as there is no Service Reference Variant 4.4.1.

Service Request Name	RetrieveBillingDataLog
Service Reference	4.4
Service Request Variant Name	RetrieveCoMOrTariffTriggeredBillingDataLog
Service Reference Variant	4.4.2
Service Request Objective	To enable a DCC Service User to read a data set stored in the Billing Data Log (Change of Mode or Tariff Triggered) of an Electricity Smart Meter or Gas Proxy Function / Smart Meter on an ad-hoc basis for a specified date range.
Business Context Statement	This Service Request Variant provides the mechanism to read the Change of Mode / Tariff Triggered Billing Data Log on an ad-hoc basis.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and sensitive (the request is non-sensitive and the device response Billing Data Log content is sensitive)</p> <p>SMETS2 or later:</p> <p>GBCS <i>XREF: SME.C.NC</i></p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The Service Request sender needs to be the Registered Import Supplier for the entire date-time period for which the Billing Data Log is requested. This could be the 'current' or the 'old' Registered Import Supplier. If the sender is not authorised to

	read data for the entire period requested, an error will be returned.	
	2. Because this Service Request returns Sensitive data, URPs (i.e. the 'old' Registered Supplier), have to include in the Request the Public Security Credentials they want the Device to sign the Response with.	
	3. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents.	
	4. This Service Request returns Billing Log Data relating to an ESME operating in either Credit or Prepayment Mode where Billing Data Log entries have been recorded as a result of a change in Device Configuration e.g. change of mode or tariff. Specific data items returned include the values of the Active Import register, Tariff TOU Register Matrix, Tariff TOU Block register Matrix, Meter Balance, Emergency Credit Balance, Accumulated Debt register, payment Debt register and Time Debt registers [1..2], for a Single element ESME variant and in addition the values of the Secondary Active Import register and Secondary Tariff TOU register Matrix for a Twin element ESME variant as defined by SMETS.	
	5. If the device is a GSME in Prepayment Mode, then the values for Meter Balance, Emergency Credit Balance, Accumulated Debt register, payment Debt register and Time Debt registers [1..2] are also returned.	
	6. For reading the Billing Data Log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users.	
	7. Only the registered GIS may successfully request RetrieveCoMOrTariffTriggeredBillingDataLog data from the GSME direct, all previously registered GIS Users must target the Service Request to the GPF.	
	8. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example:	
	<ul style="list-style-type: none">• To ensure inclusive, use 20/11/2018 00:00:00,• To ensure exclusive, use 19/11/2018 23:59:58	
	GBCS Cross Reference	Electricity
GBCS Message Code	0x002F	0x00C3
GBCS Use Case	ECS20b	GCS15b

GBCS Use Case Name	Read ESME Billing Data Log (change of mode / tariff triggered exc export)	Read GSME Billing Data Log (change of mode / tariff triggered)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Where the Device does not record, on change of mode or change of tariff, the ConsumptionRegister (Gas) or ActiveImportRegisterConsumption (Electricity) values in such log entries, the S1SP shall set the corresponding values in the SMETS1 Response to the relevant Unsupported Values (see section 19.9). For a SMETS1 ESME the DCC shall populate the TariffTOUBlock[1..4]RegisterMatrixValue values with the Tariff Block Counter Matrix values from the Billing Data Log (with their SMETS1 meanings). SMETS1 does not require the recording of additional prepayment values to the timetable set out in the Billing Calendar so it may not be provided in SMETS1 Responses. Provision of Public Security Credentials for the Device to sign the Response with is not applicable to SMETS1 Devices. The DCC Data Systems will not validate whether this data item has been included in a SMETS1 Service Request. Secondary element values are not applicable to SMETS1. Guidance note: In certain circumstances when requesting readings from SMETS1 Devices, the Device may still be busy with previous operations when the read request is received, causing the Device to fail to return expected data. DCC recommends that a delay of at least 5 minutes is made before any reading request is made to the Device if this reading request is part of a larger number of orchestrated Service Requests, e.g. after a tariff update. This problem has been noticed with SRV 4.4.2, though it could apply to any SMETS1 read request. <p>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</p>	

Table 44 Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.4.2.1 Service Request

4.4.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RetrieveCoMOrTariffTriggeredBillingDataLog XML element defines this Service Request and contains the date-time period for which the log is to be read on the device, for URPs the Key

Agreement Public Security Credentials and, for Future Dated Requests, the Execution Date Time.

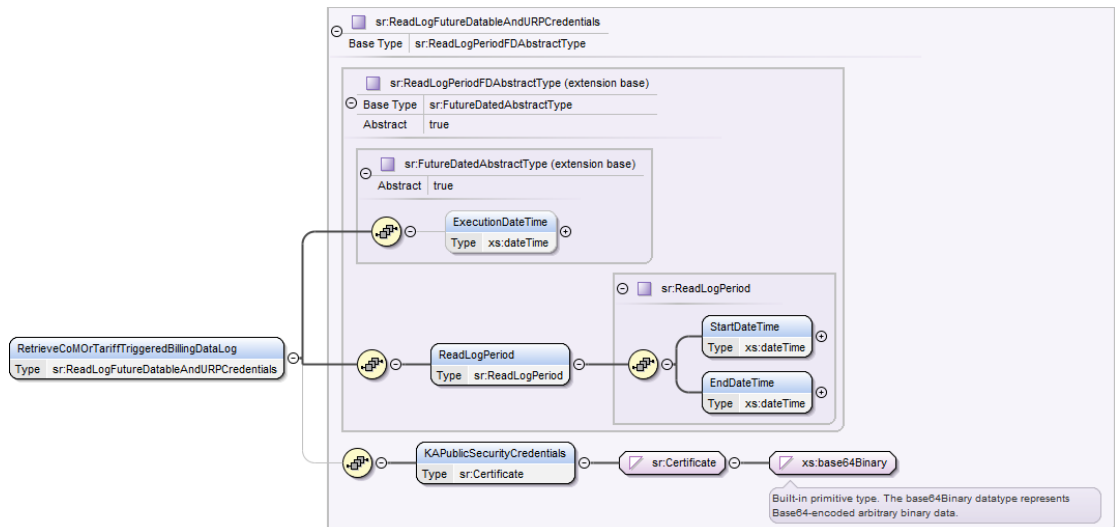


Figure 25 Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Service Request Structure

4.4.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Old Registered Supplier)	sr:Certificate (xs:base64Binary)	SMETS2 or later Service: (Registered Supplier: N/A Old Registered Supplier ¹ : Yes) SMETS1 Service: N/A	None	N/A	Non-Sensitive

Table 45 Retrieve Debt And Credit Billing Data Log Service Request Data Items

¹ Mandatory for SMETS2 or later Service and User Roles EIS and GIS that were registered parties (KRPs) to the Device for the required time period, but they no longer are

4.4.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 46 Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Modes of Operation

4.4.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 47 Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Command Variant Values

4.4.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for:

- SMETS2 or later: Execution Date Time, Read Log Period, Key Agreement Public Security Credentials and Device Applicability validation.
- SMETS1: Execution Date Time, Read Log Period and Device Applicability validation.

4.4.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveCoMOOrTariffTriggeredBillingDataLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveCoMOOrTariffTriggeredBillingDataLog>
```

Figure 26 Sample Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Service Request Format

4.4.2.2 Responses

The response messages for a "Retrieve Change Of Mode Or Tariff Triggered Billing Data Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery

- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.4.2.2.1 Parse Output / SMETS1 Response Format

4.4.2.2.1.1 Format - RetrieveCoMOrTariffTriggeredBillingDataLogRsp

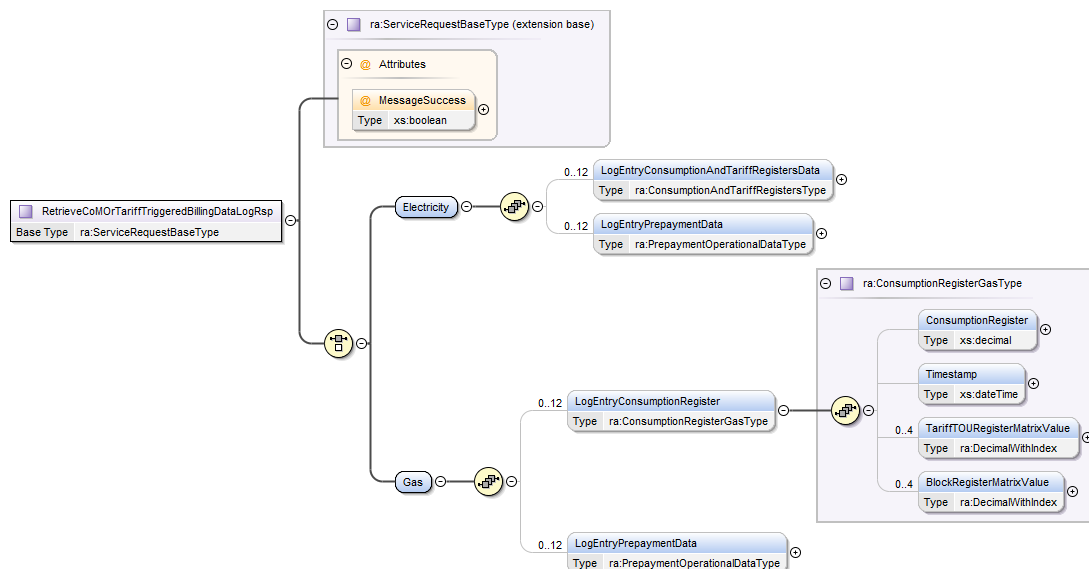


Figure 27 - Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response / SMETS1 Response Structure

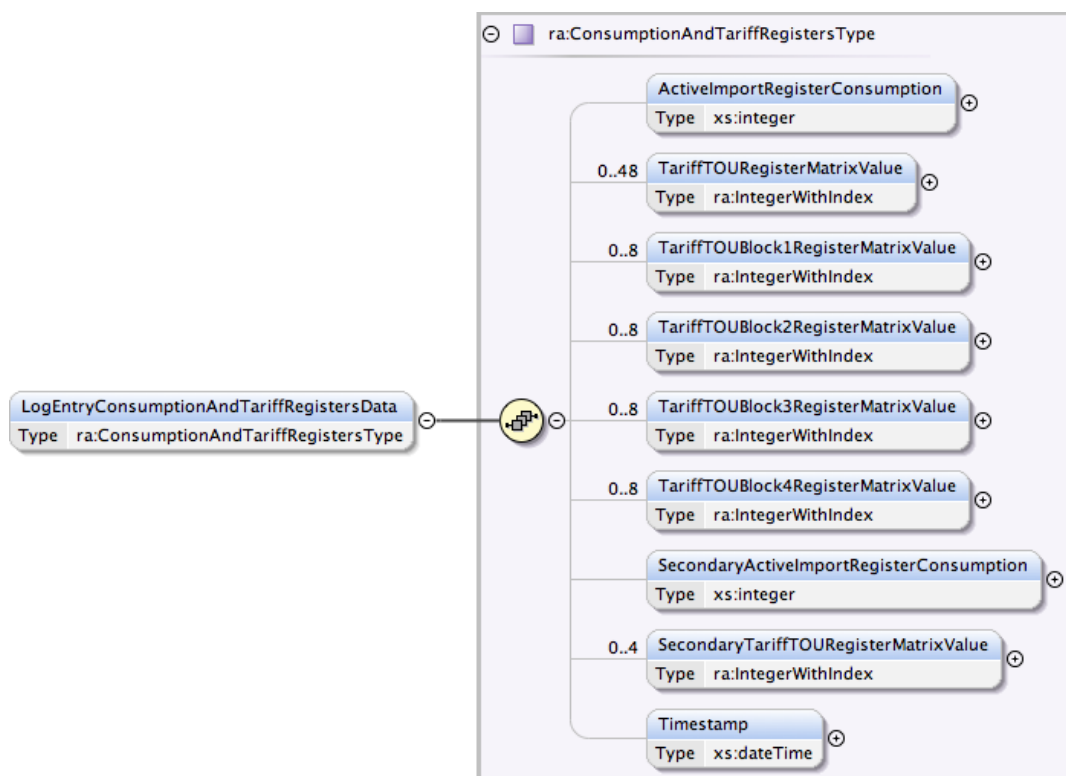


Figure 28 - Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response / SMETS1 Response - LogEntryConsumptionAndTariffRegistersData Structure

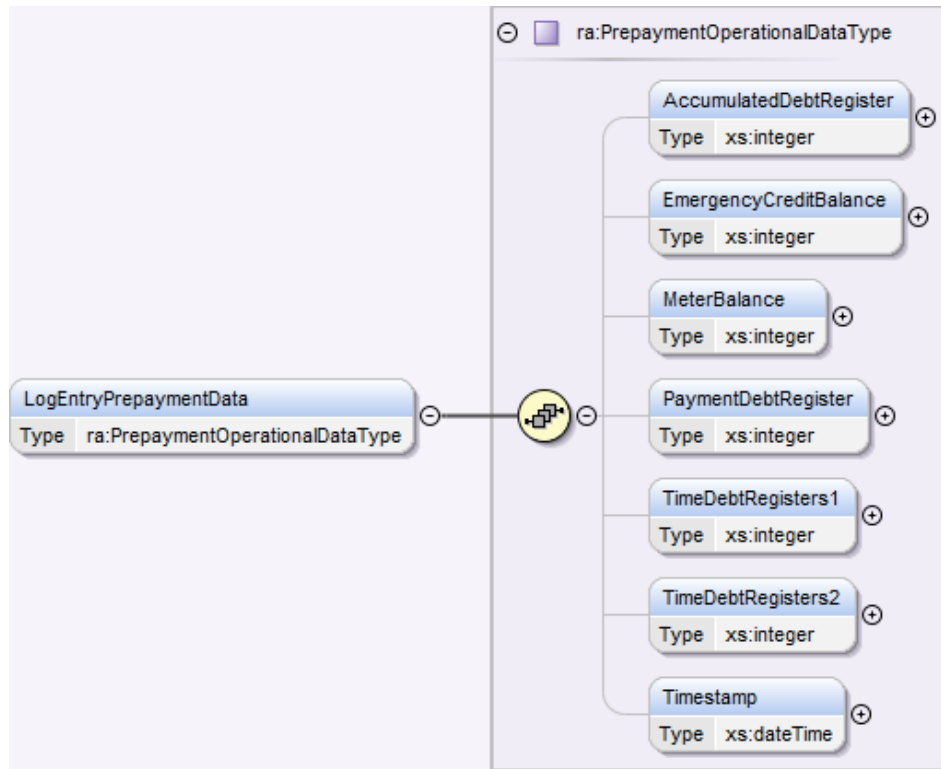


Figure 29 - Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response / SMETS1 Response - LogEntryPrepaymentData Structure

4.4.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	002F	00C3
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS20b</i>	<i>GCS15b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Billing Data Log (change of mode / tariff triggered exc export)</i>	<i>Read GSME Billing Data Log (change of mode / tariff triggered)</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP
SupplementaryOriginatorCounter	Present where originator is a URP	Present where originator is a URP
Timestamp	Not Present	Not Present

Table 48- Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.4.2.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntryConsumptionAndTariffRegistersData ¹	Array of Consumption and Tariff Registers Data Electricity Only	ra: ConsumptionAndTariffRegistersType (see section 4.4.2.2.1.4)	None	N/A	Sensitive
LogEntryConsumptionRegister ¹	Array of Consumption register data Gas Only	ra: ConsumptionRegisterGasType (see section 4.4.2.2.1.5)	None	N/A	Sensitive
LogEntryPrepaymentData ¹	Array of Prepayment Data SMETS1: SMETS1 Devices are not required to record this prepayment data so it may not be provided in SMETS1 Responses.	ra: PrepaymentOperationalDataType (see section 4.14.2.1.4)	None	N/A	Sensitive

Table 49- Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response / SMETS1 Response Body Data Items

¹ Maximum 12

4.4.2.2.1.4 ConsumptionAndTariffRegistersType Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActiveImportRegisterConsumption	The register recording the cumulative Active Energy Imported. SMETS1: Where the Device does not record this value on change of mode or change of tariff, the DCC shall set the value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:integer	None	Wh	Sensitive
TariffTOURegisterMatrixValue ¹	Tariff Registers for Time-of-use Pricing.	ra: IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock1RegisterMatrixValue ²	Tariff Registers for Time –of-use with Block Pricing. SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra: IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock2RegisterMatrixValue ²	Tariff Registers for Time –of-use with Block Pricing. SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra: IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock3RegisterMatrixValue ²	Tariff Registers for Time –of-use with Block Pricing. SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra: IntegerWithIndex	None	Wh	Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
TariffTOUBlock4RegisterMatrixValue ²	Tariff Registers for Time-of-use with Block Pricing. SMETS1: This value shall be populated by Tariff TOU Block Register Matrix values where supported by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra: IntegerWithIndex	None	Wh	Sensitive
SecondaryActiveImportRegisterConsumption	The register recording the cumulative Active Energy Imported via the secondary measuring element of the Electricity Meter. Optional. Only present if ESME variant = "B" twin element. N/A to SMETS1	xs:integer	None	Wh	Sensitive
SecondaryTariffTOURegisterMatrixValue ³	Secondary measurement element Tariff Registers for Time-of-use Pricing. Optional. Only present if ESME variant = "B" twin element. N/A to SMETS1	ra: IntegerWithIndex	None	Wh	Sensitive
Timestamp	Time when the snapshot was taken.	xs:dateTime	None	N/A	Sensitive

Table 50 - Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response / SMETS1 Response – ConsumptionAndTariffRegistersType Specific Data Items

¹ Maximum 48

² Maximum 8

³ Maximum 4

4.4.2.2.1.5 ConsumptionRegisterGasType Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ConsumptionRegister	Consumption Register data Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS SMETS1: Where the Device does not record this value on change of mode or change of tariff, the DCC shall set the value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:decimal	None	m ³	Sensitive
Timestamp	Time when the snapshot was taken. (Note that this item is not correctly defined in GBCS 0.8.1 and may not be populated)	xs:dateTime	None	N/A	Sensitive
TariffTOURegisterMatrixValue	A 1 x 4 matrix for storing Tariff Registers for Time-of-use Pricing. Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS	ra: DecimalWithIndex	None	m ³	Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
BlockRegisterMatrix Value	A 4 x 1 matrix for storing Block Counters for Block Pricing Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS	ra: DecimalWithIndex	None	m ³	Sensitive

Table 51- Retrieve Change of Mode or Tariff Triggered Billing Data Log Parse Response / SMETS1 Response – ConsumptionRegisterGasType Specific Data Items

4.4.2.2.1.6 Sample Response

```
<ra:RetrieveCoMOrTariffTriggeredBillingDataLogRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:LogEntryConsumptionAndTariffRegistersData>
      <ra:ActiveImportRegisterConsumption>0</ra:ActiveImportRegisterConsumption>
      <ra:TariffTOURegisterMatrixValue index="1">0</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOURegisterMatrixValue index="2">0</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="1">0</ra:TariffTOUBlock1RegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="2">0</ra:TariffTOUBlock1RegisterMatrixValue>
      <ra:TariffTOUBlock2RegisterMatrixValue index="1">0</ra:TariffTOUBlock2RegisterMatrixValue>
      <ra:TariffTOUBlock2RegisterMatrixValue index="2">0</ra:TariffTOUBlock2RegisterMatrixValue>
      <ra:TariffTOUBlock3RegisterMatrixValue index="1">0</ra:TariffTOUBlock3RegisterMatrixValue>
      <ra:TariffTOUBlock3RegisterMatrixValue index="2">0</ra:TariffTOUBlock3RegisterMatrixValue>
      <ra:TariffTOUBlock4RegisterMatrixValue index="1">0</ra:TariffTOUBlock4RegisterMatrixValue>
      <ra:TariffTOUBlock4RegisterMatrixValue index="2">0</ra:TariffTOUBlock4RegisterMatrixValue>
      <ra:SecondaryActiveImportRegisterConsumption>0</ra:SecondaryActiveImportRegisterConsumption>1
      <ra:SecondaryTariffTOURegisterMatrixValue index="1">0</ra:SecondaryTariffTOURegisterMatrixValue>1
      <ra:SecondaryTariffTOURegisterMatrixValue index="2">0</ra:SecondaryTariffTOURegisterMatrixValue>1
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntryConsumptionAndTariffRegistersData>
    <ra:LogEntryPrepaymentData>
      <ra:AccumulatedDebtRegister>250000</ra:AccumulatedDebtRegister>
      <ra:EmergencyCreditBalance>100000</ra:EmergencyCreditBalance>
      <ra:MeterBalance>123000</ra:MeterBalance>
      <ra:PaymentDebtRegister>500</ra:PaymentDebtRegister>
      <ra:TimeDebtRegisters1>70</ra:TimeDebtRegisters1>
      <ra:TimeDebtRegisters2>80</ra:TimeDebtRegisters2>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntryPrepaymentData>
  </ra:Electricity>
</ra:RetrieveCoMOrTariffTriggeredBillingDataLogRsp>
```

Figure 30 - Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response Sample – Electricity

¹ N/A to SMETS1

```
<ra:RetrieveCoMoRTariffTriggeredBillingDataLogRsp MessageSuccess="true">
  <ra:Gas>
    <ra:LogEntryConsumptionRegister>
      <ra:ConsumptionRegister>2</ra:ConsumptionRegister>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
      <ra:BlockRegisterMatrixValue index="1">14</ra:BlockRegisterMatrixValue>
      <ra:BlockRegisterMatrixValue index="2">30</ra:BlockRegisterMatrixValue>
    </ra:LogEntryConsumptionRegister>
    <ra:LogEntryPrepaymentData>
      <ra:AccumulatedDebtRegister>250000</ra:AccumulatedDebtRegister>
      <ra:EmergencyCreditBalance>100000</ra:EmergencyCreditBalance>
      <ra:MeterBalance>123000</ra:MeterBalance>
      <ra:PaymentDebtRegister>500</ra:PaymentDebtRegister>
      <ra:TimeDebtRegisters1>70</ra:TimeDebtRegisters1>
      <ra:TimeDebtRegisters2>80</ra:TimeDebtRegisters2>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntryPrepaymentData>
  </ra:Gas>
</ra:RetrieveCoMoRTariffTriggeredBillingDataLogRsp>
```

Figure 31 - Retrieve Change Of Mode Or Tariff Triggered Billing Data Log Parse Response Sample - Gas

4.4.3 Retrieve Billing Calendar Triggered Billing Data Log (4.4.3)

Service Request Name	RetrieveBillingDataLog
Service Reference	4.4
Service Request Variant Name	RetrieveBillingCalendarTriggeredBillingDataLog
Service Reference Variant	4.4.3
Service Request Objective	To enable a DCC Service User to read a data set stored in the Billing Data Log (Billing Calendar Triggered) of an Electricity Smart Meter or Gas Proxy Function / Smart Meter on an ad-hoc basis for a specified date range.
Business Context Statement	<p>Scheduled (Billing Calendar triggered) Billing Data Log reads are configured via Service Request 6.8 (see Annex section 6.8) and handled by the Electricity Smart Meter under SMETS2, with (SMETS2 or later) a Device Alert being sent to the supplier automatically each time data is written to the Billing Data Log.</p> <p>Service Request Variant 4.4.3 provides the mechanism to read the Billing Calendar Billing Data Log on an ad-hoc basis.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and sensitive (the request is non-sensitive and the device response Billing Data Log content is sensitive)</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.NC</p>

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. The Service Request sender needs to be the Registered Import Supplier for the entire date-time period for which the Billing Data Log is requested. This could be the 'current' or the 'old' Registered Import Supplier. If the sender is not authorised to read data for the entire period requested, an error will be returned. 2. Because this Service Request returns Sensitive data, URPs (i.e. the 'old' Registered Supplier), have to include in the Request the Public Security Credentials they want the Device to sign the Response with. 3. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. 4. Returns Billing Log Data relating to an ESME operating in either Credit or Prepayment Mode where Billing Data Log entries have been recorded as a result of a billing calendar entry into the Billing Data Log. Specific data items returned include values of the Active Import register, Tariff TOU Register Matrix and Tariff TOU Block register Matrix for a Single element ESME variant and in addition the values of then Secondary Active Import register and Secondary Tariff TOU register Matrix for a Twin element ESME variant as defined by SMETS. 5. Returns Billing Log Data relating to a GSME operating in either Credit or Prepayment Mode where Billing Data Log entries have been recorded as a result of a billing calendar entry into the Billing Data Log. Specific data items returned include the values of the Consumption Register, Tariff TOU Register Matrix and Tariff Block Counter Matrix as defined by SMETS. 6. For reading the Billing Data Log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. 7. Only the registered GIS may successfully request RetrieveBillingCalendarTriggeredBillingDataLog data from the GSME direct, all previously registered GIS Users must target the Service Request to the GPF. 9. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example: <ul style="list-style-type: none"> • To ensure inclusive, use 20/11/2018 00:00:00, • To ensure exclusive, use 19/11/2018 23:59:58 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0030	0x0076

GBCS Use Case	ECS20c	GCS15c
GBCS Use Case Name	Read ESME Billing Data Log (billing calendar triggered exc export)	Read GSME Billing Data Log (billing calendar triggered)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Where the Device does not record, on change of mode or change of tariff, the ConsumptionRegister (Gas) or ActiveImportRegisterConsumption (Electricity) values in such log entries, the S1SP shall set the corresponding values in the SMETS1 Response to the relevant Unsupported Values (see section 19.9). For a SMETS1 ESME the DCC shall populate the TariffTOUBlock[1..4]RegisterMatrixValue values with the Tariff Block Counter Matrix values from the Billing Data Log (with their SMETS1 meanings). SMETS1 does not require the recording of additional prepayment values to the timetable set out in the Billing Calendar so it may not be provided in SMETS1 Responses. Provision of Public Security Credentials for the Device to sign the Response with is not applicable to SMETS1 Devices. The DCC Data Systems will not validate whether this data item has been included in a SMETS1 Service Request. Secondary element values are not applicable to SMETS1. <p>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</p>	

Table 52 Retrieve Billing Calendar Triggered Billing Data Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.4.3.1 Service Request

4.4.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RetrieveBillingCalendarTriggeredBillingDataLog XML element defines this Service Request and contains the date-time period for which the log is to be read on the device, for URPs the Key Agreement Public Security Credentials and, for Future Dated Requests, the Execution Date Time.

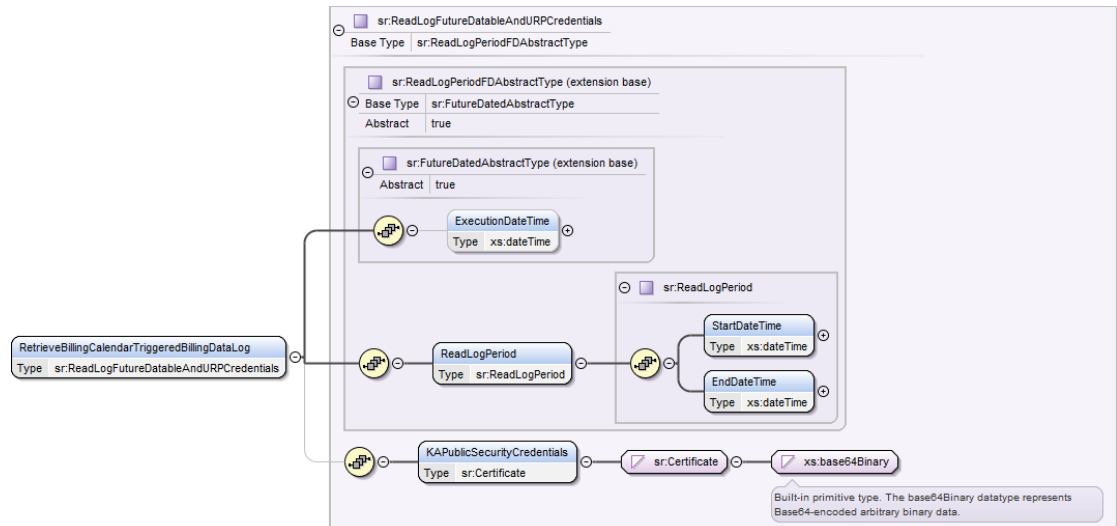


Figure 32 Retrieve Billing Calendar Triggered Billing Data Log Service Request Structure

4.4.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Old Registered Supplier)	sr:Certificate (xs:base64Binary)	SMETS2 or later Service: (Registered Supplier: N/A Old Registered Supplier ¹ : Yes) SMETS1 Service: N/A	None	N/A	Non-Sensitive

Table 53 Retrieve Debt And Credit Billing Data Log Service Request Data Items

¹ Mandatory for SMETS2 or later Service and User Roles EIS and GIS that were registered parties (KRPs) to the Device for the required time period, but they no longer are

4.4.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 54 Retrieve Billing Calendar Triggered Billing Data Log Modes of Operation

4.4.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 55 Retrieve Billing Calendar Triggered Billing Data Log Command Variant Values

4.4.3.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for:

- SMETS2 or later: Execution Date Time, Read Log Period, Key Agreement Public Security Credentials and Device Applicability validation.
- SMETS1: Execution Date Time, Read Log Period and Device Applicability validation.

4.4.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveBillingCalendarTriggeredBillingDataLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveBillingCalendarTriggeredBillingDataLog>
```

Figure 33 Sample Retrieve Billing Calendar Triggered Billing Data Log Service Request Format

4.4.3.2 Responses

The response messages for a "Retrieve Billing Calendar Triggered Billing Data Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.4.3.2.1 Parse Output / SMETS1 Response Format

4.4.3.2.1.1 Format - RetrieveBillingCalendarTriggeredBillingDataLogRsp

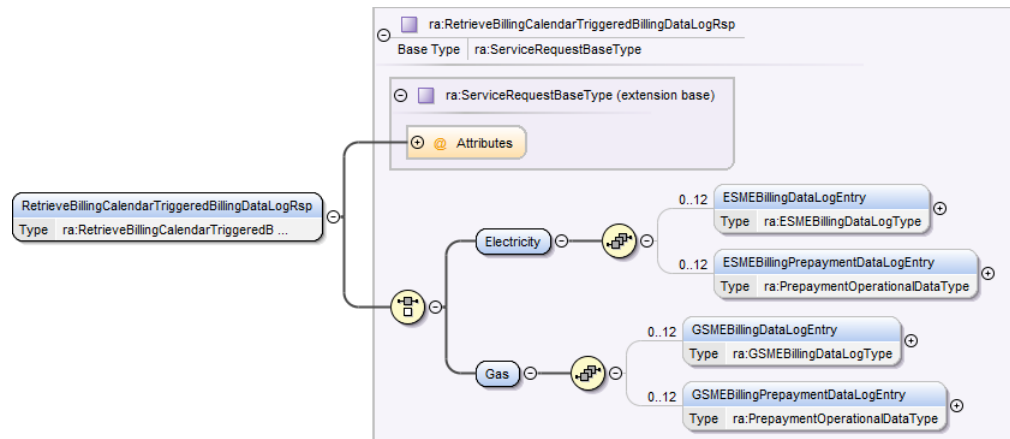


Figure 34 - Retrieve Billing Calendar Triggered Billing Data Log Parse Response / SMETS1 Response Structure

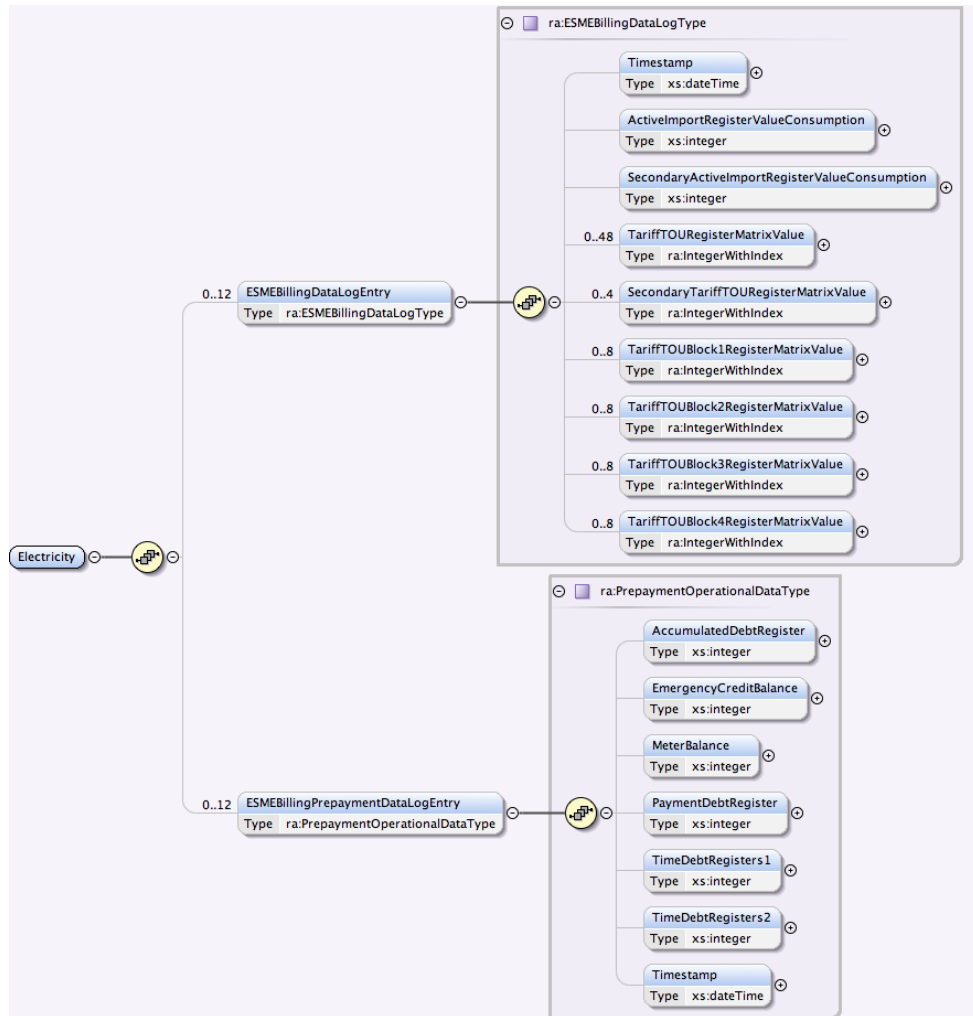


Figure 35 - Retrieve Billing Calendar Triggered Billing Data Log Parse Response / SMETS1 Response - Electricity Structure

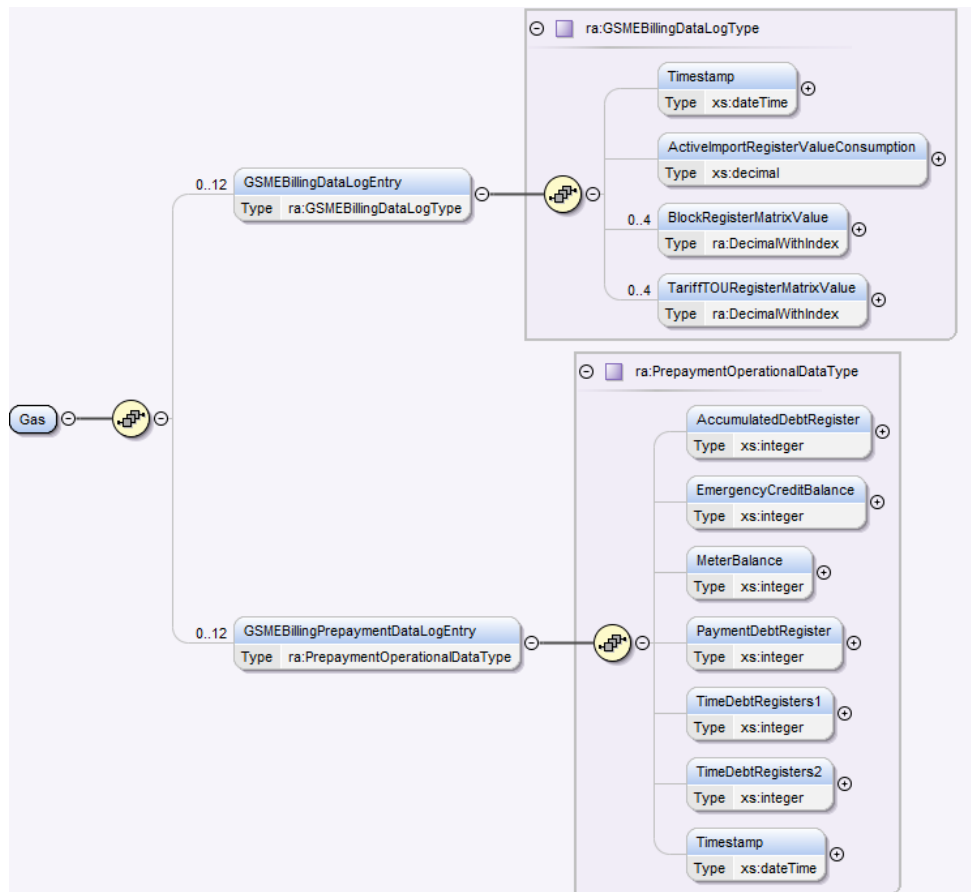


Figure 36 - Retrieve Billing Calendar Triggered Billing Data Log Parse Response / SMETS1 Response - Gas Structure

4.4.3.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0030	0076
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS20c</i>	<i>GCS15c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Billing Data Log (billing calendar triggered exc export)</i>	<i>Read GSME Billing Data Log (billing calendar triggered)</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP
SupplementaryOriginatorCounter	Present where originator is a URP	Present where originator is a URP
Timestamp	Not Present	Not Present

Table 56 - Retrieve Billing Calendar Triggered Billing Data Log Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.4.3.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ESMEBillingDataLogentry ¹	Electricity Smart Meter Billing Data Log Entry Electricity Only	ra:ESMEBillingDataLogType (see Annex 15 section 15.4.2.4)	None	N/A	Sensitive
ESMEBillingPrepaymentDataLogentry ¹	Electricity Smart Meter Billing Prepayment Data Log Entry Electricity Only SMETS1: SMETS1 Devices are not required to record this prepayment data so it may not be provided in SMETS1 Responses.	ra:PrepaymentOperationalDataType (see section 4.14.2.1.4)	None	N/A	Sensitive
GSMEBillingDataLogentry ¹	Gas Smart Meter Billing Data Log Entry Gas Only	ra:GSMEBillingDataLogType (see Annex 15 section 15.4.2.5)	None	N/A	Sensitive
GSMEBillingPrepaymentDataLogentry ¹	Gas Smart Meter Billing Data Prepayment Log Entry Gas Only SMETS1: SMETS1 Devices are not required to record this prepayment data so it may not be provided in SMETS1 Responses.	ra:PrepaymentOperationalDataType (see section 4.14.2.1.4)	None	N/A	Sensitive

Table 57 - Retrieve Billing Calendar Triggered Billing Data Log Parse Response / SMETS1 Response Body Data Items

¹ Maximum 12

4.4.3.2.1.4 Sample Response

```
<ra:RetrieveBillingCalendarTriggeredBillingDataLogRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:ESMEBillingDataLogEntry>
      <ra:Timestamp>2014-05-04T18:12:51.00</ra:Timestamp>
      <ra:ActiveImportRegisterValueConsumption>2</ra:ActiveImportRegisterValueConsumption>
      <ra:TariffTOURegisterMatrixValue index="1">20</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOURegisterMatrixValue index="2">10</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="1">5</ra:TariffTOUBlock1RegisterMatrixValue>
    </ra:ESMEBillingDataLogEntry>
    <ra:ESMEBillingPrepaymentDataLogEntry>
      <ra:AccumulatedDebtRegister>1</ra:AccumulatedDebtRegister>
      <ra:MeterBalance>2</ra:MeterBalance>
      <ra:PaymentDebtRegister>3</ra:PaymentDebtRegister>
      <ra:TimeDebtRegisters1>4</ra:TimeDebtRegisters1>
      <ra:TimeDebtRegisters2>5</ra:TimeDebtRegisters2>
      <ra:Timestamp>2014-05-04T18:12:51.00</ra:Timestamp>
    </ra:ESMEBillingPrepaymentDataLogEntry>
  </ra:Electricity>
</ra:RetrieveBillingCalendarTriggeredBillingDataLogRsp>
```

Figure 37 - Retrieve Billing Calendar Triggered Billing Data Log Parse Response Sample – Electricity

```
<ra:RetrieveBillingCalendarTriggeredBillingDataLogRsp MessageSuccess="true">
  <ra:Gas>
    <ra:GSMEBillingDataLogEntry>
      <ra:Timestamp>2014-05-04T18:12:51.00</ra:Timestamp>
      <ra:ActiveImportRegisterValueConsumption>2</ra:ActiveImportRegisterValueConsumption>
      <ra:BlockRegisterMatrixValue index="1">20</ra:BlockRegisterMatrixValue>
      <ra:TariffTOURRegisterMatrixValue index="2">10</ra:TariffTOURRegisterMatrixValue>
    </ra:GSMEBillingDataLogEntry>
    <ra:GSMEBillingPrepaymentDataLogEntry>
      <ra:AccumulatedDebtRegister>1</ra:AccumulatedDebtRegister>
      <ra:MeterBalance>2</ra:MeterBalance>
      <ra:PaymentDebtRegister>3</ra:PaymentDebtRegister>
      <ra:TimeDebtRegisters1>4</ra:TimeDebtRegisters1>
      <ra:TimeDebtRegisters2>5</ra:TimeDebtRegisters2>
      <ra:Timestamp>2014-05-04T18:12:51.00</ra:Timestamp>
    </ra:GSMEBillingPrepaymentDataLogEntry>
  </ra:Gas>
</ra:RetrieveBillingCalendarTriggeredBillingDataLogRsp>
```

Figure 38 - Retrieve Billing Calendar Triggered Billing Data Log Parse Response
Sample - Gas

4.4.4 Retrieve Billing Data Log (Payment Based Debt Payments) (4.4.4)

Service Request Name	RetrieveBillingDataLog
Service Reference	4.4
Service Request Variant Name	RetrieveBillingDataLog(PaymentBasedDebtPayments)
Service Reference Variant	4.4.4
Service Request Objective	To enable a DCC Service User to read a data set stored in the Billing Data Log (Payment Based Debt Payments) of an Electricity Smart Meter / Gas Proxy Function / Gas Smart Meter on an ad-hoc basis for a specified date range.
Business Context Statement	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. The Service Request sender needs to be the Registered Import Supplier for the entire date-time period for which the Billing Data Log is requested. This could be the 'current' or the 'old' Registered Import Supplier. If the sender is not authorised to read data for the entire period requested, an error will be returned. 2. Returns Billing Log Data relating to an ESME or GSME operating in Prepayment Mode; specifically the value of prepayment based debt payments as defined by SMETS. 3. For reading the Billing Data Log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. 4. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example: <ul style="list-style-type: none"> • To ensure inclusive, use 20/11/2018 00:00:00, • To ensure exclusive, use 19/11/2018 23:59:58 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x002E	0x00C4
GBCS Use Case	ECS20a	GCS15d
GBCS Use Case Name	Read ESME Billing Data Log (payment based debt payments)	Read GSME Billing Data Log (payment-based debt payments)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 58 Retrieve Billing Data Log (Payment Based Debt Payments) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.4.4.1 Service Request

4.4.4.1.1 Format - RetrieveBillingDataLogDebtPayments

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RetrieveBillingDataLogDebtPayments XML element defines this Service Request and contains the date-time period for which the log is to be read on the device and, for Future Dated Requests, the Execution Date Time.

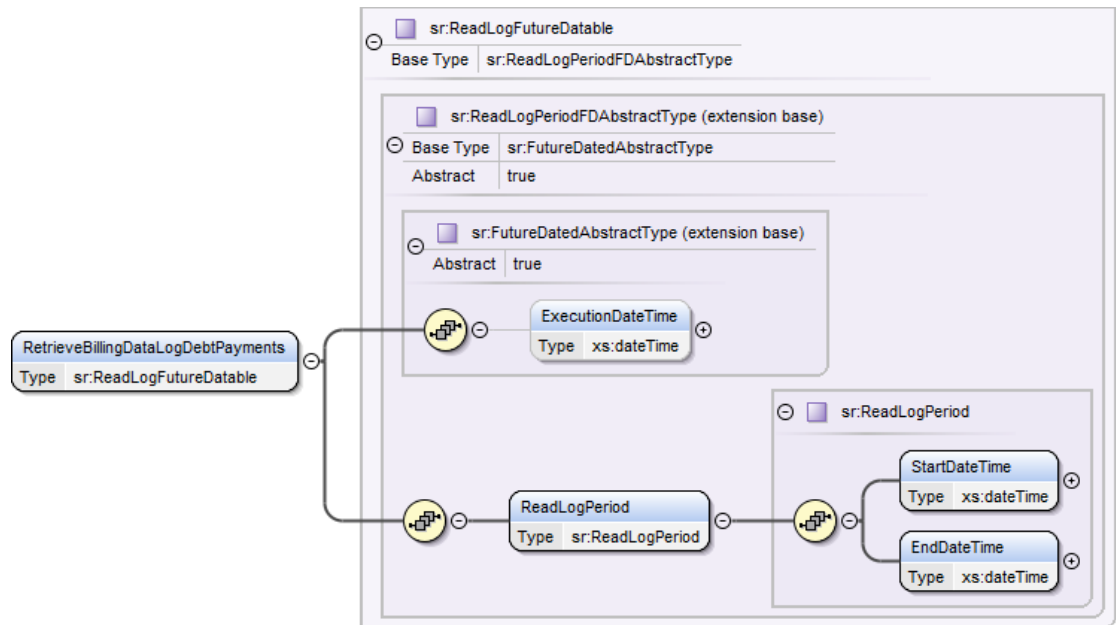


Figure 39 Retrieve Billing Data Log (Payment Based Debt Payments) Service Request Structure

4.4.4.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 59 Retrieve Billing Data Log (Payment Based Debt Payments) Service Request Data Items

4.4.4.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 60 Retrieve Billing Data Log (Payment Based Debt Payments) Modes of Operation

4.4.4.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 61 Retrieve Billing Data Log (Payment Based Debt Payments) Command Variant Values

4.4.4.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Read Log Period validation.

4.4.4.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveBillingDataLogDebtPayments>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveBillingDataLogDebtPayments>
```

Figure 40 Sample Retrieve Billing Data Log (Payment Based Debt Payments) Service Request Format

4.4.4.2 Responses

The response messages for a “Retrieve Billing Data Log (Payment Based Debt Payments)” request follow the generic format for all “Device” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.4.4.2.1 Parse Output / SMETS1 Response Format

4.4.4.2.1.1 Format - RetrieveBillingDataLogDebtPaymentsRsp

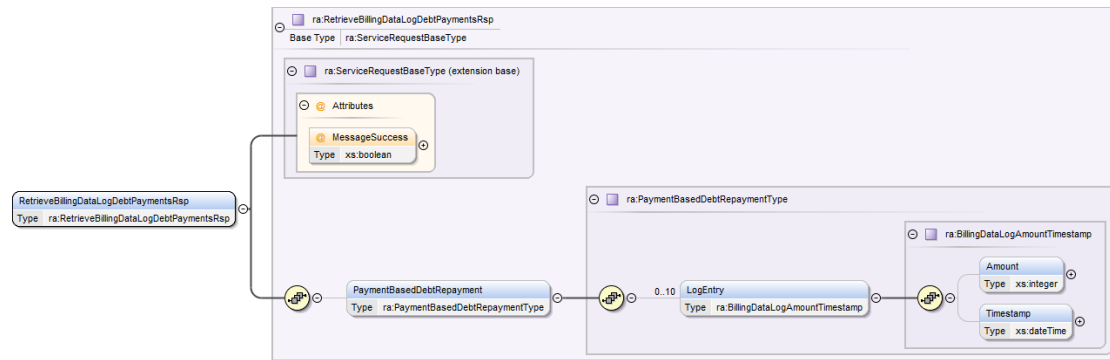


Figure 41 - Retrieve Billing Data Log (Payment Based Debt Payments) Parse Response / SMETS1 Response Structure

4.4.4.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	002E	00C4
GBCS Use Case Number (for information only - not in header)	ECS20a	GCS15d
GBCS Use Case Name (for information only - not in header)	Read ESME Billing Data Log (payment based debt payments)	Read GSME Billing Data Log (payment-based debt payments)
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 62 - Retrieve Billing Data Log (Payment Based Debt Payments) Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.4.4.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PaymentBasedDebtRepayment	Array of amount of debt recovered as part of the Credit Added	ra:PaymentBasedDebtRepaymentType (see section 4.4.4.2.1.4)	None	N/A	Non-Sensitive

Table 63 - Retrieve Billing Data Log (Payment Based Debt Payments) Parse Response / SMETS1 Response Body Data Items

4.4.4.2.1.4 PaymentBasedDebtRepayment Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry ¹	Amount of debt recovered as part of the credit added and time stamp of recovery	ra:BillingDataLogAmountTimestamp (see section 4.4.4.2.1.5)	None	N/A	Non-Sensitive

Table 64 - Retrieve Billing Data Log (Payment Based Debt Payments) Parse Response / SMETS1 Response – PaymentBasedDebtRepayment Specific Data Items

¹ Maximum 10

4.4.4.2.1.5 BillingDataLogAmountTimestamp Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Amount	SR4.4.4 - PaymentBasedDebtRepayment : Amount of debt recovered as part of the credit added (max 10) SR4.4.5 - Prepayment Credits: Amount of Prepayment Credit Added	xs:integer	None	1000th pence / cent	Non-Sensitive
Timestamp	SR4.4.4 - PaymentBasedDebtRepayment : Timestamp of recovery (max 10) SR4.4.5 - Prepayment Credits: Timestamp of application	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 65 - Retrieve Billing Data Log (Payment Based Debt Payments) Parse Response / SMETS1 Response – BillingDataLogAmountTimestamp Specific Data Items

4.4.4.2.1.6 Sample Response body

```
<ra:RetrieveBillingDataLogDebtPaymentsRsp MessageSuccess="true">
  <ra:PaymentBasedDebtRepayment>
    <ra:LogEntry>
      <ra:Amount>10000</ra:Amount>
      <ra:Timestamp>2014-08-23T19:23:08.00</ra:Timestamp>
    </ra:LogEntry>
  </ra:PaymentBasedDebtRepayment>
</ra:RetrieveBillingDataLogDebtPaymentsRsp>
```

Figure 42 - Retrieve Billing Data Log (Payment Based Debt Payments) Parse Response Sample

4.4.5 Retrieve Billing Data Log (Prepayment Credits) (4.4.5)

Service Request Name	RetrieveBillingDataLog
Service Reference	4.4
Service Request Variant Name	RetrieveBillingDataLog(PrepaymentCredits)

Service Reference Variant	4.4.5	
Service Request Objective	To enable a DCC Service User to read a data set stored in the Billing Data Log (Prepayment Credits) of an Electricity Smart Meter / Gas Proxy Function / Gas Smart Meter on an ad-hoc basis for a specified date range.	
Business Context Statement		
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: <i>SME.C.NC</i>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The Service Request sender needs to be the Registered Import Supplier for the entire date-time period for which the Billing Data Log is requested. This could be the 'current' or the 'old' Registered Import Supplier. If the sender is not authorised to read data for the entire period requested, an error will be returned. Returns Billing Log Data relating to an ESME or GSME operating in Prepayment Mode; specifically the value of prepayment credits as defined by SMETS. For reading the Billing Data Log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example: <ul style="list-style-type: none"> To ensure inclusive, use 20/11/2018 00:00:00, To ensure exclusive, use 19/11/2018 23:59:58 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x00C9	0x00C5
GBCS Use Case	ECS20d	GCS15e
GBCS Use Case Name	Read ESME Billing Data Log (prepayment credits)	Read GSME Billing Data Log (prepayment credits)
SMETS1 Applicability	Yes	Yes

Service Request Narrative (SMETS1)

The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.

Table 66 Retrieve Billing Data Log (Prepayment Credits) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.4.5.1 Service Request

4.4.5.1.1 Format

The Request XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RetrieveBillingDataLogPrepaymentCredits XML element defines this Service Request and contains the date-time period for which the log is to be read on the device and, for Future Dated Requests, the Execution Date Time.

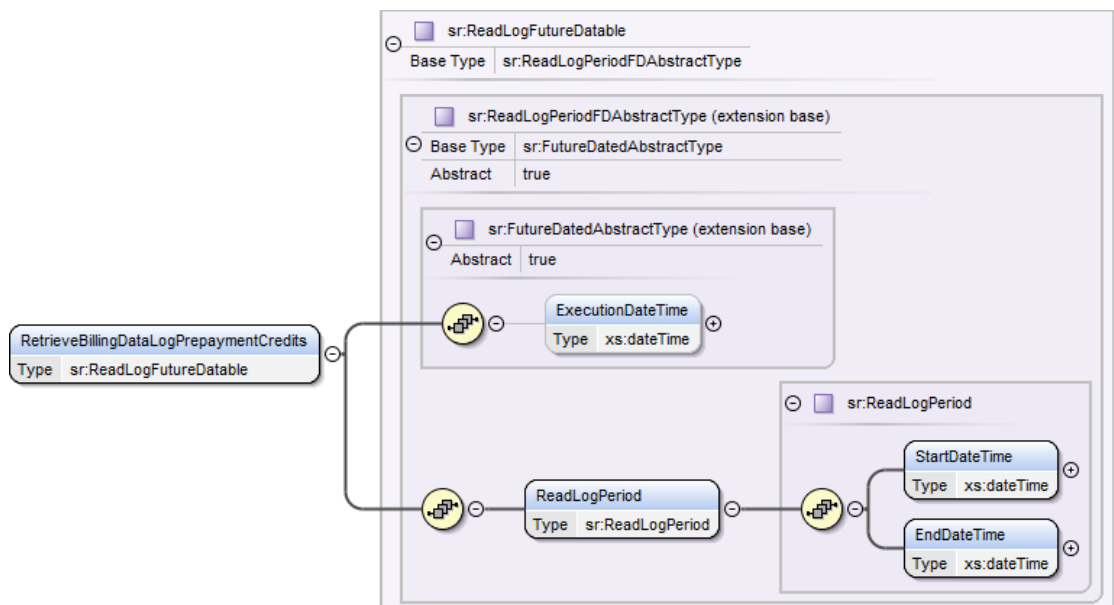


Figure 43 Retrieve Billing Data Log (Prepayment Credits) Service Request Structure

4.4.5.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 67 Retrieve Billing Data Log (Prepayment Credits) Service Request Data Items

4.4.5.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 68 Retrieve Billing Data Log (Prepayment Credits) Modes of Operation

4.4.5.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 69 Retrieve Billing Data Log (Prepayment Credits) Command Variant Values

4.4.5.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Read Log Period validation.

4.4.5.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveBillingDataLogPrepaymentCredits>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveBillingDataLogPrepaymentCredits>
```

Figure 44 Sample Retrieve Billing Data Log (Prepayment Credits) Service Request Format

4.4.5.2 Responses

The response messages for a "Retrieve Billing Data Log (Prepayment Credits)" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.4.5.2.1 Parse Output / SMETS1 Response Format

4.4.5.2.1.1 Format - RetrieveBillingDataLogPrepaymentCreditsRsp

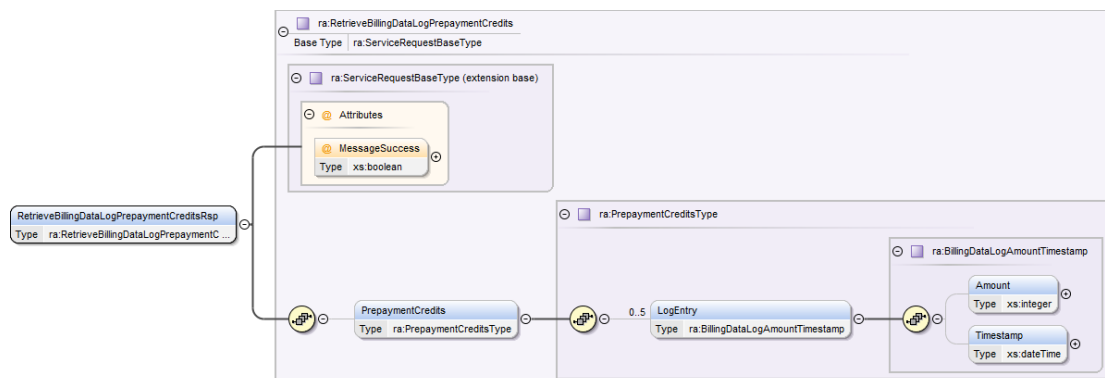


Figure 45 - Retrieve Billing Data Log (Prepayment Credits) Parse Response / SMETS1 Response Structure

4.4.5.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00C9	00C5
GBCS Use Case Number (for information only - not in header)	ECS20d	GCS15e
GBCS Use Case Name (for information only - not in header)	Read ESME Billing Data Log (prepayment credits)	Read GSME Billing Data Log (prepayment credits)
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 70 - Retrieve Billing Data Log (Prepayment Credits) Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.4.5.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PrepaymentCredits	Array of Prepayment Credits	ra: PrepaymentCredits Type (see section 4.4.5.2.1.4)	None	N/A	Non-Sensitive

Table 71 - Retrieve Billing Data Log (Prepayment Credits) Parse Response / SMETS1 Response Body Data Items

4.4.5.2.1.4 PrepaymentCredits Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry ¹	Amount of Prepayment Credit Added and timestamp of application	ra: BillingDataLogAmountTimestamp (see section 4.4.4.2.1.5)	None	N/A	Non-Sensitive

Table 72 - Retrieve Billing Data Log Parse Response / SMETS1 Response – PrepaymentCredits Specific Data Items

¹ A maximum of 5 LogEntry values can be returned.

4.4.5.2.1.5 Sample Response

```
<ra:RetrieveBillingDataLogPrepaymentCreditsRsp MessageSuccess="true">
  <ra:PrepaymentCredits>
    <ra:LogEntry>
      <ra:Amount>1000</ra:Amount>
      <ra:Timestamp>2014-08-23T20:14:18.00</ra:Timestamp>
    </ra:LogEntry>
  </ra:PrepaymentCredits>
</ra:RetrieveBillingDataLogPrepaymentCreditsRsp>
```

Figure 46 - Retrieve Billing Data Log (Prepayment Credits) Parse Response Sample

4.5 Section 4.5

This section has been intentionally left blank as there is no Service Reference 4.5.

4.6 Retrieve Daily Read Log (4.6)

SMETS2 or later

This Service Request maps to two Electricity and one Gas GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 4.6 Service Request has been broken into two parts: 4.6.1 (Import) and 4.6.2 (Export)

SMETS1

This Service Request maps to Service Reference Variant 4.6.1 (Import)

4.6.1 Retrieve Import Daily Read Log (4.6.1)

Service Request Name	RetrieveDailyReadLog
----------------------	----------------------

Service Reference	4.6
Service Request Variant Name	RetrieveImportDailyReadLog
Service Reference Variant	4.6.1
Service Request Objective	To enable a DCC Service User to read an Import Daily Read Log entry of an electricity Smart Meter or Gas Proxy Function / Smart Meter for a specified date-time period.
Business Context Statement	Allows a DCC Service User to request the retrieval of a stored Import Daily Read Log entry for a specific date (Enables a reading at a specific time (e.g. midnight) to be retrieved at a later time (for example on change of Supplier).
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and sensitive (the request is non-sensitive and the device response Daily Read Log content is sensitive)</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.NC</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> <i>GSME Daily Read Log</i> as defined in SMETS is, a log capable of storing thirty one UTC date and time stamped entries of the <i>Tariff TOU Register Matrix</i>, the <i>Tariff Block Counter Matrix</i> and the <i>Consumption Register</i> arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. <i>ESME Daily Read Log</i> as defined in SMETS is, a log capable of storing thirty one UTC date and time stamped entries of the <i>Tariff TOU Register Matrix</i>, the <i>Tariff TOU Block Register Matrix</i>, the <i>Active Import Register</i> and the <i>Active Export Register</i> arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. In addition, <i>Secondary Tariff TOU Register Matrix</i> and <i>Secondary Active Import Register</i> may also be recorded for a twin element ESME. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned. Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. This could be the 'current' or the 'old' Registered Supplier. Because this Service Request returns Sensitive data, URPs (i.e. the 'old' Registered Supplier), have to include in the Request the Public Security Credentials they want the Device to sign the Response with. <ol style="list-style-type: none"> Access Control will allow the 'old' Registered Import Supplier and the 'current' Registered Import Supplier to read the Import Daily Read Log entry for a CoS Date identified from registration data.

	<p>5. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. This will never be the 'old' Registered Supplier. Note also that this Service Request should not be scheduled for a GSME as the GSME will reject the commands if sent by the DSP as part of a schedule. The GPF should be the target device for DSP Scheduled commands.</p> <p>6. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents.</p> <p>7. For reading the daily read log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users.</p> <p>8. Only the registered GIS may successfully request RetrievalImportDailyReadLog data from the GSME direct, all previously registered GIS Users must target the Service Request to the GPF.</p> <p>9. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example:</p> <ul style="list-style-type: none">• To ensure inclusive, use 20/11/2018 00:00:00,• To ensure exclusive, use 19/11/2018 23:59:58		
	GBCS Cross Reference	Electricity	Gas
	GBCS Message Code	0x0033	0x0077
	GBCS Use Case	ECS21a	GCS16a
	GBCS Use Case Name	Read Electricity Daily Read Log (exc export)	Read GSME Daily Read log(s)
	SMETS1 Applicability	Yes	Yes

Service Request Narrative (SMETS1)

The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:

1. For an ESME the DCC shall populate the TariffTOUBlock[1..4]RegisterMatrixValue values with the Tariff Block Counter Matrix values from the Daily Read Log (with their SMETS1 meanings).
2. SMETS1 Smart Meters need only support 14 entries in this log as opposed to 31 entries for SMETS2 or later Smart Meters.
3. Provision of Public Security Credentials for the Device to sign the Response with is not applicable to SMETS1 Devices. The DCC Data Systems will not validate whether this data item has been included in a SMETS1 Service Request.
4. Secondary element values are not applicable to SMETS1.

Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.

Table 73 Retrieve Import Daily Read Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.6.1.1 Service Request

4.6.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its RetrieveImportDailyReadLog XML element defines this Service Request and contains the date-time period for which the log is to be read on the Device, for URPs the Key Agreement Public Security Credentials and, for Future Dated Requests, the Execution Date Time.

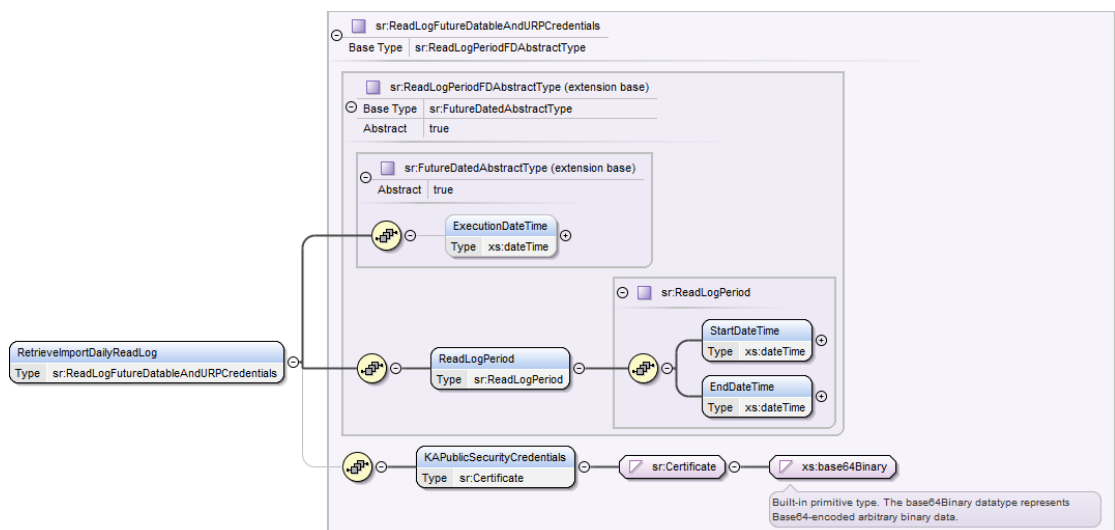


Figure 47 Retrieve Import Daily Read Log Service Request Structure (Ad-hoc)

Create Schedule: Its DSPRetrieveImportDailyReadLog XML element defines this Service Request and contains the date-time interval for which to read data on the device, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

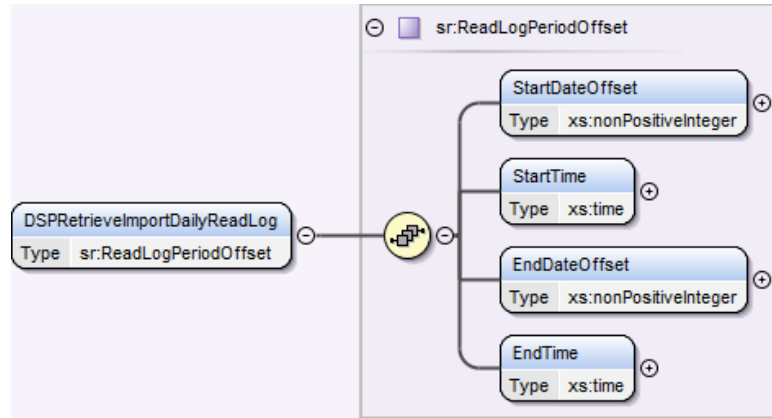


Figure 48 Retrieve Import Daily Read Log Service Request Structure (Create Schedule)

4.6.1.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.6.1.1.2.1 RetrievalImportDailyReadLog (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
DailyReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Old Registered Supplier)	sr:Certificate (xs:base64Binary)	SMETS2 or later Service: (Registered Supplier: N/A Old Registered Supplier ¹ : Yes) SMETS1 Service: N/A	None	N/A	Non-Sensitive

Table 74 Retrieve Import Daily Read Log Service Request Data Items (Ad-hoc)

¹ Mandatory for SMETS2 or later Service and User Roles EIS and GIS that were registered parties (KRPs) to the Device for the required time period, but they no longer are

4.6.1.1.2.2 DSPRetrieveImportDailyReadLog (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPRetrieveImportDailyReadLog	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriodOffset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 75 Retrieve Import Daily Read Log Service Request – RetrieveDailyReadLog Data Items (Create Schedule)

4.6.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	Yes
SMETS1	No	Yes	No	DSP	Yes

Table 76 Retrieve Import Daily Read Log Modes of Operation

4.6.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 77 Retrieve Import Daily Read Log Command Variant Values (Ad-hoc)

4.6.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks).

Ad-hoc: See also Annex section 17.2 for:

- SMETS2 or later: Execution Date Time, Key Agreement Public Security Credentials, Read Log Period and Device Applicability validation.
- SMETS1: Execution Date Time, Read Log Period and Device Applicability validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset (DSPDailyReadLogPeriodOffset) and Device Applicability validation:

4.6.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveImportDailyReadLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveImportDailyReadLog>
```

Figure 49 Sample Retrieve Import Daily Read Log Service Request Format (Ad-hoc)

4.6.1.2 Responses

The response messages for a “Retrieve Import Daily Read Log” request follow the generic format for all “Device” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Service Response (from Device) is a variation of the generic one and it follows the structure defined in section 4.8.1.2.2 for Service Request 4.8.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.6.1.2.1 Parse Output / SMETS1 Response Format

4.6.1.2.1.1 Format - RetrieveImportDailyReadLogRsp

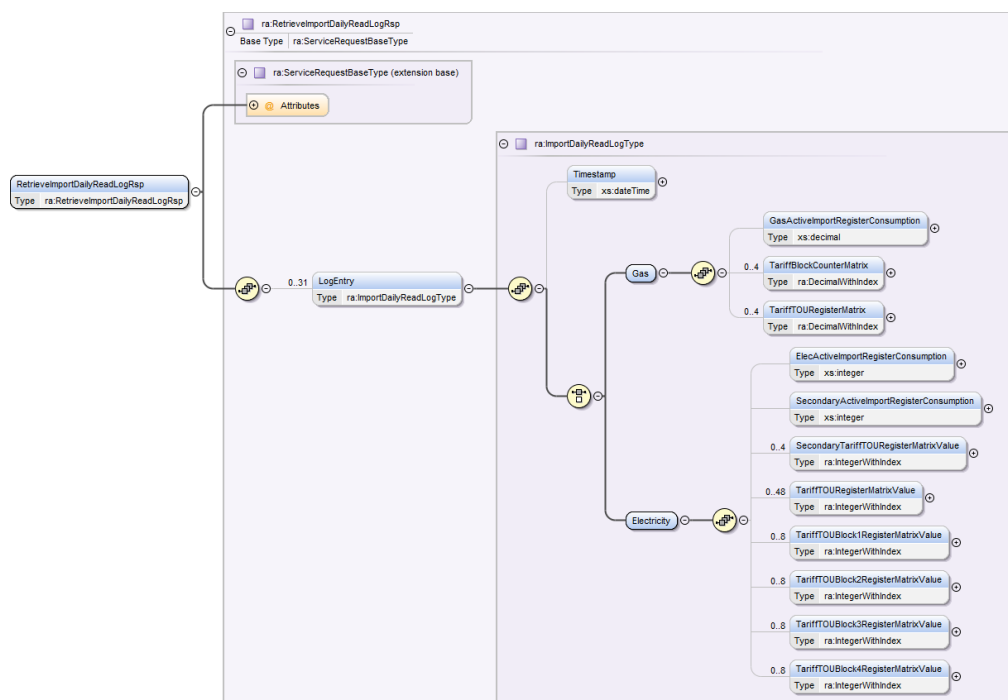


Figure 50 - Retrieve Import Daily Read Log Parse Response / SMETS1 Response Structure

4.6.1.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0033	0077
GBCS Use Case Number (for information only - not in header)	ECS21a	GCS16a
GBCS Use Case Name (for information only - not in header)	Read Electricity Daily Read Log (exc export)	Read GSME Daily Read log(s)
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Present where originator is a URP	Present where originator is a URP
Timestamp	Not Present	Not Present

Table 78 - Retrieve Import Daily Read Log Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.6.1.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Timestamp	The UTC date-time at which the corresponding log entry was taken	xs:dateTime	None	UTC Date-Time	Sensitive
GasActiveImportRegisterConsumption	The register recording the cumulative Active Energy Imported. Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS Gas Only	xs:decimal	None	m ³	Sensitive
ElecActiveImportRegisterConsumption	The register recording the cumulative Active Energy Imported. Electricity Only	xs:integer	None	Wh	Sensitive
TariffBlockCounterMatrix	Block Counters for Block Pricing. Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS Gas Only Maximum of 4	ra:DecimalWithIndex	None	m ³	Sensitive
TariffTOURegisterMatrix	Tariff Registers for Time-of-use Pricing. Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS Gas Only Maximum of 4	ra:DecimalWithIndex	None	m ³	Sensitive
SecondaryActiveImportRegisterConsumption	The register recording the cumulative Active Energy Imported via the secondary measuring element of the Electricity Meter. Electricity Only Optional N/A to SMETS1	xs:integer	None	Wh	Sensitive
SecondaryTariffTOURegisterMatrixValue ¹	Tariff Registers for Time-of-use Pricing. Electricity Only Optional N/A to SMETS1	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOURegisterMatrixValue ²	Tariff Registers for Time-of-use Pricing. Electricity Only	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock1RegisterMatrixValue ³	Block Counters for Block Pricing. Electricity Only SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Daily Read Log.	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock2RegisterMatrixValue ³	Block Counters for Block Pricing. Electricity Only SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Daily Read Log.	ra:IntegerWithIndex	None	Wh	Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
TariffTOUBlock3RegisterMatrixValue ³	Block Counters for Block Pricing. Electricity Only SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Daily Read Log.	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock4RegisterMatrixValue ³	Block Counters for Block Pricing. Electricity Only SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Daily Read Log.	ra:IntegerWithIndex	None	Wh	Sensitive

Table 79 - Retrieve Import Daily Read Log Parse Response / SMETS1 Response Body Data Items

¹Maximum 4

²Maximum 48

³Maximum 8

4.6.1.2.1.4 Sample Electricity Response

```
<ra:RetrieveImportDailyReadLogRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:Timestamp>2006-05-04T00:00:00.00</ra:Timestamp>
    <ra:Electricity>
      <ra:ElecActiveImportRegisterConsumption>0</ra:ElecActiveImportRegisterConsumption>
      <ra:SecondaryActiveImportRegisterConsumption>0</ra:SecondaryActiveImportRegisterConsumption>1
      <ra:SecondaryTariffTOURegisterMatrixValue index="1">0</ra:SecondaryTariffTOURegisterMatrixValue>1
      <ra:SecondaryTariffTOURegisterMatrixValue index="2">0</ra:SecondaryTariffTOURegisterMatrixValue>1
      <ra:TariffTOURegisterMatrixValue index="1">0</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOURegisterMatrixValue index="2">0</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="1">0</ra:TariffTOUBlock1RegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="2">0</ra:TariffTOUBlock1RegisterMatrixValue>
      <ra:TariffTOUBlock2RegisterMatrixValue index="1">0</ra:TariffTOUBlock2RegisterMatrixValue>
      <ra:TariffTOUBlock2RegisterMatrixValue index="2">0</ra:TariffTOUBlock2RegisterMatrixValue>
      <ra:TariffTOUBlock3RegisterMatrixValue index="1">0</ra:TariffTOUBlock3RegisterMatrixValue>
      <ra:TariffTOUBlock3RegisterMatrixValue index="2">0</ra:TariffTOUBlock3RegisterMatrixValue>
      <ra:TariffTOUBlock4RegisterMatrixValue index="1">0</ra:TariffTOUBlock4RegisterMatrixValue>
      <ra:TariffTOUBlock4RegisterMatrixValue index="2">0</ra:TariffTOUBlock4RegisterMatrixValue>
    </ra:Electricity>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:Timestamp>2006-05-05T00:00:00.00</ra:Timestamp>
    <ra:Electricity>
      <ra:ElecActiveImportRegisterConsumption>0</ra:ElecActiveImportRegisterConsumption>
      <ra:SecondaryActiveImportRegisterConsumption>0</ra:SecondaryActiveImportRegisterConsumption>1
      <ra:SecondaryTariffTOURegisterMatrixValue index="1">0</ra:SecondaryTariffTOURegisterMatrixValue>1
      <ra:SecondaryTariffTOURegisterMatrixValue index="2">0</ra:SecondaryTariffTOURegisterMatrixValue>1
      <ra:TariffTOURegisterMatrixValue index="1">0</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOURegisterMatrixValue index="2">0</ra:TariffTOURegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="1">0</ra:TariffTOUBlock1RegisterMatrixValue>
      <ra:TariffTOUBlock1RegisterMatrixValue index="2">0</ra:TariffTOUBlock1RegisterMatrixValue>
      <ra:TariffTOUBlock2RegisterMatrixValue index="1">0</ra:TariffTOUBlock2RegisterMatrixValue>
      <ra:TariffTOUBlock2RegisterMatrixValue index="2">0</ra:TariffTOUBlock2RegisterMatrixValue>
      <ra:TariffTOUBlock3RegisterMatrixValue index="1">0</ra:TariffTOUBlock3RegisterMatrixValue>
      <ra:TariffTOUBlock3RegisterMatrixValue index="2">0</ra:TariffTOUBlock3RegisterMatrixValue>
      <ra:TariffTOUBlock4RegisterMatrixValue index="1">0</ra:TariffTOUBlock4RegisterMatrixValue>
      <ra:TariffTOUBlock4RegisterMatrixValue index="2">0</ra:TariffTOUBlock4RegisterMatrixValue>
    </ra:Electricity>
  </ra:LogEntry>
</ra:RetrieveImportDailyReadLogRsp>
```

Figure 51 - Retrieve Import Daily Read Log Parse Response Electricity Sample

¹ N/A to SMETS1

4.6.1.2.1.5 Sample Gas Response

```
<ra:RetrieveImportDailyReadLogRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:Timestamp>2006-05-04T00:00:00.00</ra:Timestamp>
    <ra:Gas>
      <ra:GasActiveImportRegisterConsumption>0</ra:GasActiveImportRegisterConsumption >
      <ra:TariffBlockCounterMatrix index="1">0</ra:TariffBlockCounterMatrix>
      <ra:TariffBlockCounterMatrix index="2">0</ra:TariffBlockCounterMatrix>
      <ra:TariffBlockCounterMatrix index="3">0</ra:TariffBlockCounterMatrix>
      <ra:TariffBlockCounterMatrix index="4">0</ra:TariffBlockCounterMatrix>
      <ra:TariffTOURegisterMatrix index="1">0</ra:TariffTOURegisterMatrix>
      <ra:TariffTOURegisterMatrix index="2">0</ra:TariffTOURegisterMatrix>
      <ra:TariffTOURegisterMatrix index="3">0</ra:TariffTOURegisterMatrix>
      <ra:TariffTOURegisterMatrix index="4">0</ra:TariffTOURegisterMatrix>
    </ra:Gas>
  </ra:LogEntry>
</ra:RetrieveImportDailyReadLogRsp>
```

Figure 52 - Retrieve Import Daily Read Log Parse Response Gas Sample

4.6.2 Retrieve Export Daily Read Log (4.6.2)

Service Request Name	RetrieveDailyReadLog
Service Reference	4.6
Service Request Variant Name	RetrieveExportDailyReadLog
Service Reference Variant	4.6.2
Service Request Objective	To enable a DCC Service User to read an Export Daily Read Log entry of an electricity meter for a specified date period.
Business Context Statement	Allows a DCC Service User to request the retrieval of a stored Export Daily Read Log entry for a specific date (Enables a reading at a specific time (e.g. midnight) to be retrieved at a later time (for example on change of Supplier).
User Role Access	<ul style="list-style-type: none"> Electricity Export Supplier (EES)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	1. ESME <i>Daily Read Log</i> as defined in SMETS is, a log capable of storing thirty one UTC date and time stamped entries of the <i>Tariff TOU Register Matrix</i> , the <i>Tariff TOU Block Register Matrix</i> , the <i>Active Import Register</i> and the <i>Active Export Register</i> arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. In addition, <i>Secondary Tariff TOU Register Matrix</i> and <i>Secondary</i>

	<i>Active Import Register</i> may also be recorded for a twin element ESME.	
	2. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned.	
	3. Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. <div>a. Access Control will allow the 'old' Registered Export Supplier and the 'current' Registered Export Supplier to read the Export Daily Read Log entry for a CoS Date identified from registration data.</div>	
	4. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0035	N/A
GBCS Use Case	ECS21c	N/A
GBCS Use Case Name	Read Electricity Daily Read Log (export only)	N/A
SMETS1 Applicability	No	No

Table 80 Retrieve Export Daily Read Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.6.2.1 Service Request

4.6.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Ad-hoc: Its `RetrieveExportDailyReadLog` XML element defines this Service Request and contains the date-time period for which the log is to be read on the Device and, for Future Dated Requests, the Execution Date Time.

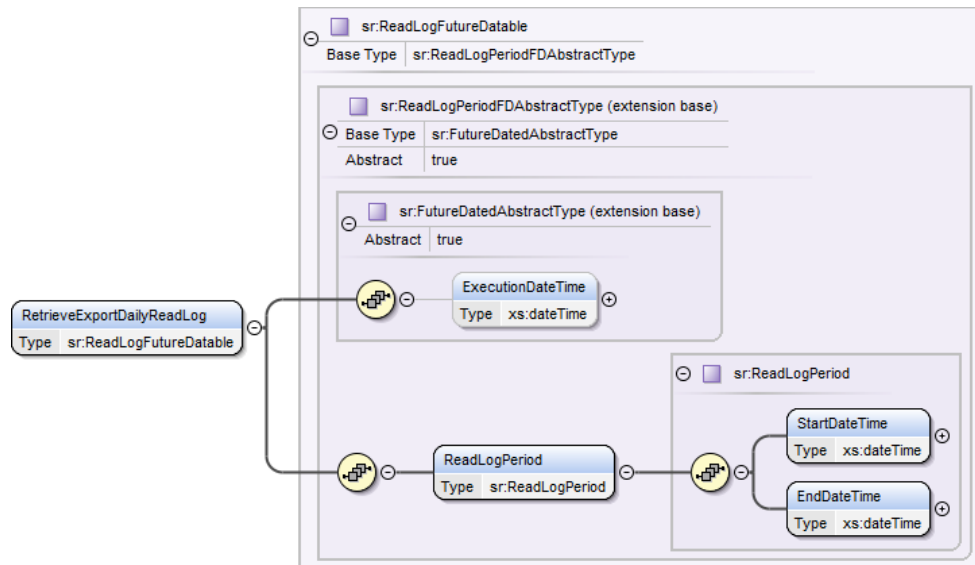


Figure 53 Retrieve Export Daily Read Log Service Request Structure (Ad-hoc)

Create Schedule: Its DSPRetrieveExportDailyReadLog XML element defines this Service Request and contains the date-time interval for which to read data on the device, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

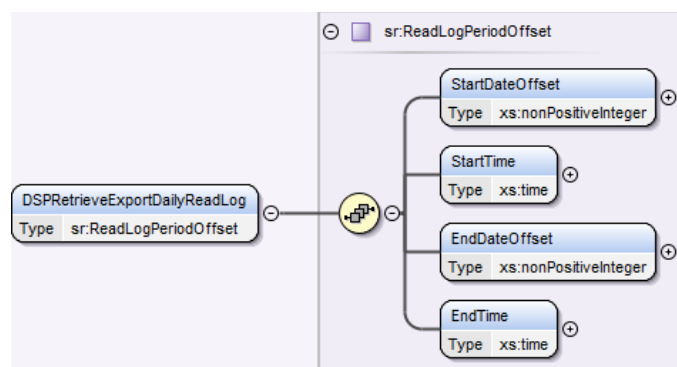


Figure 54 Retrieve Export Daily Read Log Service Request Structure (Create Schedule)

4.6.2.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.6.2.1.2.1 RetrieveExportDailyReadLog (Ad-hoc)

The data items contained in the Service Request are defined in section 4.4.4.1.2.

4.6.2.1.2.2 DSPRetrieveExportDailyReadLog (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPRetrieveExportDailyReadLog	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriodOffset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 81 Retrieve Export Daily Read Log Service Request – RetrieveDailyReadLog Data Items (Create Schedule)

4.6.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	Yes

Table 82 Retrieve Export Daily Read Log Modes of Operation

4.6.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 83 Retrieve Export Daily Read Log Command Variant Values (Ad-hoc)

4.6.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time and Read Log Period validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset validation.

4.6.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveExportDailyReadLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveExportDailyReadLog>
```

Figure 55 Sample Retrieve Export Daily Read Log Service Request Format (Ad-hoc)

4.6.2.2 Responses

The response messages for a “Retrieve Export Daily Read Log” request follow the generic format for all “Device” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

When this Service Request is run as DSP Scheduled, the Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.6.2.2.1 Parse Output Format

4.6.2.2.1.1 Format - RetrieveExportDailyReadLogRsp

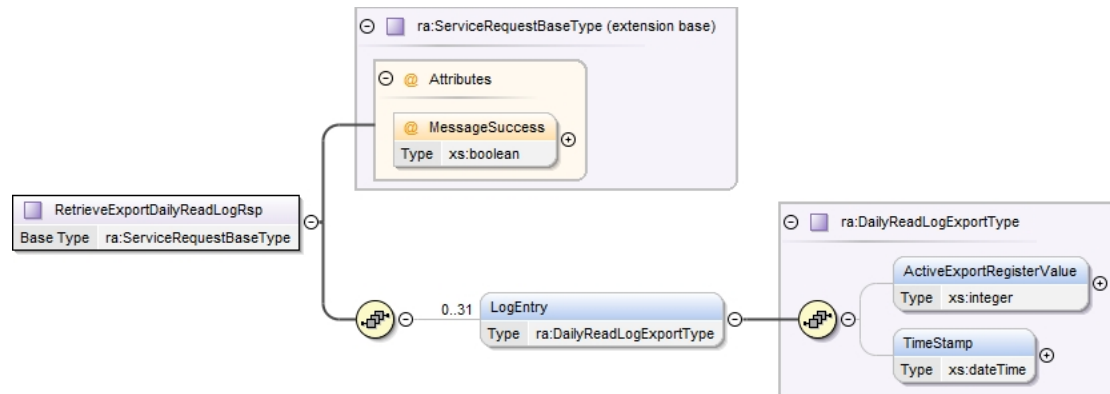


Figure 56 - Retrieve Export Daily Read Log Parse Response Structure

4.6.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0035
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS21c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Electricity Daily Read Log (export only)</i>
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 84 - Retrieve Export Daily Read Log Parse Response Header Data Items

4.6.2.2.1.3 Specific Body Data Items

The body items in the table below appear as pairs within the “LogEntry” group which can repeat up to thirty-one times.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActiveExportRegisterValue	The billing log entry recorded at that date-time	xs:integer	None	Wh	Non-Sensitive
Timestamp	The UTC date-time at which the corresponding log entry was taken	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 85 - Retrieve Export Daily Read Log Parse Response Body Data Items

4.6.2.2.1.4 Sample Response

```
<ra:RetrieveExportDailyReadLogRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:ActiveExportRegisterValue>0</ra:ActiveExportRegisterValue>
    <ra:TimeStamp>2006-05-04T00:00:00.00</ra:TimeStamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveExportRegisterValue>10</ra:ActiveExportRegisterValue>
    <ra:TimeStamp>2006-05-05T00:00:00.00</ra:TimeStamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveExportRegisterValue>20</ra:ActiveExportRegisterValue>
    <ra:TimeStamp>2006-05-06T00:00:00.00</ra:TimeStamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveExportRegisterValue>30</ra:ActiveExportRegisterValue>
    <ra:TimeStamp>2006-05-07T00:00:00.00</ra:TimeStamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveExportRegisterValue>40</ra:ActiveExportRegisterValue>
    <ra:TimeStamp>2006-05-08T00:00:00.00</ra:TimeStamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveExportRegisterValue>50</ra:ActiveExportRegisterValue>
    <ra:TimeStamp>2006-05-09T00:00:00.00</ra:TimeStamp>
  </ra:LogEntry>
</ra:RetrieveExportDailyReadLogRsp>
```

Figure 57 - Retrieve Export Daily Read Log Parse Response Sample

4.7 Section 4.7

This section has been intentionally left blank as there is no Service Reference 4.7.

4.8 Read Profile Data (4.8)

SMETS2 or later

This Service Request maps to three Electricity and one Gas GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 4.8 Service Request has been broken into three parts: 4.8.1 (Active Import) – applicable to Electricity and Gas, 4.8.2 (Reactive Import) – applicable to Electricity and 4.8.3 (Export) – applicable to Electricity.

SMETS1

This Service Request maps to Service Reference Variant 4.8.1 (Active Import) – applicable to Electricity and Gas, 4.8.2 (Reactive Import) – applicable to Electricity and 4.8.3 (Export) – applicable to Electricity.

4.8.1 Read Active Import Profile Data (4.8.1)

Service Request Name	ReadProfileData
Service Reference	4.8
Service Request Variant Name	ReadActiveImportProfileData
Service Reference Variant	4.8.1

Service Request Objective	To enable a DCC Service user to request the retrieval of interval data (half hourly active import consumption data) from a Device with a specific Device ID.
Business Context Statement	<p>A DCC Service User wishes to retrieve a set of half hourly active import consumption data for a Device at a specific Device ID. The Profile Data Log will store (where such time has elapsed) at least:</p> <p>Electricity:</p> <ul style="list-style-type: none"> 13 months of Active Energy Imported via the primary measuring element of the Electricity Meter; 13 months of Active Energy Imported via the secondary measuring element of the Electricity Meter (if present – twin element ESME variant only) <p>Gas:</p> <ul style="list-style-type: none"> 13 months of Active Import Consumption data (GPF) 3 months of Active Import Consumption data (GSME) <p>This request will return such active import consumption data as is available. A DCC Service User will have the ability to request a start and end date for interval data.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU)
Security Classification	<p>Non-critical and sensitive (the request is non-sensitive and the response is sensitive)</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.NC</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The <i>Profile Data Log</i> on the GSME, as defined in SMETS, is a log capable of storing a minimum of three months of UTC date and time stamped half hourly Consumption data arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. The Gas Proxy Function will store a minimum of 13 months' worth of data from the GSME in its <i>Profile Data Log</i>. When reading the active import profile data from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned. Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. In the case of

	<p>Import Supplier, this could be the 'current' or the 'old' Registered Supplier. Because this Service Request returns Sensitive data, URPs (i.e. the 'old' Registered Supplier and 'Other User'), have to include in the Request the Public Security Credentials they want the Device to sign the Response with.</p> <p>5. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. In the case of Import Supplier, this will never be the 'old' Registered Supplier. The URP Public Security Credentials (applicable to 'Other User') for the Device to sign the Response are included in the Create Schedule Service Request. See Annex section 5.1. Note also that this Service Request should not be scheduled for a GSME as the GSME will reject the commands if sent by the DSP as part of a schedule. The GPF should be the target device for DSP Scheduled commands.</p> <p>6. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents.</p> <p>7. Only the registered GIS may successfully request ReadActiveImportProfileData data from the GSME direct using their KAPublicSecurityCredentials, all previously registered GIS Users must target the Service Request to the GPF.</p> <p>8. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example:</p> <ul style="list-style-type: none"> To ensure inclusive, use 20/11/2018 00:00:00, To ensure exclusive, use 19/11/2018 23:59:58 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0037	0x0078
GBCS Use Case	ECS22b	GCS17
GBCS Use Case Name	Read Electricity Half Hour Profile Data (active import)	Read GSME Profile Data Log
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <p>1. Provision of Public Security Credentials for the Device to sign the Response with is not applicable to SMETS1 Devices. The</p>	

	<p>DCC Data Systems will not validate whether this data item has been included in a SMETS1 Service Request.</p> <p>2. Secondary element values are not applicable to SMETS1.</p> <p>Note that it remains true with SMETS1 Devices that this Service Request if targeted to Gas Devices (GPF/GSME) cannot be part of a Sequence, even though the treatment of sensitive data in responses is not the same for SMETS1 Devices.</p>
--	--

Table 86 Read Active Import Profile Data Service Request

This section should be read in conjunction with Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.8.1.1 Service Request

4.8.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadActiveImportProfileData XML element defines this Service Request and contains the date-time interval for which to read data on the device, for URP the Key Agreement Public Security Credentials and, for Future Dated, the Execution Date and Time.

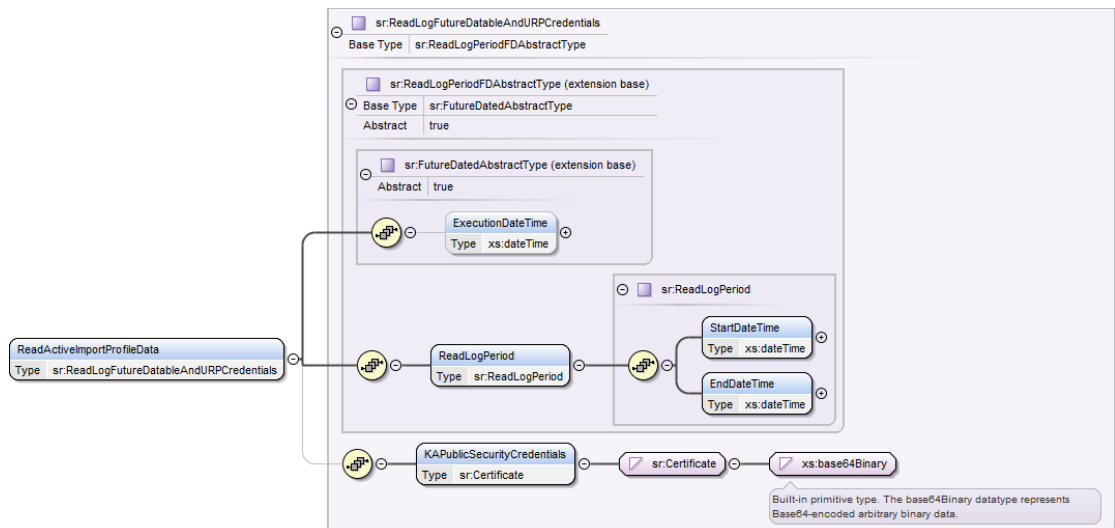


Figure 58 Read Active Import Profile Data Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadActiveImportProfileData XML element defines this Service Request and contains the date-time interval for which to read data on the device, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition

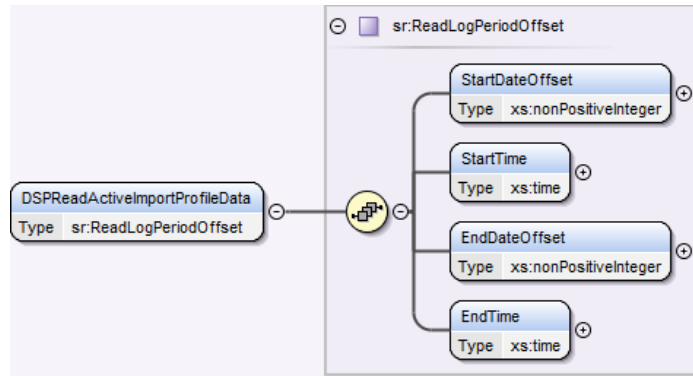


Figure 59 Read Active Import Profile Data Service Request Structure (Create Schedule)

4.8.1.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.8.1.1.2.1 ReadActiveImportProfileData (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Other User or previous Registered Supplier)	xs:base64Binary	SMETS2 or later Service: (User Role EIS, GIS, ENO, GNO: N/A User Role OU: Yes ¹) SMETS1 Service: N/A	None	N/A	Non-Sensitive

Table 87 Read Active Import Profile Data Service Request Data Items (Ad-hoc)

¹ Also Mandatory for SMETS2 or later Service and User Roles:

- EIS and GIS that were registered parties (KRPs) to the Device for the required time period, but they no longer are

4.8.1.1.2.2 DSPReadActiveImportProfileData (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPReadActiveImportProfileData	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriodOffset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 88 Read Active Import Profile Data Service Request Data Items (Create Schedule)

4.8.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	Yes
SMETS1	No	Yes	No	DSP	Yes

Table 89 Read Active Import Profile Data Modes of Operation

4.8.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 90 Read Active Import Profile Data Command Variant Values (Ad-hoc)

4.8.1.1.5 Validation

This Service Request specific validation is as follows;

See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for:

- SMETS2 or later: Execution Date Time, KA Public Security Credentials, Read Log Period and Device Applicability validation.
- SMETS1: Execution Date Time, Read Log Period and Device Applicability validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset and Device Applicability validation.

4.8.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadActiveImportProfileData>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</ReadActiveImportProfileData>
```

Figure 60 Sample Read Active Import Profile Data Service Request Format (Ad-hoc)

4.8.1.2 Responses

The response messages for a "Read Active Import Profile Data" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the device.

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Response is a variation of the generic one and it is defined in section 4.8.1.2.2.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.8.1.2.1 SMETS2 or later Service Response (from Device) – DSP Scheduled Message

4.8.1.2.1.1 DSP Scheduled Response Format

The DSPScheduledMessage XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of the Service Response that includes the Device Command Response and the DSP Schedule ID.

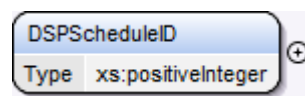


Figure 61 DSP Scheduled Service Response (from Device) Structure

4.8.1.2.1.2 DSP Scheduled Response Specific Data Items Definition

If the Device sends a response to the DCC Data Systems, they will add the DSP Schedule ID to the GBCS response from the Device.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	Schedule ID generated by the DCC Data Systems when the Schedule was created > 0	xs:positiveInteger	Yes	None	N/A	Non-Sensitive

Table 91 DSP Scheduled Service Request Response Data Items

4.8.1.2.1.3 DSP Scheduled Sample Response (KRP)

The response from the Device is digitally signed by the DSP Broker, because of the inclusion of the DSP Schedule ID in the XML

```
<ResponseMessage>
  <ServiceReference>4.8</ServiceReference>
  <ServiceReferenceVariant>4.8.1</ServiceReferenceVariant>
  <DSPScheduledMessage>
    <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    <DSPScheduleID>500</DSPScheduleID>
  </DSPScheduledMessage>
</ResponseMessage>
```

Figure 62 Sample Service Response (from Device) Format (DSPScheduledMessage) (KRP)

4.8.1.2.1.4 DSP Scheduled Sample Response (URP - Response includes sensitive data)

The response from the Device is digitally signed by the DSP Broker, because of the inclusion of the DSP Schedule ID in the XML.

```
<ResponseMessage>
  <ServiceReference>4.8</ServiceReference>
  <ServiceReferenceVariant>4.8.1</ServiceReferenceVariant>
  <DSPScheduledMessage>
    <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    <DSPScheduleID>500</DSPScheduleID>
  </DSPScheduledMessage>
</ResponseMessage>
```

Figure 63 Sample Service Response (from Device) Format (DSPScheduledMessage) (URP - Response includes sensitive data)

4.8.1.2.1.5 DSP Scheduled Sample Response (URP - Response only includes non-sensitive data)

The response from the Device is digitally signed by the DSP Broker. Please note this sample has been included here for completeness, but it doesn't apply to this Service Reference Variant.

```
<ResponseMessage>
  <ServiceReference>4.8</ServiceReference>
  <ServiceReferenceVariant>4.8.1</ServiceReferenceVariant>
  <DSPScheduledMessage>
    <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    <DSPScheduleID>500</DSPScheduleID>
  </DSPScheduledMessage>
</ResponseMessage>
```

Figure 64 Sample Service Response (from Device) Format (DSPScheduledMessage) (URP – Response only includes non-sensitive data)

4.8.1.2.2 SMETS1 Response (DSP Scheduled) Format

4.8.1.2.2.1 Format – SMETS1Response (DSP Scheduled) ReadActiveImportProfileDataRsp

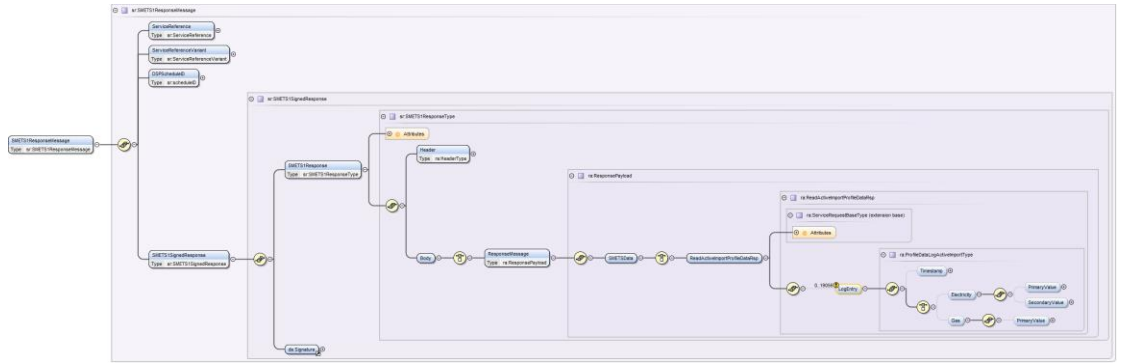


Figure 65 - Read Active Import Profile Data SMETS1 Response (DSP Scheduled) Structure

Note: LogEntry Maximum 19056. A value of 19056 is considered as 'Unbounded' by the XSD validation

The SMETS1 Response includes the specific response defined in section 4.8.1.2.3 and it also includes the DSP Schedule ID generated when the Schedule was created via Service Request 5.1.

4.8.1.2.2.2 Sample Response

```
<SMETS1ResponseMessage>
  <ServiceReference>4.8</ServiceReference>
  <ServiceReferenceVariant>4.8.1</ServiceReferenceVariant>
  <DSPScheduleID>500</DSPScheduleID>
  <SMETS1SignedResponse>
    <SMETS1Response schemaVersion="3.0">
      <Header>
        <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
        <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
        <ra:OriginatorCounter>50</ra:OriginatorCounter>
        <ra:ServiceReference>4.8</ra:ServiceReference>
        <ra:ServiceReferenceVariant>4.8.1</ra:ServiceReferenceVariant>
      </Header>
      <Body>
        <ResponseMessage>
          <ra:SMETSData>
            <ra:ReadActiveImportProfileDataRsp MessageSuccess="true">
              <ra:LogEntry>
                <ra:Timestamp>2006-05-04T00:00:00.00</ra:Timestamp>
                <ra:Electricity>
                  <ra:PrimaryValue>0</ra:PrimaryValue>
                </ra:Electricity>
              </ra:LogEntry>
              <ra:LogEntry>
                <ra:Timestamp>2006-05-04T00:30:00.00</ra:Timestamp>
                <ra:Electricity>
                  <ra:PrimaryValue>0</ra:PrimaryValue>
                </ra:Electricity>
              </ra:LogEntry>
              <ra:LogEntry>
                <ra:Timestamp>2006-05-04T01:00:00.00</ra:Timestamp>
                <ra:Electricity>
                  <ra:PrimaryValue>0</ra:PrimaryValue>
                </ra:Electricity>
              </ra:LogEntry>
              <ra:LogEntry>
                <ra:Timestamp>2006-05-04T01:30:00.00</ra:Timestamp>
                <ra:Electricity>
                  <ra:PrimaryValue>0</ra:PrimaryValue>
                </ra:Electricity>
              </ra:LogEntry>
            </ra:ReadActiveImportProfileDataRsp>
          </ra:SMETSData>
        </ResponseMessage>
      </Body>
    </SMETS1Response>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    <KeyInfo>
      <X509Data>
        <X509IssuerSerial>
          <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
          <X509SerialNumber>7432112348</X509SerialNumber>
        </X509IssuerSerial>
      </X509Data>
    </KeyInfo>
  </Signature>
</SMETS1SignedResponse>
</SMETS1ResponseMessage>
```

Figure 66 - Read Active Import Profile Data SMETS1 Response (DSP Scheduled)
Sample

4.8.1.2.3 Parse Output / SMETS1 Response Format

4.8.1.2.3.1 Format - ReadActiveImportProfileDataRsp

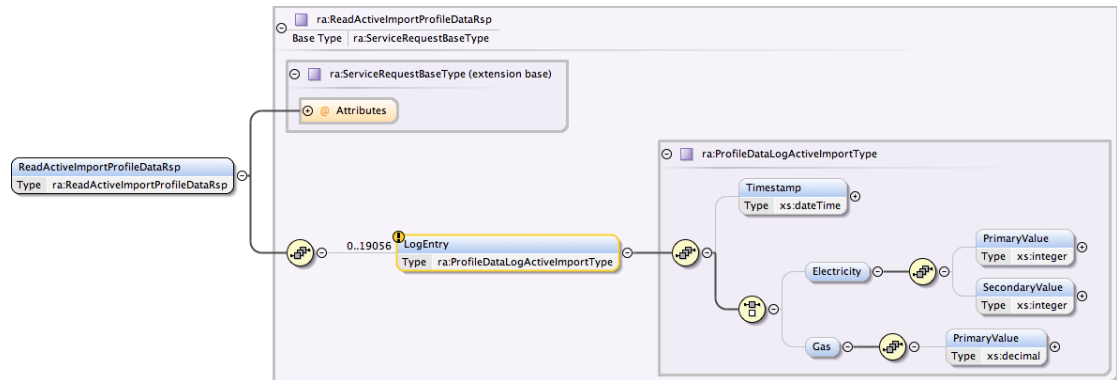


Figure 67 - Read Active Import Profile Data Parse Response / SMETS1 Response Structure

Note: LogEntry Maximum 19056. A value of 19056 is considered as 'Unbounded' by the XSD validation

4.8.1.2.3.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0037	0078
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS22b</i>	<i>GCS17</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Electricity Half Hour Profile Data (active import)</i>	<i>Read GSME Profile Data Log</i>
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Present where originator is a URP	Present where originator is a URP
Timestamp	Not present	Not present

Table 92 - Read Active Import Profile Data Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.8.1.2.3.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Timestamp	The date-time stamp at the end of the period to which the value relates	xs:dateTime	None	N/A	Sensitive

4.8.1.2.3.4 Electricity Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PrimaryValue	The total active energy imported in this 30 minute period (if a twin element meter, this is for the primary element; if on a polyphase meter, it is cumulative across the phases)	xs:integer	None	Wh	Sensitive
SecondaryValue	The total active energy imported in this 30 minute period on the secondary element Optional N/A to SMETS1	xs:integer	None	Wh	Sensitive

4.8.1.2.3.5 Gas Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PrimaryValue	The total active energy imported in this 30 minute period Parse Response: Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS Guidance note: DCC Service Users should treat the value of 16,777,215 m ³ as an invalid value. This value should not be used as part of any calculation or estimation	xs:decimal	None	m ³	Sensitive

4.8.1.2.3.6 Sample Response

```
<ra:ReadActiveImportProfileDataRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:Timestamp>2006-05-04T00:00:00.00</ra:Timestamp>
    <ra:Electricity>
      <ra:PrimaryValue>0</ra:PrimaryValue>
      <ra:SecondaryValue>0</ra:SecondaryValue>1
    </ra:Electricity>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:Timestamp>2006-05-04T00:30:00.00</ra:Timestamp>
    <ra:Electricity>
      <ra:PrimaryValue>0</ra:PrimaryValue>
      <ra:SecondaryValue>0</ra:SecondaryValue>1
    </ra:Electricity>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:Timestamp>2006-05-04T01:00:00.00</ra:Timestamp>
    <ra:Electricity>
      <ra:PrimaryValue>0</ra:PrimaryValue>
      <ra:SecondaryValue>0</ra:SecondaryValue>1
    </ra:Electricity>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:Timestamp>2006-05-04T01:30:00.00</ra:Timestamp>
    <ra:Electricity>
      <ra:PrimaryValue>0</ra:PrimaryValue>
      <ra:SecondaryValue>0</ra:SecondaryValue>1
    </ra:Electricity>
  </ra:LogEntry>
</ra:ReadActiveImportProfileDataRsp>
```

Figure 68 - Read Active Import Profile Data Parse Response Sample

¹ N/A to SMETS1

4.8.2 Read Reactive Import Profile Data (4.8.2)

Service Request Name	ReadProfileData
Service Reference	4.8
Service Request Variant Name	ReadReactiveImportProfileData
Service Reference Variant	4.8.2
Service Request Objective	To enable a DCC Service user to request the retrieval of interval data (half hourly reactive import data) from a Device with a specific Device ID.

Business Context Statement	<p>A DCC Service User wishes to retrieve a set of half hourly reactive import data for a ESME at a specific Device ID. The Profile Data Log will store (where such time has elapsed) at least:</p> <ul style="list-style-type: none"> 3 months reactive energy import <p>This request will return such reactive import data as is available. A DCC Service User will have the ability to request a start and end date for interval data.</p>	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO) Other User (OU) 	
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: <i>SME.C.NC</i></p>	
Service Request Narrative (SMETS2 or later)	<p>1. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned.</p> <ul style="list-style-type: none"> Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. In the case of Import Supplier, this could be the 'current' or the 'old' Registered Supplier. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. In the case of Import Supplier, this will never be the 'old' Registered Supplier. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0038	N/A
GBCS Use Case	ECS22c	N/A
GBCS Use Case Name	Read Electricity Half Hour Profile Data (reactive import)	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.</p>	

Table 93 Read Reactive Import Profile Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.8.2.1 Service Request

4.8.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadReactiveImportProfileData XML element defines this Service Request and contains the date-time interval for which to read data on the device and, for Future Dated, the Execution Date and Time.

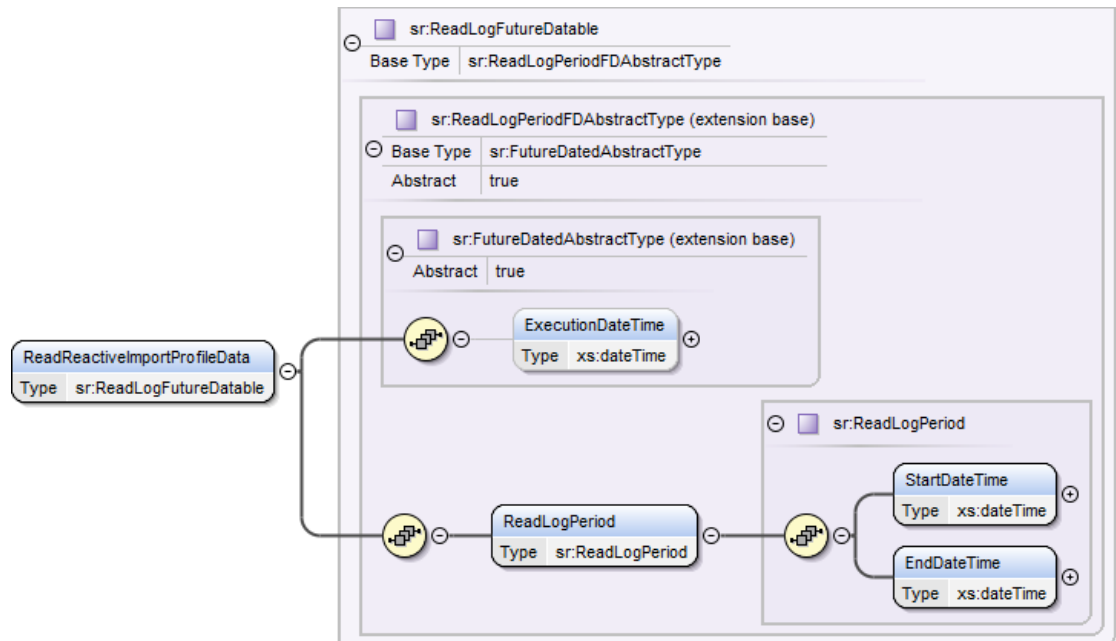


Figure 69 Read Reactive Import Profile Data Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadReactiveImportProfileData XML element defines this Service Request and contains the date-time interval for which to read data on the device, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

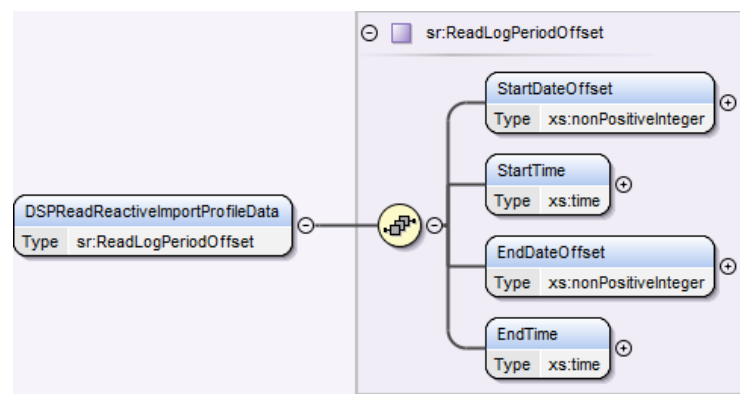


Figure 70 Read Reactive Import Profile Data Service Request Structure (Create Schedule)

4.8.2.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.8.2.1.2.1 ReadReactiveImportProfileData (Ad-hoc)

The data items contained in the Service Request are defined in section 4.4.4.1.2.

4.8.2.1.2.2 DSPReadReactiveImportProfileData (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPReadReactiveImportProfileData	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriod Offset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 94 Read Rective Import Profile Data Service Request Data Items (Create Schedule)

4.8.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	Yes
SMETS1	No	Yes	No	DSP	Yes

Table 95 Read Reactive Import Profile Data Modes of Operation

4.8.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 96 Read Reactive Import Profile Data Command Variant Values (Ad-hoc)

4.8.2.1.5 Validation

See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time and Read Log Period validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset validation.

4.8.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadReactiveImportProfileData>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</ReadReactiveImportProfileData>
```

Figure 71 Sample Read Reactive Import Profile Data Service Request Format (Ad-hoc)

4.8.2.2 Responses

The response messages for a "Read Reactive Import Profile Data" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the device.

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Service Response (from Device) is a variation of the generic one and it follows the structure defined in section 4.8.1.2.2 for Service Request 4.8.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.8.2.2.1 Parse Output / SMETS1 Response Format

4.8.2.2.1.1 Format - ReadReactiveImportProfileDataRsp

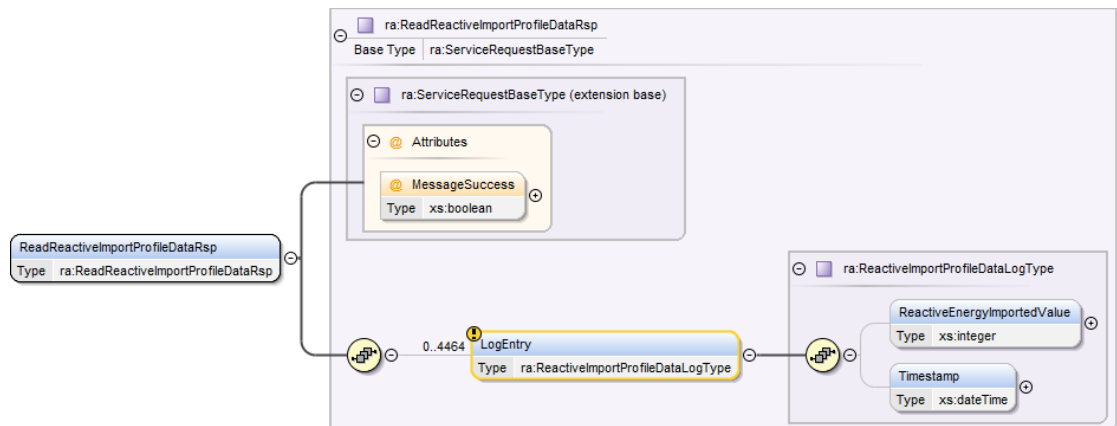


Figure 72 - Read Reactive Import Profile Data Parse Response / SMETS1 Response Structure

Note: LogEntry Maximum 4464. A value of 4464 is considered as 'Unbounded' by the XSD validation

4.8.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0038

Data Item	Electricity Response
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS22c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Electricity Half Hour Profile Data (reactive import)</i>
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 97 - Read Reactive Import Profile Data Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.8.2.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ReactiveEnergyImportedValue	The total reactive import energy imported in this 30 minute period (if a twin element meter, this is across the primary and secondary element; if on a polyphase meter, it is cumulative across the phases)	xs:integer	None	varh	Non-Sensitive
Timestamp	The date-time stamp at the end of the period to which the value relates	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 98 - Read Reactive Import Profile Data Parse Response / SMETS1 Response Body Data Items

4.8.2.2.1.4 Sample Response

```
<ra:ReadReactiveImportProfileDataRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:ReactiveEnergyImportedValue>10</ra:ReactiveEnergyImportedValue>
    <ra:Timestamp>2006-05-04T00:00:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ReactiveEnergyImportedValue>20</ra:ReactiveEnergyImportedValue>
    <ra:Timestamp>2006-05-04T00:30:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ReactiveEnergyImportedValue>30</ra:ReactiveEnergyImportedValue>
    <ra:Timestamp>2006-05-04T01:00:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ReactiveEnergyImportedValue>40</ra:ReactiveEnergyImportedValue>
    <ra:Timestamp>2006-05-04T01:30:00.00</ra:Timestamp>
  </ra:LogEntry>
</ra:ReadReactiveImportProfileDataRsp>
```

Figure 73 - Read Reactive Import Profile Data Parse Response Sample

4.8.3 Read Export Profile Data (4.8.3)

Service Request Name	ReadProfileData	
Service Reference	4.8	
Service Request Variant Name	ReadExportProfileData	
Service Reference Variant	4.8.3	
Service Request Objective	To enable a DCC Service user to request the retrieval of interval data (half hourly export data) from a Device with a specific Device ID.	
Business Context Statement	<p>A DCC Service User wishes to retrieve a set of half hourly export data for a Device at a specific Device ID. The Profile Data Log will store (where such time has elapsed) at least:</p> <ul style="list-style-type: none"> • 3 months active energy export • 3 months reactive energy export <p>This request will return such export data as is available. A DCC Service User will have the ability to request a start and end date for interval data.</p>	
User Role Access	<ul style="list-style-type: none"> • Electricity Export Supplier (EES) • Electricity Network Operator (ENO) • Other User (OU) 	
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: <i>SME.C.NC</i></p>	
Service Request Narrative (SMETS2 or later)	<p>1. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned.</p> <ul style="list-style-type: none"> • Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested.. In the case of Export Supplier or Electricity Network Operator, this could be the 'current' or the 'old' Registered Supplier. • DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. See Annex section 5.1. 	
GBCS Cross Reference	Electricity	Gas

GBCS Message Code	0x0036	N/A
GBCS Use Case	ECS22a	N/A
GBCS Use Case Name	Read Electricity Half Hour Profile Data (export)	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 99 Read Export Profile Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.8.3.1 Service Request

4.8.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadExportProfileData XML element defines this Service Request and contains the date-time interval for which to read data on the device and, for Future Dated, the Execution Date and Time.

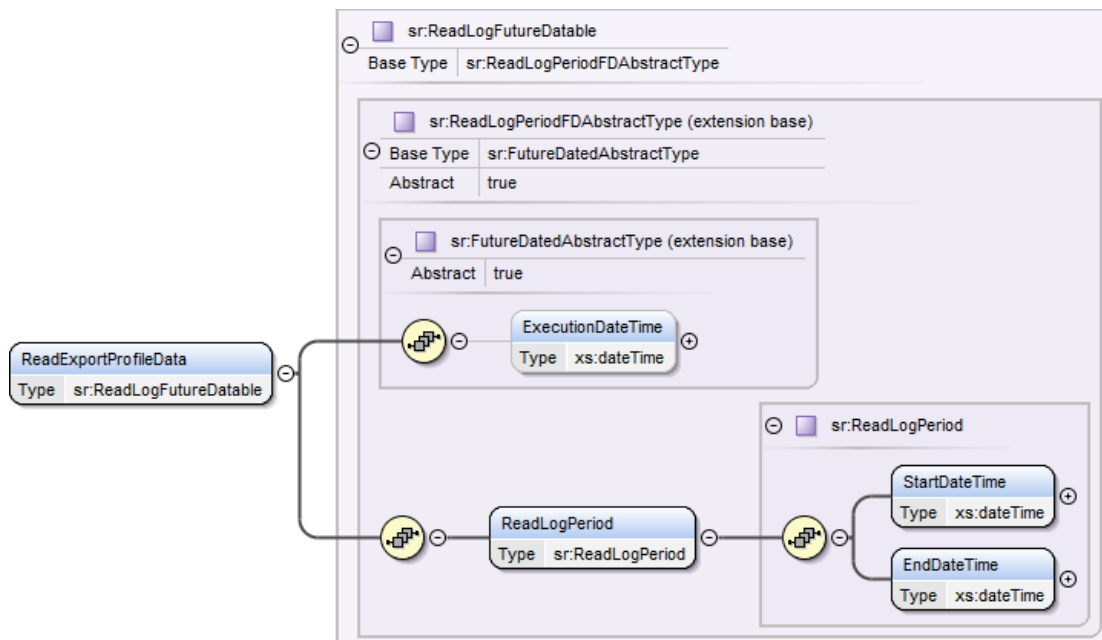


Figure 74 Read Export Profile Data Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadExportProfileData XML element defines this Service Request and contains the date-time interval for which to read data on the device, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

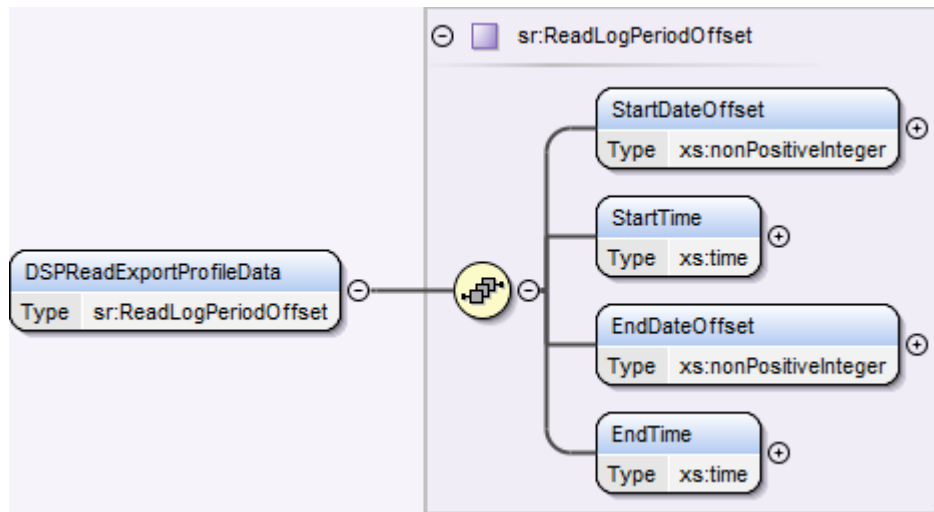


Figure 75 Read Export Profile Data Service Request Structure (Create Schedule)

4.8.3.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.8.3.1.2.1 ReadExportProfileData (Ad-hoc)

The data items contained in the Service Request are defined in section 4.4.4.1.2.

4.8.3.1.2.2 DSPReadExportProfileData (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPReadExportProfileData	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriodOffset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 100 Read Export Profile Data Service Request Data Items (Create Schedule)

4.8.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see the Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	Yes
SMETS1	No	Yes	No	DSP	Yes

Table 101 Read Export Profile Data Modes of Operation

4.8.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS1	Yes	No	No	No	No	No	No	No

Table 102 Read Export Profile Data Command Variant Values (Ad-hoc)

4.8.3.1.5 Validation

See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time and Read Log Period validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset validation.

4.8.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadExportProfileData>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</ReadExportProfileData>
```

Figure 76 Sample Read Export Profile Data Service Request Format (Ad-hoc)

4.8.3.2 Responses

The response messages for a "Read Export Profile Data" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the device.

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Service Response (from Device) is a variation of the generic one and it follows the structure defined in section 4.8.1.2.2 for Service Request 4.8.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.8.3.2.1 Parse Output / SMETS1 Response Format

4.8.3.2.1.1 Format - ReadExportProfileDataRsp

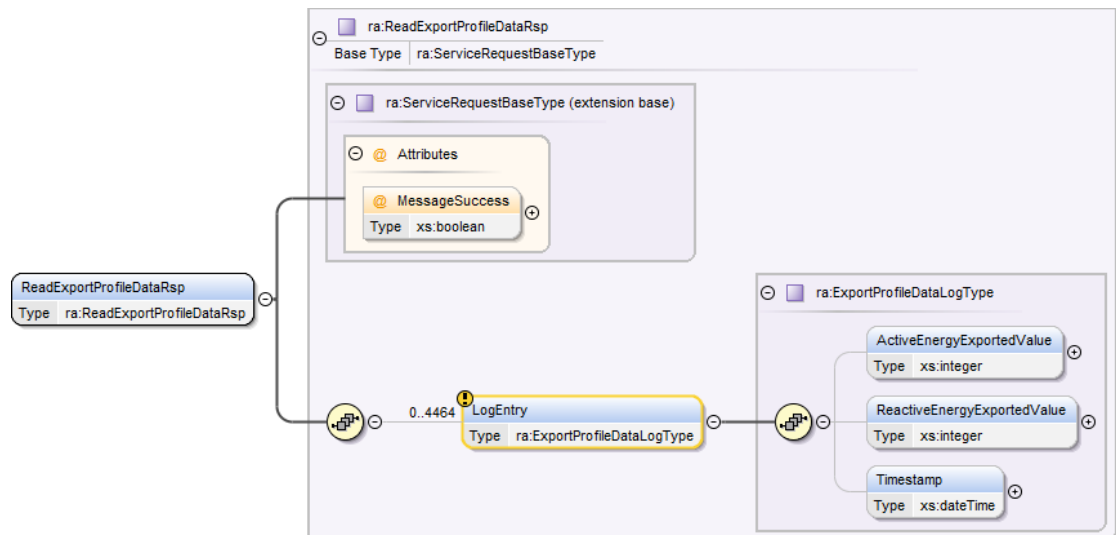


Figure 77 - Read Export Profile Data Parse Response / SMETS1 Response Structure

Note: LogEntry Maximum 4464. A value of 4464 is considered as 'Unbounded' by the XSD validation

4.8.3.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0036
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS22a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Electricity Half Hour Profile Data (export)</i>
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 103 - Read Export Profile Data Parse Response/ SMETS1 Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.8.3.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActiveEnergyExportedValue	The total active energy exported in this 30 minute period (if a twin element meter, this is for the primary element; if on a polyphase meter, it is cumulative across the phases)	xs:integer	None	Wh	Non-sensitive
ReactiveEnergyExportedValue	The total reactive energy exported in this 30 minute period (if a twin element meter, this is for the primary element; if on a polyphase meter, it is cumulative across the phases)	xs:integer	None	varh	Non-sensitive
Timestamp	The date-time stamp at the end of the period to which the value relates	xs:dateTime	None	N/A	Non-sensitive

Table 104 - Read Export Profile Data Parse Response / SMETS1 Response Body Data Items

4.8.3.2.1.4 Sample Response

```

<ra:ReadExportProfileDataRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:ActiveEnergyExportedValue>10</ra:ActiveEnergyExportedValue>
    <ra:ReactiveEnergyExportedValue>5</ra:ReactiveEnergyExportedValue>
    <ra:Timestamp>2006-05-04T00:00:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveEnergyExportedValue>20</ra:ActiveEnergyExportedValue>
    <ra:ReactiveEnergyExportedValue>10</ra:ReactiveEnergyExportedValue>
    <ra:Timestamp>2006-05-04T00:30:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveEnergyExportedValue>30</ra:ActiveEnergyExportedValue>
    <ra:ReactiveEnergyExportedValue>15</ra:ReactiveEnergyExportedValue>
    <ra:Timestamp>2006-05-04T01:00:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveEnergyExportedValue>40</ra:ActiveEnergyExportedValue>
    <ra:ReactiveEnergyExportedValue>20</ra:ReactiveEnergyExportedValue>
    <ra:Timestamp>2006-05-04T01:30:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveEnergyExportedValue>50</ra:ActiveEnergyExportedValue>
    <ra:ReactiveEnergyExportedValue>25</ra:ReactiveEnergyExportedValue>
    <ra:Timestamp>2006-05-04T02:00:00.00</ra:Timestamp>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:ActiveEnergyExportedValue>60</ra:ActiveEnergyExportedValue>
    <ra:ReactiveEnergyExportedValue>30</ra:ReactiveEnergyExportedValue>
    <ra:Timestamp>2006-05-04T02:30:00.00</ra:Timestamp>
  </ra:LogEntry>
</ra:ReadExportProfileDataRsp>

```

Figure 78 - Read Export Profile Data Parse Response Sample

4.9 Section 4.9

This section has been intentionally left blank as there is no Service Reference 4.9.

4.10 Read Network Data (4.10)

Service Request Name	ReadNetworkData
Service Reference	4.10
Service Request Variant Name	ReadNetworkData
Service Reference Variant	4.10
Service Request Objective	To enable a DCC Service User to read stored power quality data from a Device for a specified Device ID.
Business Context Statement	The DCC Service User wishes to review the power quality data logs of a particular device (e.g. 6 minute gas sampling or Average RMS power)
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO)
Security Classification	<p>Non-critical and non-sensitive for Electricity and response sensitive for Gas</p> <p>SMETS2 or later:</p> <p>GBCS XREF: <i>SME.C.NC</i></p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> For Gas, this Service Request reads the Network Data Log values from the GSME as defined in SMETS. A log capable of storing a period of up to 4 hours of consumption data recorded at 6 minute intervals on the Network Data Log can be read (total of 40 entries recorded in the Device). This data is recorded on the Network Data Log via Service Request 14.1 (Record Network Data (GAS)). See Annex section 14.1. For Electricity, this Service Request reads the following data items as defined in SMETS <ul style="list-style-type: none"> AverageRMSUnderVoltageCounter - The number of times the average RMS voltage has been below the Average RMS Under Voltage Threshold since last reset. AverageRMSOverVoltageCounter - The number of times the average RMS voltage has been above the Average RMS Over Voltage Threshold since last reset. AverageRMSVoltageProfileDataLog - A log capable of storing 4320 entries (including the UTC date and time at the end of the period to which the value relates) comprising the averaged RMS voltage for each Average RMS Voltage Measurement Period arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not

	<p>authorised to read data for the entire period requested, an error will be returned.</p> <ol style="list-style-type: none"> Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. For Electricity, the response content depends on whether the Meter is Single or Poly Phase. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. Because this Service Request (Gas) returns Sensitive data, URPs (i.e. the GNO reading data from the GSME), have to include in the Request the Public Security Credentials they want the Device to sign the Response with. 		
GBCS Cross Reference	Electricity (Single Phase)	Electricity (Poly Phase)	Gas
GBCS Message Code	0x0039	0x00BC	0x0079
GBCS Use Case	ECS23	ECS23b	GCS18
GBCS Use Case Name	Read Voltage Operational Data	Read Voltage Operational Data -3 Phase	Read Gas Network Data Log
SMETS1 Applicability	Yes	N/A	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> SMETS1 ESME Devices are only required to support setting of Average RMS Voltage Measurement Period (with its SMETS1 meaning) in minutes, whereas the SMETS2 equivalent can be set in seconds. Therefore, where the SMETS1 ESME does not support setting to a resolution of seconds, the value in the MeasurementPeriod within AvgRMSVoltageProfileDataLog may be a multiple of 60 rather than the number of seconds requested in a prior 'Update Device Configuration (Voltage) (SRV 6.5)' Service Request. Provision of Public Security Credentials for the Device to sign the Response with is not applicable to SMETS1 Devices. The DCC Data Systems will not validate whether this data item has been included in a SMETS1 Service Request. 		

Table 105 Read Network Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.10.1 Service Request

4.10.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadNetworkData XML element defines this Service Request and contains the date-time interval for which the logs are to be retrieved, for URP the Key Agreement Public Security Credentials and, for Future Dated, the Execution Date Time.

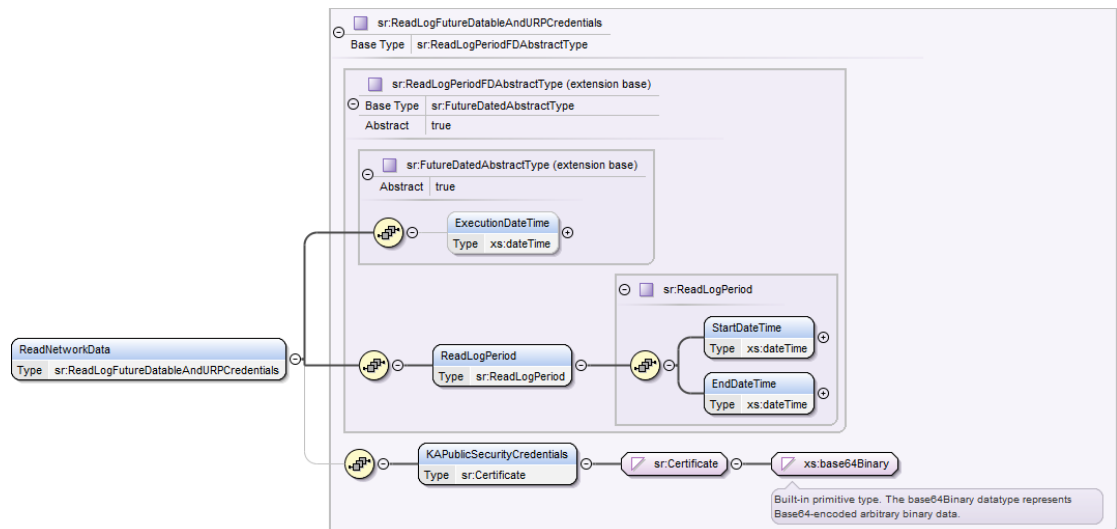


Figure 79 Read Network Data Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadNetworkData XML element defines this Service Request and contains the date-time interval for which the log is to be read, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

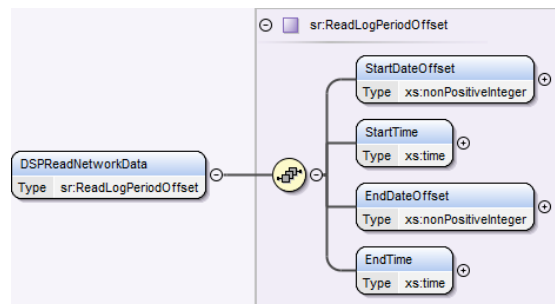


Figure 80 Read Network Data Service Request Structure (Create Schedule)

4.10.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.10.1.2.1.1 ReadNetworkData (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required. Note that for requests targeted at GSME, this date range must surround the 4 hour period.	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Gas Network Operator)	xs:base64Binary	SMETS2 or later Service: (User Role EIS, GIS, ENO: N/A User Role GNO: Yes) SMETS1 Service: N/A	None	N/A	Non-Sensitive

Table 106 Read Network Data Service Request Data Items (Ad-hoc)

4.10.1.2.1.2 DSPReadNetworkData (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPReadNetworkData	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriod Offset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 107 Read Network Data Service Request Data Items (Create Schedule)

4.10.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	Yes
SMETS1	No	Yes	No	DSP	Yes

Table 108 Read Network Data Modes of Operation

4.10.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 109 Read Network Data Command Variant Values (Ad-hoc)

4.10.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for:

- SMETS2 or later: Execution Date Time, KA Public Security Credentials and Read Log Period validation.
- SMETS1: Execution Date Time and Read Log Period validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset validation.

4.10.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadNetworkData>
  <ReadLogPeriod>
    <StartTime>2014-01-01T00:00:00.00Z</StartTime>
    <EndTime>2014-01-31T23:59:59.00Z</EndTime>
  </ReadLogPeriod>
</ReadNetworkData>
```

Figure 81 Sample Read Network Data Service Request Format (Ad-hoc)

4.10.2 Responses

The response messages for a "Read Network Data" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response.

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the device.

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Service Response (from Device) is a variation of the generic one and it follows the structure defined in section 4.8.1.2.2 for Service Request 4.8.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.10.2.1 Parse Output / SMETS1 Response Format

4.10.2.1.1 Format - ReadNetworkDataRsp

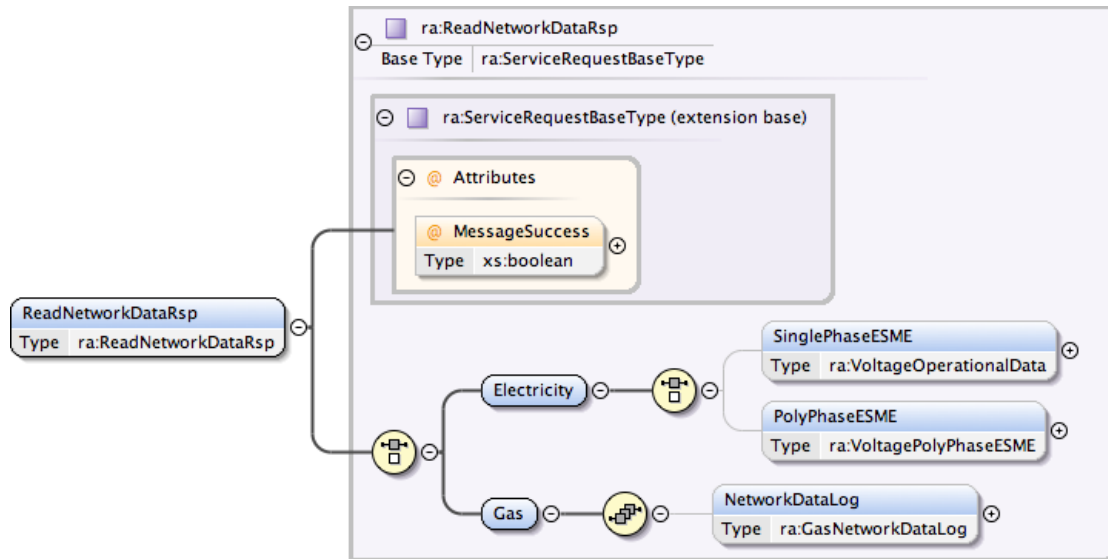


Figure 82 - Read Network Data Parse Response / SMETS1 Response Structure

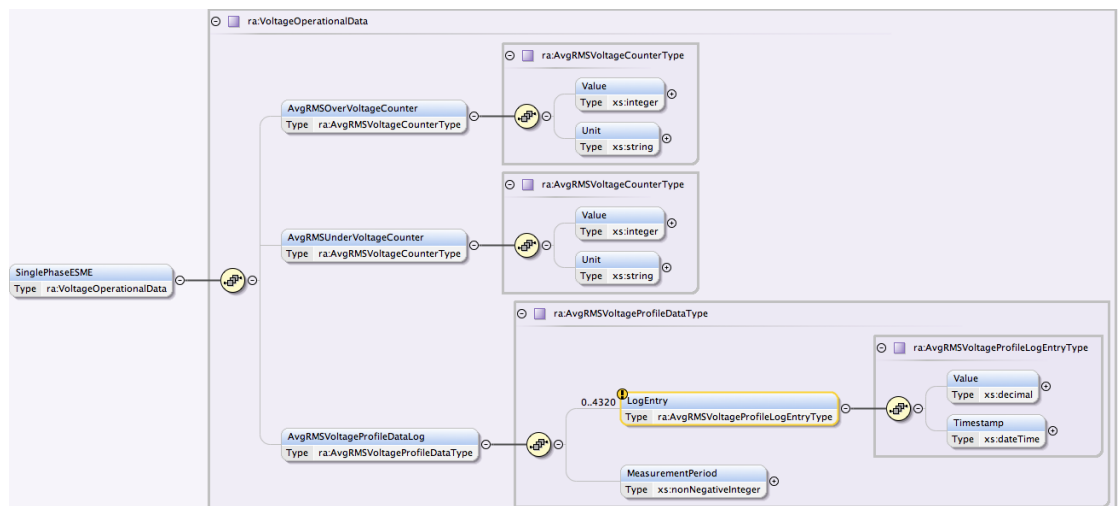


Figure 83 - Read Network Data Parse Response / SMETS1 Response – Electricity Single Phase ESME Structure

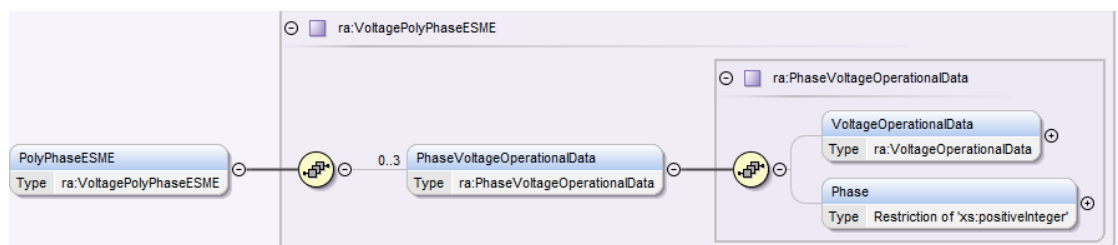


Figure 84 - Read Network Data Parse Response – Electricity Poly Phase ESME Structure

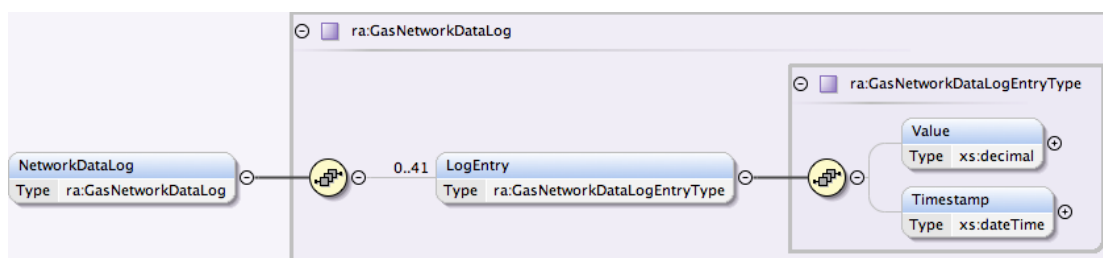


Figure 85 - Read Network Data Parse Response / SMETS1 Response – Gas Network Data Log Structure

4.10.2.1.2 Specific Header Data Items

Data Item	Electricity Response (Single Phase)	Electricity Response (Poly Phase)	Gas Response
GBCSHexadecimalMessageCode	0039	00BC	0079
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS23</i>	<i>ECS23b</i>	<i>GCS18</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Voltage Operational Data</i>	<i>Read Voltage Operational Data – 3 Phase</i>	<i>Read Gas Network Data Log</i>
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present	Present where DSP scheduled or originator is a URP
Timestamp	Present	Present	Present

Table 110 - Read Network Data Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.10.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SinglePhaseESME	Voltage operational data for the single phase of an Electricity Single Phase Meter	ra:VoltageOperationalIData (see section 4.10.2.1.4)	None	N/A	Non-Sensitive
PolyPhaseESME	Voltage operational data for each of the 3 phases of an Electricity Poly Phase Meter N/A to SMETS1	ra:VoltagePolyPhaseESME (see section 4.10.2.1.6)	None	N/A	Non-Sensitive
NetworkDataLog	Network Data Log Gas Only	ra:GasNetworkDataLog (see section 4.10.2.1.8)	None	N/A	Sensitive

Table 111 - Read Network Data Parse Response / SMETS1 Response Body Data Items

4.10.2.1.4 VoltageOperationalData Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AvgRMSOverVoltageCounter: Value	The number of times the average RMS voltage has been above the Average RMS Over Voltage Threshold since last reset.	xs:integer	None	Number of occurrences	Non-Sensitive
AvgRMSOverVoltageCounter: Unit	The Average RMS Over Voltage Counter Unit Valid set: • 255: No units	xs:string	None	N/A	Non-Sensitive
AvgRMSUnderVoltageCounter: Value	The number of times the average RMS voltage has been below the Average RMS Under Voltage Threshold since last reset.	xs: integer	None	Number of occurrences	Non-Sensitive
AvgRMSUnderVoltageCounter: Unit	The Average RMS Under Voltage Counter Unit Valid set: 255: No units	xs:string	None	N/A	Non-Sensitive
AvgRMSVoltageProfileDataLog	A log capable of storing 4320 entries (including the UTC date and time at the end of the period to which the value relates) comprising the averaged RMS voltage for each Average RMS Voltage Measurement Period arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten	Ra:AvgRMSVoltageProfileDataLog (see section 4.10.2.1.5)	None	N/A	Non-Sensitive

Table 112 - Read Network Data Parse Response / SMETS1 Response - VoltageOperationalData Specific Data Items

4.10.2.1.5 AvgRMSVoltageProfileDataLog Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry.Value ¹	The Average RMS Value measured to the nearest 10 th of a Volt.	xs:decimal	None	Volts	Non-Sensitive
LogEntry.Timestamp ¹	The date-time at the end of the corresponding measurement period	xs:dateTime	None	UTC Date-Time	Non-Sensitive
MeasurementPeriod	The period in seconds over which the average RMS is averaged SMETS1: This value may be a multiple of 60 rather than the number of seconds requested in a prior 'Update Device Configuration (Voltage) (SRV 6.5)' Service Request (see Service Request narrative).	xs:nonNegativeInteger	None	Seconds	Non-Sensitive

Table 113 - Read Network Data Parse Response / SMETS1 Response - AvgRMSVoltageProfileDataLog Specific Data Items

¹ Maximum 4320 Log Entries. Note that a value of 4320 is considered as 'Unbounded' by the XSD validation

4.10.2.1.6 VoltagePolyPhaseESME Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PhaseVoltageOperationalData ¹	The Voltage Operational Data for each of the 3 phases	ra:PhaseVoltageOperationalData (see section 4.10.2.1.7)	None	N/A	Non-Sensitive

Table 114 - Read Network Data Parse Response - VoltagePolyPhaseESME Specific Data Items

¹ Maximum 3 (one per phase) when the response is successful

4.10.2.1.7 PhaseVoltageOperationalData Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
VoltageOperationalData	The Voltage Operational Data for each of the 3 phases	ra:VoltageOperationalData (see section 4.10.2.1.4)	None	N/A	Non-Sensitive
Phase	Each of the 3 phases in the Meter Valid set: <ul style="list-style-type: none"> Value between 1 and 3 	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 3)	None	N/A	Non-Sensitive

Table 115 - Read Network Data Parse Response - PhaseVoltageOperationalData Specific Data Items

4.10.2.1.8 GasNetworkDataLog Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry.Value ¹	Log of consumption data taken at 6-minute intervals over a 4-hour period: values Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS	xs:decimal	None	m ³	Sensitive
LogEntry.Timestamp ¹	The date-time at the end of the corresponding measurement period	xs:dateTime	None	UTC Date-Time	Sensitive

Table 116 - Read Network Data Parse Response / SMETS1 Response - GasNetworkDataLog Specific Data Items

¹ Maximum 41

4.10.2.1.9 Sample Response

```
<ra:ReadNetworkDataRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:SinglePhaseESME>
      <ra:AvgRMSOverVoltageCounter>
        <ra:Value>10</ra:Value>
        <ra:Unit>255</ra:Unit>
      </ra:AvgRMSOverVoltageCounter>
      <ra:AvgRMSUnderVoltageCounter>
        <ra:Value>10</ra:Value>
        <ra:Unit>255</ra:Unit>
      </ra:AvgRMSUnderVoltageCounter>
      <ra:AvgRMSVoltageProfileDataLog>
        <ra:LogEntry>
          <ra:Value>10</ra:Value>
          <ra:Timestamp>2014-08-20T00:01:00.00</ra:Timestamp>
        </ra:LogEntry>
        <ra:MeasurementPeriod>86400</ra:MeasurementPeriod >
      </ra:AvgRMSVoltageProfileDataLog>
    </ra:SinglePhaseESME>
  </ra:Electricity>
</ra:ReadNetworkDataRsp>
```

Figure 86 - Read Network Data Parse Response Sample – Single Phase ESME

```

<ra:ReadNetworkDataRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:PolyPhaseESME>
      <ra:PhaseVoltageOperationalData>
        <ra:VoltageOperationalData>
          <ra:AvgRMSOverVoltageCounter>
            <ra:Value>10</ra:Value>
            <ra:Unit>255</ra:Unit>
          </ra:AvgRMSOverVoltageCounter>
          <ra:AvgRMSUnderVoltageCounter>
            <ra:Value>10</ra:Value>
            <ra:Unit>255</ra:Unit>
          </ra:AvgRMSUnderVoltageCounter>
          <ra:AvgRMSVoltageProfileDataLog>
            <ra:LogEntry>
              <ra:Value>10</ra:Value>
              <ra:Timestamp>2014-08-20T00:01:00.00</ra:Timestamp>
            </ra:LogEntry>
            <ra:MeasurementPeriod>86400</ra:MeasurementPeriod>
          </ra:AvgRMSVoltageProfileDataLog>
        </ra:VoltageOperationalData>
        <ra:Phase>1</ra:Phase>
      </ra:PhaseVoltageOperationalData>
      <ra:PhaseVoltageOperationalData>
        <ra:VoltageOperationalData>
          <ra:AvgRMSOverVoltageCounter>
            <ra:Value>10</ra:Value>
            <ra:Unit>255</ra:Unit>
          </ra:AvgRMSOverVoltageCounter>
          <ra:AvgRMSUnderVoltageCounter>
            <ra:Value>10</ra:Value>
            <ra:Unit>255</ra:Unit>
          </ra:AvgRMSUnderVoltageCounter>
          <ra:AvgRMSVoltageProfileDataLog>
            <ra:LogEntry>
              <ra:Value>7</ra:Value>
              <ra:Timestamp>2014-08-20T00:02:00.00</ra:Timestamp>
            </ra:LogEntry>
            <ra:MeasurementPeriod>86400</ra:MeasurementPeriod>
          </ra:AvgRMSVoltageProfileDataLog>
        </ra:VoltageOperationalData>
        <ra:Phase>2</ra:Phase>
      </ra:PhaseVoltageOperationalData>
      <ra:PhaseVoltageOperationalData>
        <ra:VoltageOperationalData>
          <ra:AvgRMSOverVoltageCounter>
            <ra:Value>10</ra:Value>
            <ra:Unit>255</ra:Unit>
          </ra:AvgRMSOverVoltageCounter>
          <ra:AvgRMSUnderVoltageCounter>
            <ra:Value>10</ra:Value>
            <ra:Unit>255</ra:Unit>
          </ra:AvgRMSUnderVoltageCounter>
          <ra:AvgRMSVoltageProfileDataLog>
            <ra:LogEntry>
              <ra:Value>5</ra:Value>
              <ra:Timestamp>2014-08-20T00:03:00.00</ra:Timestamp>
            </ra:LogEntry>
            <ra:MeasurementPeriod>86400</ra:MeasurementPeriod>
          </ra:AvgRMSVoltageProfileDataLog>
        </ra:VoltageOperationalData>
        <ra:Phase>3</ra:Phase>
      </ra:PhaseVoltageOperationalData>
    </ra:PolyPhaseESME>
  </ra:Electricity>
</ra:ReadNetworkDataRsp>

```

Figure 87 - Read Network Data Parse Response Sample – Poly Phase ESME

```
<ra:ReadNetworkDataRsp MessageSuccess="true">
  <ra:Gas>
    <ra:NetworkDataLog>
      <ra:LogEntry>
        <ra:Value>10</ra:Value>
        <ra:Timestamp>2014-08-20T00:01:00.00</ra:Timestamp>
      </ra:LogEntry>
    </ra:NetworkDataLog>
  </ra:Gas>
</ra:ReadNetworkDataRsp>
```

Figure 88 - Read Network Data Parse Response Sample – Gas

4.11 Read Tariff (4.11)

SMETS2 or later

This Service Request maps to two Electricity and one Gas GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 4.11 Service Request has been broken into two parts: 4.11.1 (Primary Element) – applicable to Electricity and Gas, and 4.11.2 (Secondary Element) – applicable to Electricity.

SMETS1

This Service Request maps to Service Reference Variant 4.11.1 (Primary Element) – applicable to Electricity and Gas.

4.11.1 Read Tariff (Primary Element) (4.11.1)

Service Request Name	ReadTariff
Service Reference	4.11
Service Request Variant Name	ReadTariff(PrimaryElement)
Service Reference Variant	4.11.1
Service Request Objective	To enable a DCC Service User to read the current tariff settings (including price, time of use matrix and time of use blocks) that are in use on a meter.
Business Context Statement	The DCC Service User requires a view of the tariff deployed to a device to resolve a customer query.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Other User (OU)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. This Service Request returns all the current tariff settings available at the Primary Element of the Meter. It isn't possible to request a subset of them. 2. The Tariff values are set by Users via Service Request 1.1.1 - UpdateImportTariff(Primary Element). Users are advised not to read primary element tariff information prior to using Service Request 1.1.1 to set it, as there is a risk that it could cause an error in Parse software. 3. For reading the tariff values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x003A	0x009F
GBCS Use Case	ECS24	GCS21f
GBCS Use Case Name	Read ESME Tariff Data	Read GSME Tariff Data
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. Prices may be returned for Block tariffs or Time of Use tariffs but not both. The values of the tariff which is not in use on the Device shall be set to the relevant Unsupported Values (see section 19.9). 2. The DCC shall set the PrimaryActiveTariffPrice and PrimaryActiveTariffPriceScale in the SMETS1 Response to the relevant Unsupported Values (see section 19.9). 3. For similar reasons, DCC Service Users are advised not to read primary element tariff information prior to using Service Request 1.1.1 to set it, as there is a risk that it could cause unexpected behaviour in responses. 	

Table 117 Read Tariff (Primary Element) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.11.1.1 Service Request

4.11.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadTariffPrimaryElement XML element defines this Service Request and doesn't contain any data items.



Figure 89 Read Tariff (Primary Element) Service Request Structure

4.11.1.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 118 Read Tariff (Primary Element) Modes of Operation

4.11.1.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 119 Read Tariff (Primary Element) Command Variant Values

4.11.1.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

4.11.1.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadTariffPrimaryElement/>
```

Figure 90 Sample Read Tariff (Primary Element) Service Request Format

4.11.1.2 Responses

The response messages for a "Read Tariff (Primary Element)" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response.

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.11.1.2.1 Parse Output / SMETS1 Response Format

This response returns the tariffs for the primary element of an electricity or gas Device. These settings are determined by the use of Service Requests 1.1.1 and 1.2.1.

A tariff consists of a switching table, a set of special days and a threshold matrix which between them determine which prices apply in different conditions.

Prices can be TOU, changing according to the time, or by block, which means that the price changes as usage thresholds are crossed.

A price matrix relates a price to an action, which is an entry in a script table, effectively an identifier of that price.

A threshold matrix defines prices (8 electricity, 4 gas) to be applied within a block, and up to 3 usage thresholds at which prices are changed.

A profile schedule is a set of start times and tariff actions (or scripts) for that time, which is effectively an index into the price matrix, enabling the price to be looked up. Tariff actions can be TOU or block threshold identifiers. Up to 48 start times & actions may be defined for electricity and 4 for gas, though note that for gas it is not possible to switch from one block tariff to another within a day.

The switching table consists of a set of structures, namely season, week and day profiles, to determine when prices are changed on a device, which may be either by TOU or block.

Day profiles define a day type and a profile schedule to occur on that day type. Up to 16 day profiles may be defined for an electricity primary element or 4 for gas.

Week profiles are patterns of day profiles, to select which day type occurs on each day of the week. Up to 4 week profiles may be defined for an electricity primary element or 2 for gas.

Seasons are periods of the year specifying start dates and week types which apply in that season. Up to 4 seasons may be defined for an electricity primary element or 3 for gas.

The special days enable tariffs to be different on specific days e.g. public holidays. Up to 50 special days may be defined for electricity and 20 for gas.

Tariffs may be a mixture of TOU and block tariffs.

4.11.1.2.1.1 Format - ReadTariffPrimaryElementRsp

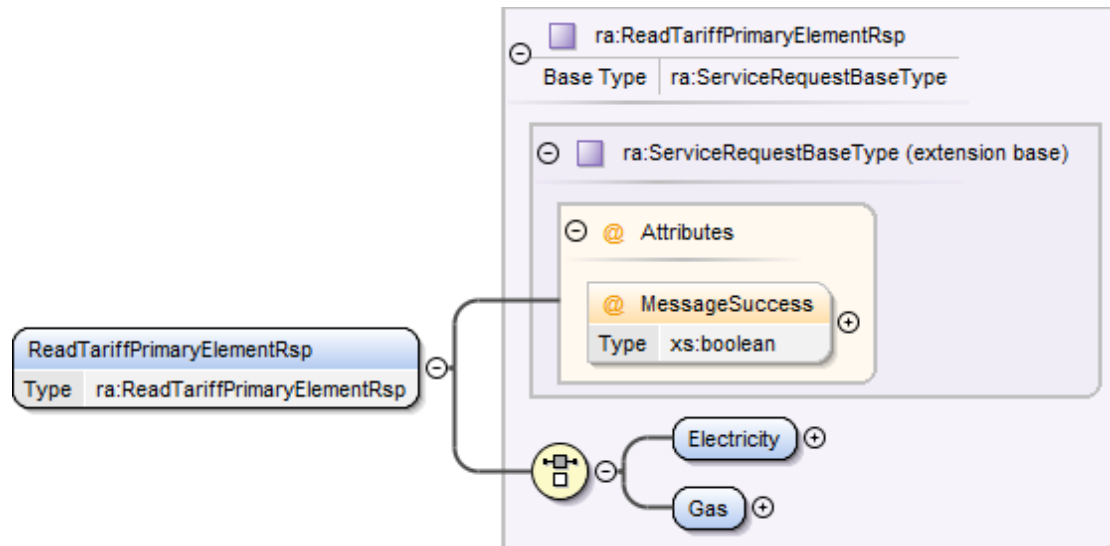


Figure 91 - Read Tariff Primary Element Parse Response / SMETS1 Response Structure

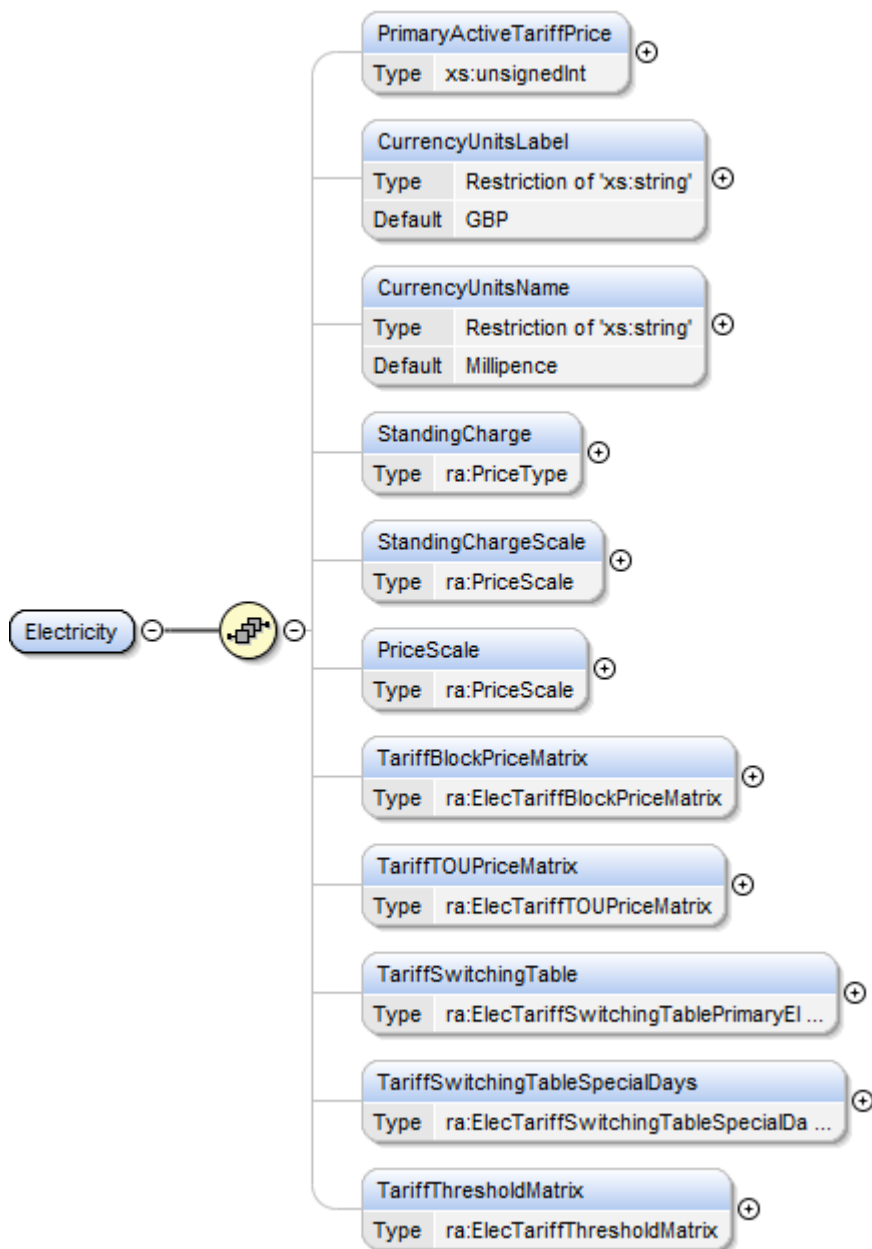


Figure 92 Read Tariff Primary Element Parse Response / SMETS1 Response – Electricity Structure

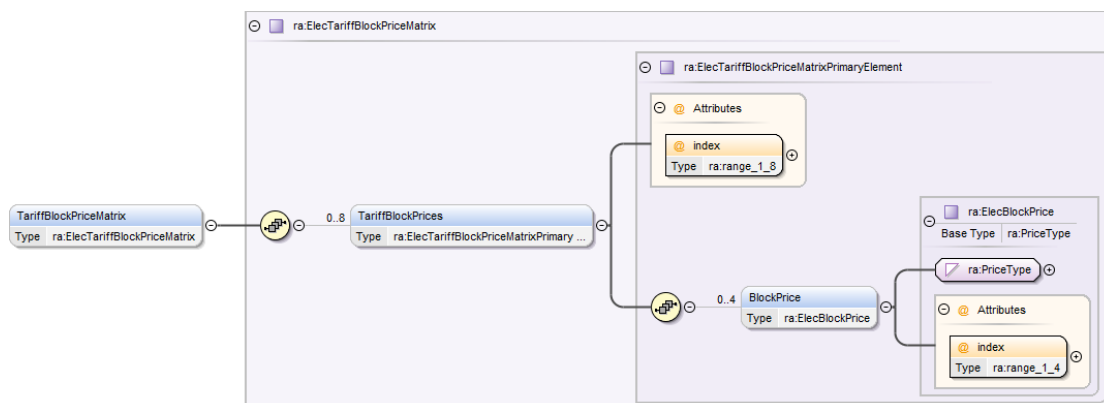


Figure 93 - Read Tariff Primary Element Parse Response / SMETS1 Response – ElecTariffBlockPriceMatrix Structure

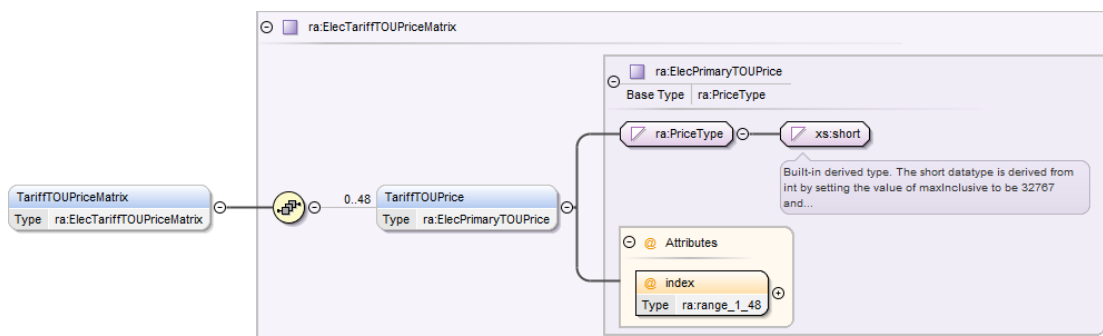


Figure 94 - Read Tariff Primary Element Parse Response / SMETS1 Response – ElecTariffTOUPriceMatrix Structure

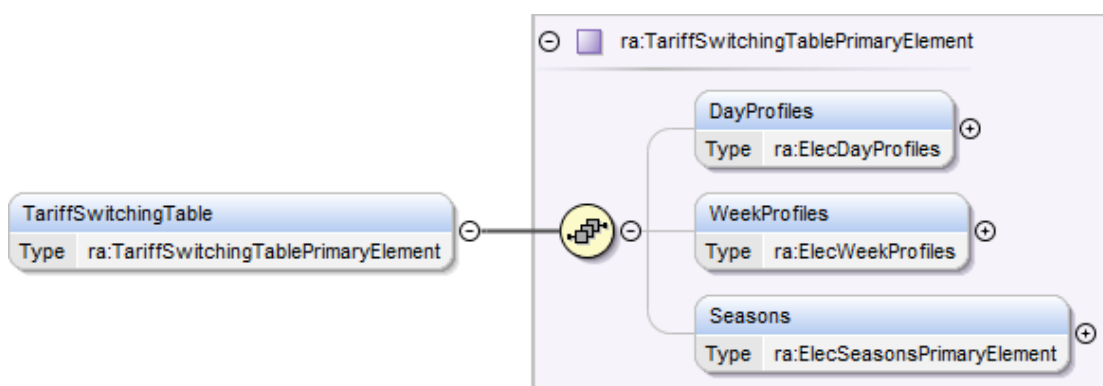


Figure 95 - Read Tariff Primary Element Parse Response / SMETS1 Response – Electricity TariffSwitchingTableStructure

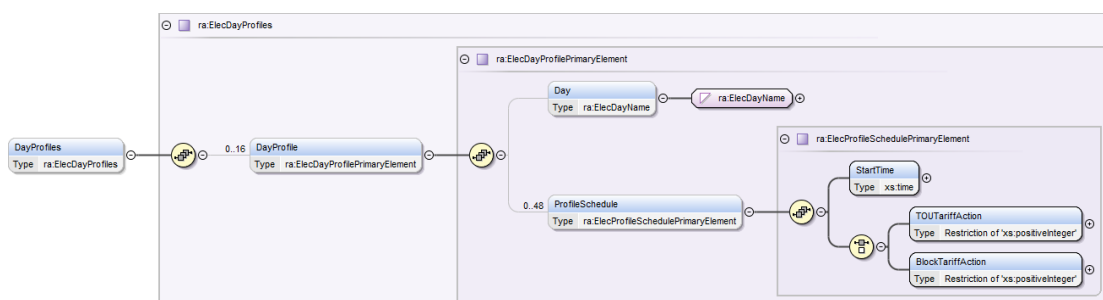


Figure 96 - Read Tariff Primary Element Parse Response / SMETS1 Response – ElecDayProfiles Structure

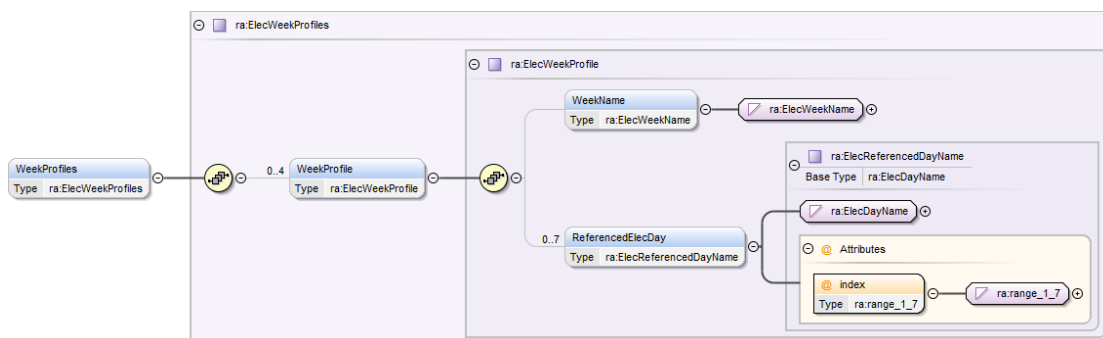


Figure 97 - Read Tariff Primary Element Parse Response / SMETS1 Response – ElecWeekProfiles Structure

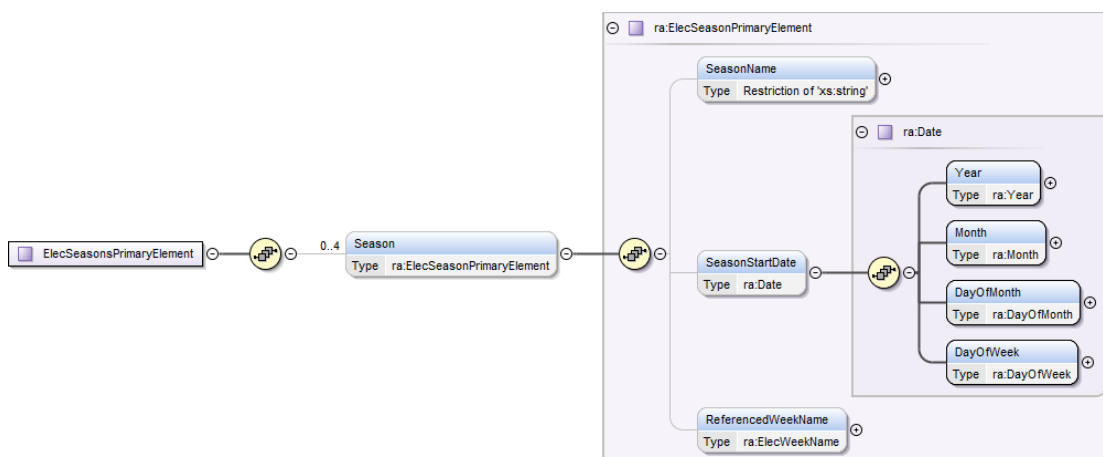


Figure 98 - Read Tariff Primary Element Parse Response / SMETS1 Response – Electricity Season Profiles Structure

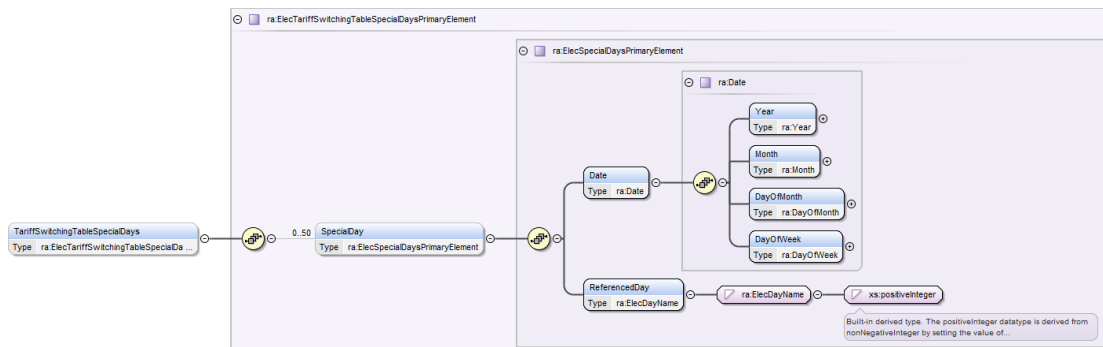


Figure 99 - Read Tariff Primary Element Parse Response / SMETS1 Response – ElecTariffSwitchingTableSpecialDaysPrimaryElement Structure

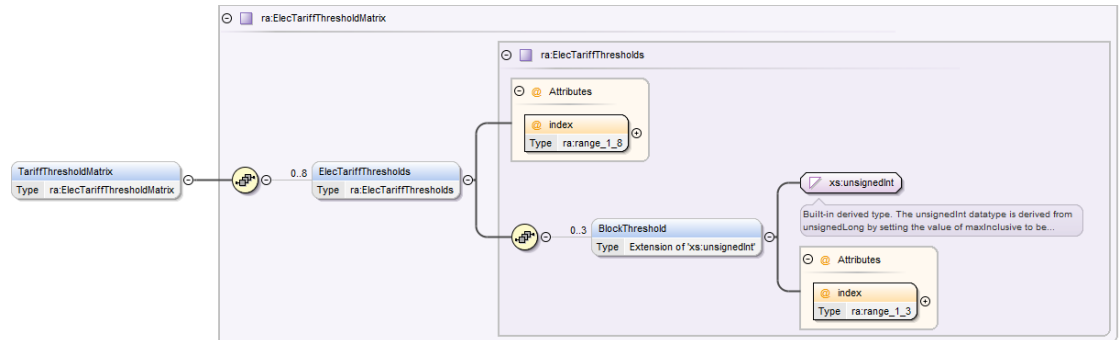


Figure 100 - Read Tariff Primary Element Parse Response / SMETS1 Response – ElecTariffThresholdMatrix Structure

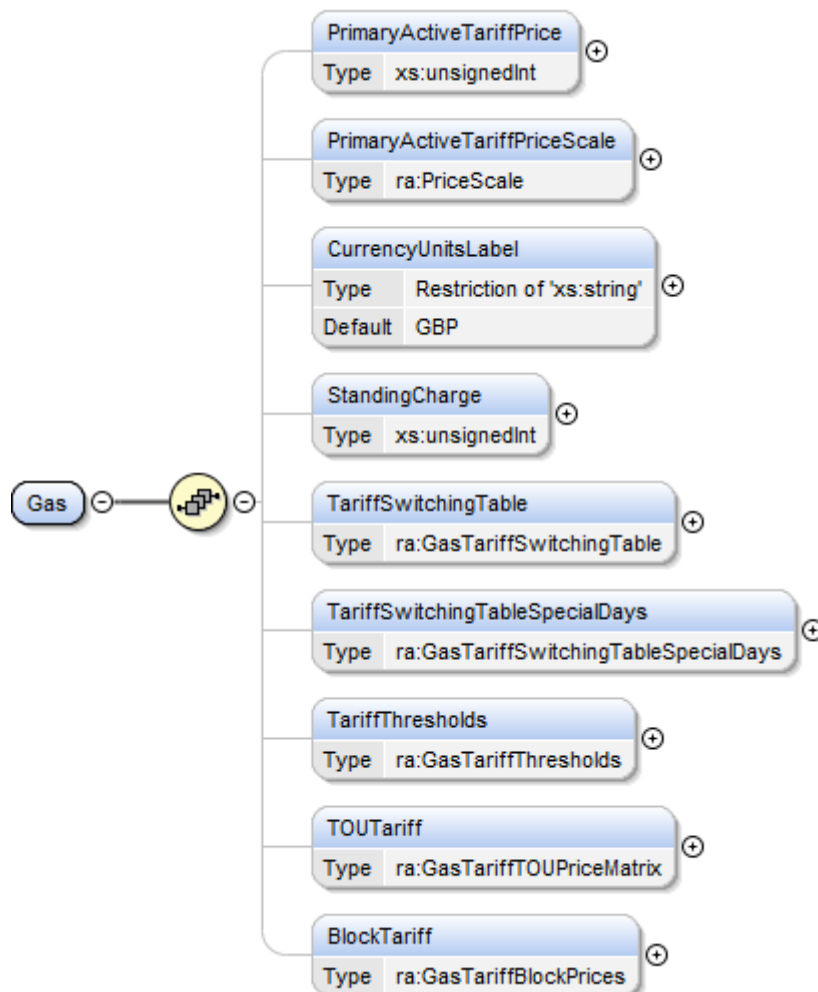


Figure 101 - Read Tariff Primary Element Parse Response / SMETS1 Response – Gas Structure



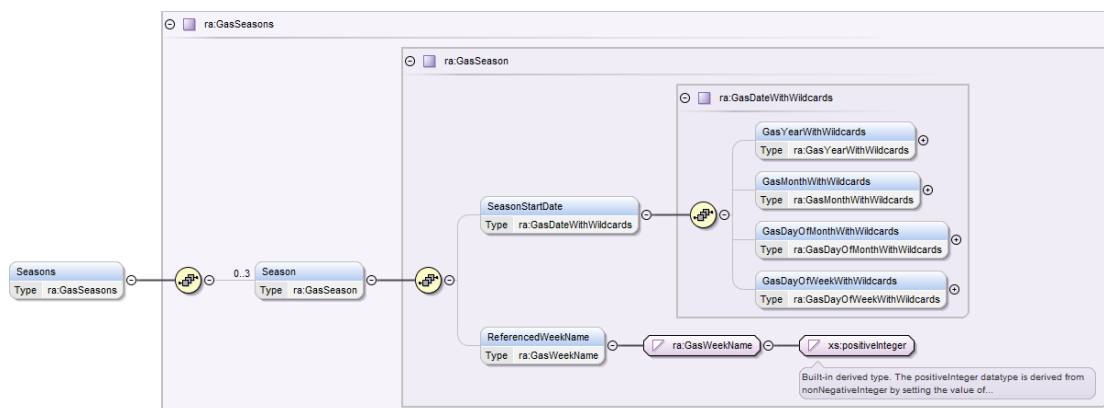


Figure 105 - Read Tariff Primary Element Parse Response / SMETS1 Response – GasSeasons Structure

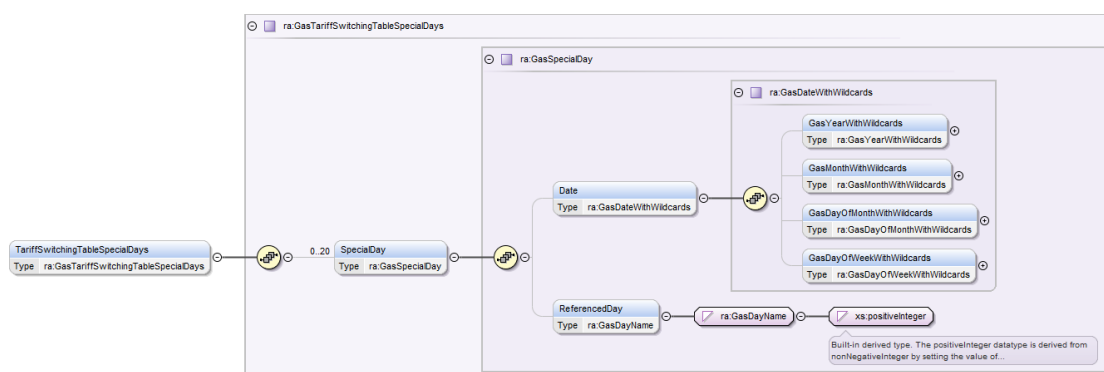


Figure 106 - Read Tariff Primary Element Parse Response / SMETS1 Response – GasTariffSwitchingTableSpecialDays Structure

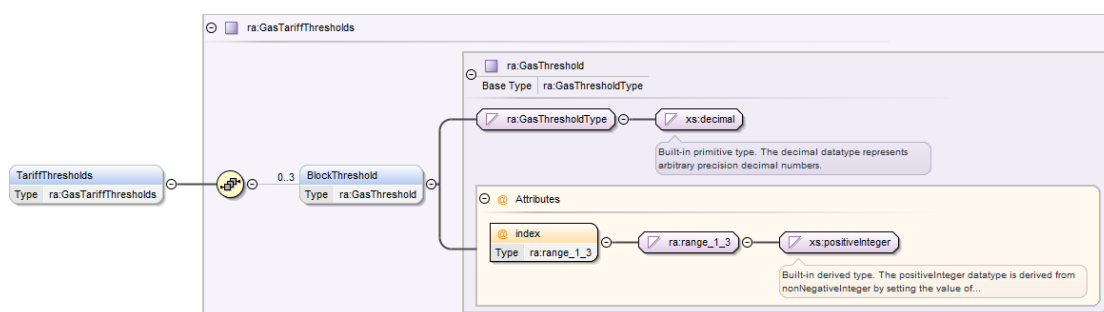


Figure 107 - Read Tariff Primary Element Parse Response / SMETS1 Response – GasTariffThresholds Structure

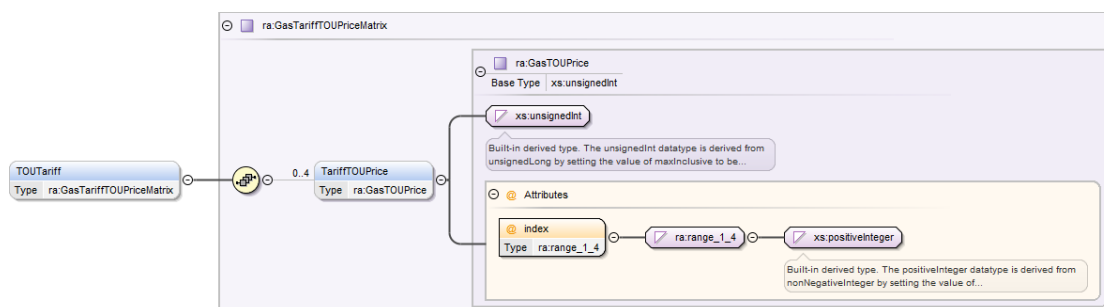


Figure 108 - Read Tariff Primary Element Parse Response / SMETS1 Response – GasTariffTOUPriceMatrix Structure

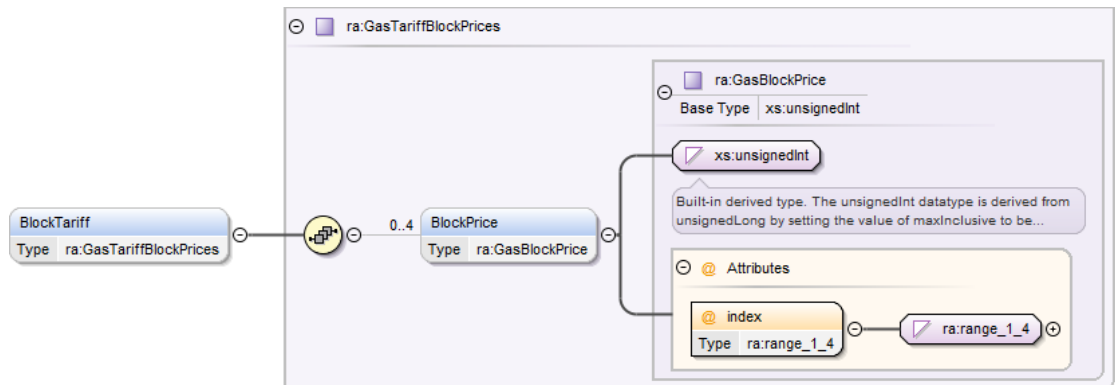


Figure 109 - Read Tariff Primary Element Parse Response / SMETS1 Response – GasTariffBlockPrices Structure

4.11.1.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	003A	009F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS24</i>	<i>GCS21f</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Tariff Data</i>	<i>Read GSME Tariff Data</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 120 - Read Tariff Primary Element Parse/ SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.11.1.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PrimaryActiveTariffPrice	<p>Electricity - Number representing the price in currency units per kWh consumed</p> <p>Gas - Number representing the price in currency units per cubic metre consumed</p> <p>SMETS1: In any SMETS1 Response, the DCC shall set this value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter since SMETS1 does not require support for this value.</p>	xs:unsignedInt	None	<p>Electricity - 1000th pence (or cents) per kWh</p> <p>Gas - Value when multiplied by the scale is GBP/EUROs per cubic metre</p>	Non-Sensitive
PrimaryActiveTariffPrice Scale	<p>A multiplier applied to the PrimaryActiveTariffPrice value. Note this is the value of n in 10ⁿ (10 to the power of n).</p> <p>Gas Only</p> <p>SMETS1: In any SMETS1 Response, the DCC shall set this value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter, since SMETS1 does not require support for this value.</p>	<p>ra:PriceScale</p> <p>(Restriction of xs:integer minimum = -128, maximum=127)</p>	N/A	None	Non-Sensitive
CurrencyUnitsLabel	<p>The Currency Units currently used by a Smart Meter for display purposes, which shall be GB Pounds</p> <p>Valid set:</p> <ul style="list-style-type: none"> GBP ECB <p>denoting GB Pounds or Euros.</p> <p>Electricity and Gas</p>	<p>Restriction of xs:string</p> <p>(Enumeration)</p>	GBP	N/A	Non-Sensitive
CurrencyUnitsName	<p>The Currency Units currently used by a Smart Meter for display purposes, which shall be GB Pounds</p> <p>Valid set:</p> <ul style="list-style-type: none"> Millipence Millicent <p>denoting 1000th GBP pence or 1000th Euro cent</p> <p>Electricity Only</p>	<p>Restriction of xs:string</p> <p>(Enumeration)</p>	Millipence	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
StandingCharge	<p>A charge to be levied in Currency Units per unit time when operating in Credit Mode and Prepayment Mode</p> <p>Electricity and Gas</p>	<p>ra:PriceType (xs:short) (Electricity)</p> <p>xs:unsignedInt (Gas)</p>	None	<p>Electricity - Value when multiplied by the scale is GBP/EUROs</p> <p>Gas – Millipence/Millicent</p> <p>Value is collected per day</p>	Non-Sensitive
StandingChargeScale	<p>A multiplier applied to the StandingCharge value. Note this is the value of n in 10^n (10 to the power of n).</p> <p>For example a StandingCharge of 1 and a StandingChargeScale of -2 would result in a StandingCharge of £0.01</p> <p>Electricity Only</p>	<p>ra:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)</p>	N/A	None	Non-Sensitive
PriceScale	<p>A multiplier applied to the TOU/Block price values. Note this is the value of n in 10^n (10 to the power of n).</p> <p>Electricity Only</p>	<p>ra:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)</p>	N/A	None	Non-Sensitive
Electricity TariffBlockPriceMatrix ¹	<p>Electricity Smart Meter: A 4 x 8 matrix containing prices and actions for Block Pricing.</p> <p>For Block the action indicates which one of the 8 threshold definitions is used.</p> <p>A profile schedule can have both Block and TOU actions in the same schedule.</p> <p>Note that any not set by the Supplier will be returned as 0.</p> <p>Electricity Only</p> <p>SMETS1: If the tariff type on a SMETS1 Device is 'Time-of-use' then the DCC shall set the values in TariffBlockPriceMatrix to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter,</p>	<p>ra:ElecTariffBlockPriceMatrixPrimaryElement (see Annex section 1.2.1 for the similar sr: ElecBlockTariff)</p>	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Electricity TariffTOUPriceMatrix ³	<p>Electricity Smart Meter: A 1 x 48 matrix containing prices and actions for Time-of-use Pricing. For TOU the index corresponds to the action which indicates the TOU register that consumption is recorded against.</p> <p>Note that any not set by the Supplier will be returned as 0.</p> <p>Electricity Only</p> <p>SMETS1: If the tariff type on a SMETS1 Device is 'Time-of-use with Block' then the DCC shall set the values in TariffTOUPriceMatrix to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter,</p>	<p>ra:ElectricityTariffTOUPriceMatrix</p> <p>(see Annex section 1.2.1 for the similar sr: ElecPrimaryTOUPrice)</p>	None	N/A	Non-Sensitive
Electricity TariffSwitchingTable	<p>A calendar defining UTC times, days and dates for switching the Primary Element tariff</p> <p>A profile schedule can have both Block and TOU actions in the same schedule.</p> <p>Electricity Only</p>	<p>ra: ElecTariffSwitchingTablePrimaryElement</p> <p>(see Annex section 1.1.1 for the similar sr: ElecSwitchingTablePrimary)</p>	None	N/A	Non-Sensitive
Electricity TariffSwitchingTableSpecialDays	<p>A calendar defining special dates for switching the Primary Element tariff</p> <p>Electricity Only</p>	<p>ra: ElecTariffSwitchingTableSpecialDaysPrimaryElement</p> <p>(see Annex section 1.1.1 for the similar sr: ElecSpecialDaysPrimary)</p>	None	N/A	Non-Sensitive
Electricity TariffThresholdMatrix	<p>An 8 (threshold definitions) x 3 (block thresholds) matrix capable of holding thresholds for controlling Block Tariffs.</p> <p>Electricity Only</p>	<p>ra:ElecTariffThresholdMatrix</p> <p>(see Annex section 1.1.1 for the similar sr: ElecThresholdMatrix)</p>	None	N/A	Non-Sensitive
Gas TariffSwitchingTable	<p>A calendar defining UTC times, days and dates for switching the tariff</p> <p>Gas Only</p>	<p>ra: GasTariffSwitchingTable</p> <p>(see Annex section 1.1.1 for the similar sr: GasSwitchingTable)</p>	None	N/A	Non-Sensitive
Gas TariffSwitchingTableSpecialDays	<p>A calendar defining special dates for switching the Primary Element tariff</p> <p>Gas Only</p>	<p>ra: GasTariffSwitchingTableSpecialDays</p> <p>(see Annex section 1.1.1 for the similar sr: GasSpecialDays)</p>	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Gas TariffThresholds	A 3 x 1 matrix capable of holding thresholds for controlling Block Tariffs Gas Only	ra:GasTariffThresholds Up to 3 BlockThreshold values (xs:decimal)	None	BlockThreshold is measured in Wh	Non-Sensitive
Gas TOUTariff ⁴	Gas Smart Meter: A 1 x 4 matrix containing Prices for Time-of-use Pricing Gas Only SMETS1: If the tariff type on a SMETS1 Device is 'Time-of-use with Block' then the DCC shall omit the TOUTariff element,	ra: GasTariffTOUPriceMatrix (1 x 4 matrix of ra: GasTOUPrice; see Annex section 1.1.1 for the similar sr: GasTOUPrice)	None	1000th pence / cent per kWh	Non-Sensitive
Gas BlockTariff ⁴	Gas Smart Meter: A 1 x 4 matrix containing Prices for Block Pricing Gas Only SMETS1: If the tariff type on a SMETS1 Device is 'Time-of-use' then the DCC shall omit the BlockTariff element,	Ra:GasTariffBlockPrices (1 x 4 matrix of ra: GasBlockPrice; see Annex section 1.1.1 for the similar sr: GasBlockPrice)	None	1000th pence / cent per kWh	Non-Sensitive

Table 121 - Read Tariff Primary Element Parse Response / SMETS1 Response Body Data Items

¹ Maximum 8

³ Maximum 48

⁴ Maximum 4

4.11.1.2.1.4 Sample Response

```
<ra:ReadTariffPrimaryElementRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:PrimaryActiveTariffPrice>100</ra:PrimaryActiveTariffPrice>
    <ra:CurrencyUnitsLabel>GBP</ra:CurrencyUnitsLabel>
    <ra:CurrencyUnitsName>Millipence</ra:CurrencyUnitsName>
    <ra:StandingCharge>5000</ra:StandingCharge>
    <ra:StandingChargeScale>-5</ra:StandingChargeScale>
    <ra:PriceScale>-5</ra:PriceScale>
    <ra:TariffBlockPriceMatrix>
      <ra:TariffBlockPrices index="1">
        <ra:BlockPrice index="1">2000</ra:BlockPrice >
        <ra:BlockPrice index="2">2500</ra:BlockPrice>
        <ra:BlockPrice index="3">3000</ra:BlockPrice >
        <ra:BlockPrice index="4">3500</ra:BlockPrice>
      </ra:TariffBlockPrices>
      <ra:TariffBlockPrices index="2">
        <ra:BlockPrice index="1">3000</ra:BlockPrice >
        <ra:BlockPrice index="2">3500</ra:BlockPrice>
        <ra:BlockPrice index="3">4000</ra:BlockPrice >
        <ra:BlockPrice index="4">5000</ra:BlockPrice>
      </ra:TariffBlockPrices>
    </ra:TariffBlockPriceMatrix>
    <ra:TariffTOUPriceMatrix>
      <ra:TariffTOUPrice index="1">2000</ra:TariffTOUPrice>
      <ra:TariffTOUPrice index="2">2500</ra:TariffTOUPrice>
      <ra:TariffTOUPrice index="3">4000</ra:TariffTOUPrice>
    </ra:TariffTOUPriceMatrix>
  </ra:Electricity>
</ra:ReadTariffPrimaryElementRsp>
```

← See Figure 111 for details of ElectricityTariff Switching Tables →

```
<ra:TariffThresholdMatrix>
  <ra:ElecTariffThresholds index="1">
    <ra:BlockThreshold index="1">10</ra:BlockThreshold>
    <ra:BlockThreshold index="2">20</ra:BlockThreshold>
    <ra:BlockThreshold index="3">30</ra:BlockThreshold>
  </ra:ElecTariffThresholds>
  <ra:ElecTariffThresholds index="2">
    <ra:BlockThreshold index="1">40</ra:BlockThreshold>
    <ra:BlockThreshold index="2">80</ra:BlockThreshold>
    <ra:BlockThreshold index="3">300</ra:BlockThreshold>
  </ra:ElecTariffThresholds>
</ra:TariffThresholdMatrix>
</ra:Electricity>
</ra:ReadTariffPrimaryElementRsp>
```

Figure 110 - Read Tariff Primary Element Parse Response Sample - Electricity

```

<ra:TariffSwitchingTable>
  <ra:DayProfiles>
    <ra:DayProfile>
      <ra:Day>1</ra:Day>
      <ra:ProfileSchedule>
        <ra:StartTime>00:00:00.00</ra:StartTime>
        <ra:TOUTariffAction>01</ra:TOUTariffAction>
      </ra:ProfileSchedule>
    </ra:DayProfile>
    <ra:DayProfile>
      <ra:Day>2</ra:Day>
      <ra:ProfileSchedule>
        <ra:StartTime>00:00:00.00</ra:StartTime>
        <ra:BlockTariffAction>02</ra:BlockTariffAction>
      </ra:ProfileSchedule>
    </ra:DayProfile>
  </ra:DayProfiles>
  <ra:WeekProfiles>
    <ra:WeekProfile>
      <ra:WeekName>1</ra:WeekName>
      <ra:ReferencedElecDay index="1">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index="2">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index="3">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index="4">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index="5">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index="6">2</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index="7">2</ra:ReferencedElecDay>
    </ra:WeekProfile>
  </ra:WeekProfiles>
  <ra:Seasons>
    <ra:Season>
      <ra:SeasonName>Spring</ra:SeasonName>
      <ra:SeasonStartDate>
        <ra:Year>
          <ra:NonSpecifiedYear></ra:NonSpecifiedYear>
        </ra:Year>
        <ra:Month>
          <ra:SpecifiedMonth>3</ra:SpecifiedMonth>
        </ra:Month>
        <ra:DayOfMonth>
          <ra:SpecifiedDayOfMonth>1</ra:SpecifiedDayOfMonth>
        </ra:DayOfMonth>
        <ra:DayOfWeek>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:DayOfWeek>
        <ra:SeasonStartDate>
          <ra:ReferencedWeekName>1</ra:ReferencedWeekName>
        </ra:SeasonStartDate>
      </ra:Season>
    </ra:Seasons>
  </ra:TariffSwitchingTable>
  <ra:TariffSwitchingTableSpecialDays>
    <ra:SpecialDay>
      <ra:Date>
        <ra:Year>
          <ra:NonSpecifiedYear></ra:NonSpecifiedYear>
        </ra:Year>
        <ra:Month>
          <ra:SpecifiedMonth>12</ra:SpecifiedMonth>
        </ra:Month>
        <ra:DayOfMonth>
          <ra:SpecifiedDayOfMonth>25</ra:SpecifiedDayOfMonth>
        </ra:DayOfMonth>
        <ra:DayOfWeek>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:DayOfWeek>
      </ra:Date>
      <ra:ReferencedDay>2</ra:ReferencedDay>
    </ra:SpecialDay>
  </ra:TariffSwitchingTableSpecialDays>

```

Figure 111 - Read Tariff Primary Element Parse Response Sample – Electricity Tariff Switching Tables

```
<ra:ReadTariffPrimaryElementRsp MessageSuccess="true">
  <ra:Gas>
    <ra:PrimaryActiveTariffPrice>100</ra:PrimaryActiveTariffPrice>
    <ra:PrimaryActiveTariffPriceScale>-5</ra:PrimaryActiveTariffPriceScale>
    <ra:CurrencyUnitsLabel>GBP</ra:CurrencyUnitsLabel>
    <ra:StandingCharge>5000</ra:StandingCharge>
```

← See Figure 113 for details of Gas Tariff Switching Tables →

```
    <ra:TariffThresholds>
      <ra:BlockThreshold index= "1">10</ra:BlockThreshold>
      <ra:BlockThreshold index= "2">20</ra:BlockThreshold>
      <ra:BlockThreshold index= "3">30</ra:BlockThreshold>
    </ra:TariffThresholds>
    <ra:TOUTariff>
      <ra:TariffTOUPrice index= "1">2700</ra:TariffTOUPrice>
      <ra:TariffTOUPrice index= "2">4500</ra:TariffTOUPrice>
    </ra:TOUTariff>
  </ra:Gas>
</ra:ReadTariffPrimaryElementRsp>
```

Figure 112 - Read Tariff Primary Element Parse Response Sample - Gas

```

<ra:TariffSwitchingTable>
  <ra:DayProfiles>
    <ra:DayProfile>
      <ra:DayName>1</ra:DayName>
      <ra:TOUTariffAction>01</ra:TOUTariffAction>
    </ra:DayProfile>
    <ra:DayProfile>
      <ra:DayName>2</ra:DayName>
      <ra:TOUTariffAction>3</ra:TOUTariffAction>
    </ra:DayProfile>
  </ra:DayProfiles>
  <ra:WeekProfiles>
    <ra:WeekProfile>
      <ra:WeekName>1</ra:WeekName>
      <ra:ReferencedDay index= "1">1</ra:ReferencedDay>
      <ra:ReferencedDay index= "2">1</ra:ReferencedDay>
      <ra:ReferencedDay index= "3">1</ra:ReferencedDay>
      <ra:ReferencedDay index= "4">1</ra:ReferencedDay>
      <ra:ReferencedDay index= "5">1</ra:ReferencedDay>
      <ra:ReferencedDay index= "6">2</ra:ReferencedDay>
      <ra:ReferencedDay index= "7">2</ra:ReferencedDay>
    </ra:WeekProfile>
  </ra:WeekProfiles>
  <ra:Seasons>
    <ra:Season>
      <ra:SeasonStartDate>
        <ra:GasYearWithWildcards><ra:SpecifiedYear>2015</ra:SpecifiedYear></ra:GasYearWithWildcards>
      </ra:SeasonStartDate>
      <ra:GasMonthWithWildcards><ra:SpecifiedMonth>12</ra:SpecifiedMonth></ra:GasMonthWithWildcards>
      <ra:GasDayOfMonthWithWildcards>
        <ra:SpecifiedDayOfMonth>1</ra:SpecifiedDayOfMonth>
      </ra:GasDayOfMonthWithWildcards>
      <ra:GasDayOfWeekWithWildcards>
        <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
      </ra:GasDayOfWeekWithWildcards>
      <ra:SeasonStartDate>
        <ra:ReferencedWeekName>1</ra:ReferencedWeekName>
      </ra:SeasonStartDate>
    </ra:Season>
  </ra:Seasons>
</ra:TariffSwitchingTable>
<ra:TariffSwitchingTableSpecialDays>
  <ra:SpecialDay>
    <ra:Date >
      <ra:GasYearWithWildcards><ra:SpecifiedYear>2015</ra:SpecifiedYear></ra:GasYearWithWildcards>
    </ra:Date >
    <ra:GasMonthWithWildcards><ra:SpecifiedMonth>12</ra:SpecifiedMonth></ra:GasMonthWithWildcards>
    <ra:GasDayOfMonthWithWildcards>
      <ra:SpecifiedDayOfMonth>1</ra:SpecifiedDayOfMonth>
    </ra:GasDayOfMonthWithWildcards>
    <ra:GasDayOfWeekWithWildcards>
      <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
    </ra:GasDayOfWeekWithWildcards>
    <ra:Date >
      <ra:ReferencedDay>2</ra:ReferencedDay>
    </ra:Date >
  </ra:SpecialDay>
</ra:TariffSwitchingTableSpecialDays>

```

Figure 113 - Read Tariff Primary Element Parse Response Sample – Gas Tariff Switching Tables

4.11.2 Read Tariff (Secondary Element) (4.11.2)

Service Request Name	ReadTariff
Service Reference	4.11
Service Request Variant Name	ReadTariff(SecondaryElement)

Service Reference Variant	4.11.2	
Service Request Objective	To enable a DCC Service User to read the current tariff settings (including price, time of use matrix and time of use blocks) that are in use on a Twin Element Electricity Smart Meter.	
Business Context Statement	The DCC Service User requires a view of the tariff deployed to a device to resolve a customer query.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Other User (OU) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request returns all the current tariff settings available at the Secondary Element of the Meter. It isn't possible to request a subset of them. The Tariff values are set by Users via Service Request 1.1.2 - UpdateImportTariff(SecondaryElement). Users are advised not to read secondary element tariff information prior to using Service Request 1.1.2 to set it, as there is a risk that it could cause an error in Parse software. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x00BD	N/A
GBCS Use Case	ECS24b	N/A
GBCS Use Case Name	Read ESME Tariff Data - second element	N/A
SMETS1 Applicability	No	No

Table 122 Read Tariff (Secondary Element) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.11.2.1 Service Request

4.11.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadTariffSecondaryElement XML element defines this Service Request and doesn't contain any data items.

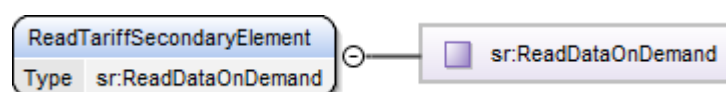


Figure 114 Read Tariff (Secondary Element) Service Request Structure

4.11.2.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 123 Read Tariff (Secondary Element) Modes of Operation

4.11.2.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 124 Read Tariff (Secondary Element) Command Variant Values

4.11.2.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

4.11.2.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadTariffSecondaryElement/>

Figure 115 Sample Read Tariff (Secondary Element) Service Request Format

4.11.2.2 Responses

The response messages for a "Read Tariff (Secondary Element)" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output.

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.11.2.2.1 Parse Output Format

This response returns the tariff for the secondary element of an electricity Device. These settings are determined by the use of Service Requests 1.1.2 and 1.2.2.

The principles are the same as for electricity primary elements, as described in section 4.11.1.2.1, but with only TOU supported, and with just 4 day profile schedules instead of 48.

4.11.2.2.1.1 Format - ReadTariffSecondaryElementRsp

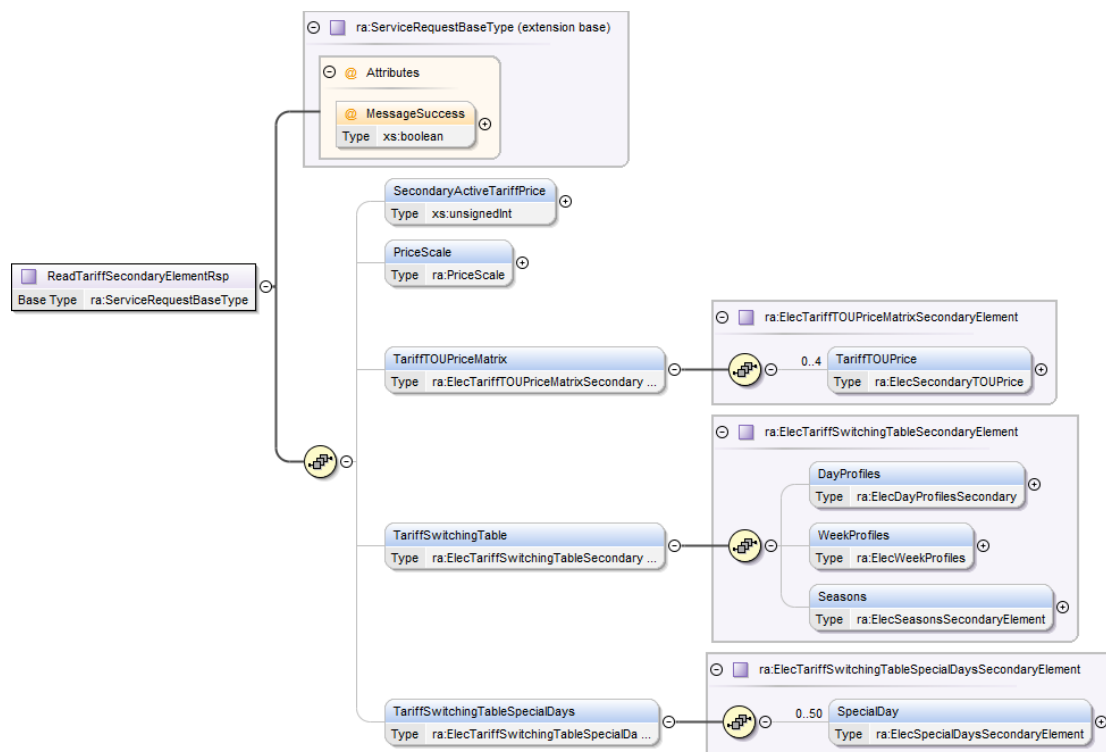


Figure 116 Read Tariff Secondary Element Parse Response Structure

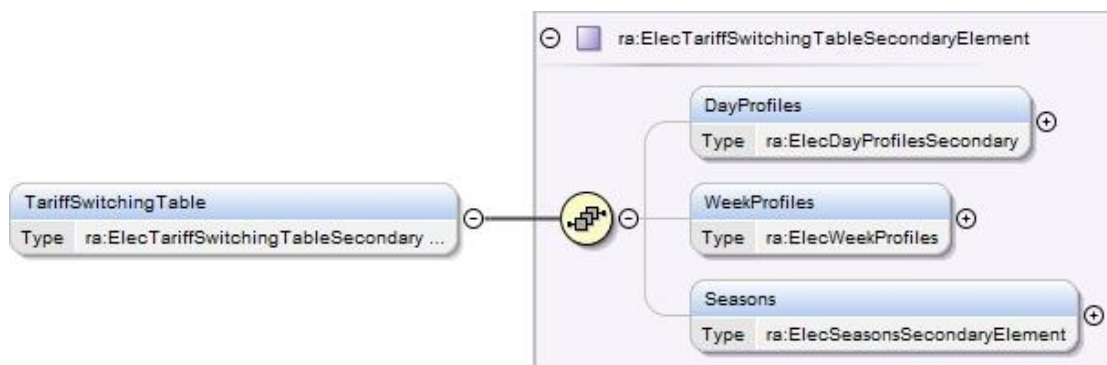


Figure 117 - Read Tariff Secondary Element Parse Response – TariffSwitchingTable Structure

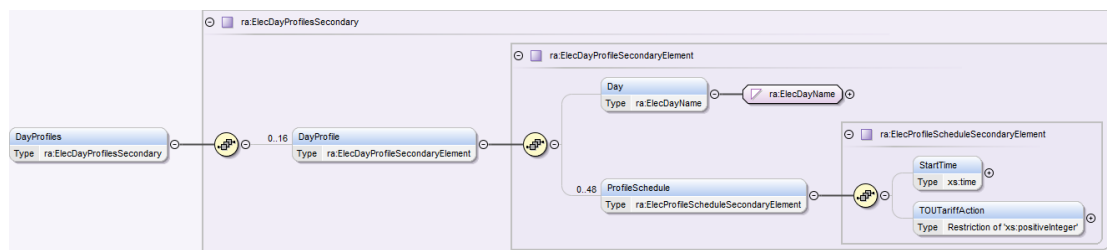


Figure 118 - Read Tariff Secondary Element Parse Response – DayProfiles Structure

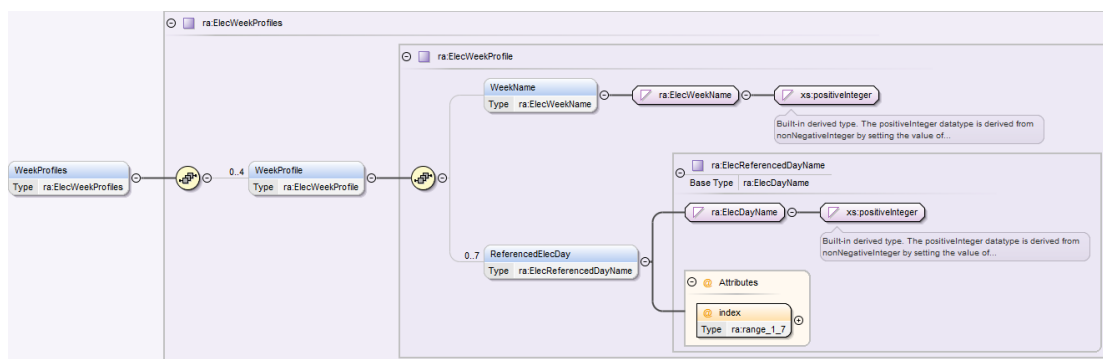


Figure 119 - Read Tariff Secondary Element Parse Response – WeekProfiles Structure

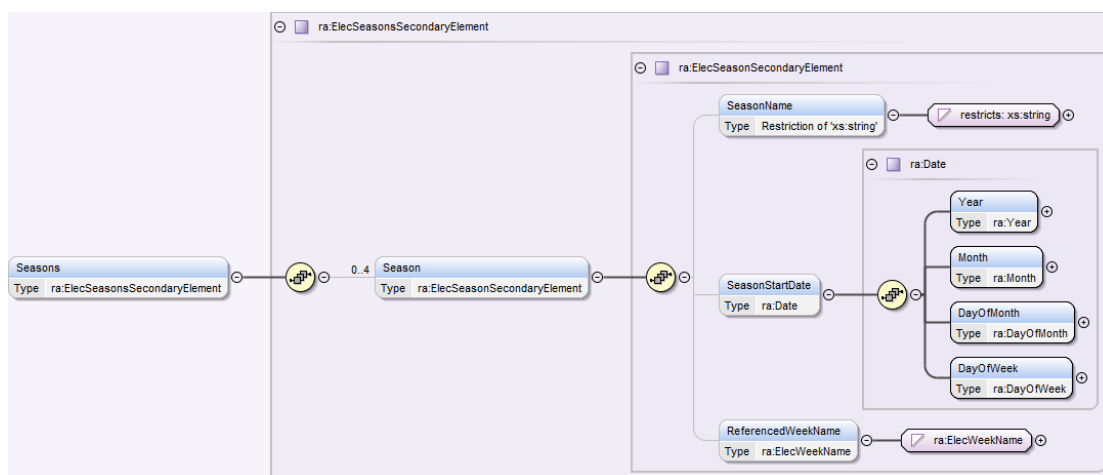


Figure 120 - Read Tariff Secondary Element Parse Response – Seasons Structure

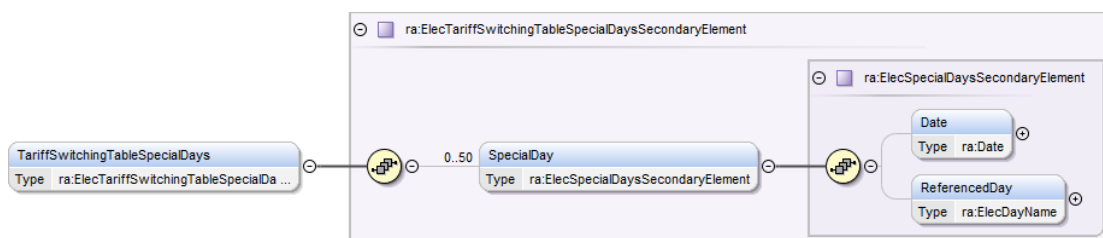


Figure 121 - Read Tariff Secondary Element Parse Response – TariffSwitchingTableSpecialDays Structure

4.11.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	00BD
GBCS Use Case Number (for information only - not in header)	ECS24b
GBCS Use Case Name (for information only - not in header)	Read ESME Tariff Data - second element
SupplementaryRemotePartyID	Present where originator is a URP

Data Item	Electricity Response
SupplementaryRemotePartyCounter	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 125 - Read Tariff Secondary Element Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.11.2.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SecondaryActiveTariffPrice	Number representing the price per kWh consumed	xs:unsignedInt	None	1000 th pence / cent (or cents) per kWh	Non-Sensitive
PriceScale	A multiplier applied to the TOU price values. Note this is the value of n in 10^n (10 to the power of n).	ra:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)	N/A	None	Non-Sensitive
TariffTOUPriceMatrix ¹	Twin Element Electricity Smart Meter: A 1 x 4 matrix containing prices for Time-of-use Pricing Tariffs relating to Supply via the secondary measuring element of the Electricity Meter	ra: ElecTariffTOUPriceMatrixSecondaryElement ² (see Annex section 1.2.2 for the similar sr: PriceSecondary)	None	N/A	Non-Sensitive
TariffSwitchingTable	A calendar defining UTC times, days and dates for switching the Secondary Element tariff	ra: ElecTariffSwitchingTableSecondaryElement ² (see Annex section 1.1.2 for the similar sr: ElecSwitchingTableSecondary)	None	N/A	Non-Sensitive
TariffSwitchingTableSpecialDays	A calendar defining special dates for switching the Secondary Element tariff	ra: ElecTariffSwitchingTableSpecialDaysSecondaryElement ¹ (see Annex section 1.1.2 for the similar sr: ElecSpecialDaysSecondary)	None	N/A	Non-Sensitive

Table 126 - Read Tariff Secondary Element Parse Response Body Data Items

¹ Maximum 4

² ra: data type is similar to the corresponding sr: data type, except that in ra: all the components are optional

4.11.2.2.1.4 Sample Response

```
<ra:ReadTariffSecondaryElementRsp MessageSuccess="true">
  <ra:SecondaryActiveTariffPrice>100</ra:SecondaryActiveTariffPrice>
  <ra:PriceScale>-5</ra:PriceScale>
  <ra:TariffTOUPriceMatrix>
    <ra:TariffTOUPrice index="1">2500</ra:TariffTOUPrice>
    <ra:TariffTOUPrice index="2">4500</ra:TariffTOUPrice>
  </ra:TariffTOUPriceMatrix>
</ra:ReadTariffSecondaryElementRsp>
```

← See Figure 123 for details of Tariff Switching Tables →

```
</ra:ReadTariffSecondaryElementRsp>
```

Figure 122 - Read Tariff Secondary Element Parse Response Sample

```

<ra:TariffSwitchingTable>
  <ra:DayProfiles>
    <ra:DayProfile>
      <ra:Day>1</ra:Day>
      <ra:ProfileSchedule>
        <ra:StartTime>00:00:00.00</ra:StartTime>
        <ra:TOUTariffAction>01</ra:TOUTariffAction>
      </ra:ProfileSchedule>
    </ra:DayProfile>
    <ra:DayProfile>
      <ra:Day>2</ra:Day>
      <ra:ProfileSchedule>
        <ra:StartTime>00:00:00.00</ra:StartTime>
        <ra:TOUTariffAction>02</ra:TOUTariffAction>
      </ra:ProfileSchedule>
    </ra:DayProfile>
  </ra:DayProfiles>
  <ra:WeekProfiles>
    <ra:WeekProfile>
      <ra:WeekName>1</ra:WeekName>
      <ra:ReferencedElecDay index= "1">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index= "2">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index= "3">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index= "4">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index= "5">1</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index= "6">2</ra:ReferencedElecDay>
      <ra:ReferencedElecDay index= "7">2</ra:ReferencedElecDay>
    </ra:WeekProfile>
  </ra:WeekProfiles>
  <ra:Seasons>
    <ra:Season>
      <ra:SeasonName>Spring</ra:SeasonName>
      <ra:SeasonStartDate>
        <ra:Year>
          <ra:NonSpecifiedYear></ra:NonSpecifiedYear>
        </ra:Year>
        <ra:Month>
          <ra:SpecifiedMonth>3</ra:SpecifiedMonth>
        </ra:Month>
        <ra:DayOfMonth>
          <ra:SpecifiedDayOfMonth>1</ra:SpecifiedDayOfMonth>
        </ra:DayOfMonth>
        <ra:DayOfWeek>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:DayOfWeek>
        <ra:SeasonStartDate>
          <ra:ReferencedWeekName>1</ra:ReferencedWeekName>
        </ra:SeasonStartDate>
      </ra:Season>
    </ra:Seasons>
  </ra:TariffSwitchingTable>
  <ra:TariffSwitchingTableSpecialDays>
    <ra:SpecialDay>
      <ra:Date>
        <ra:Year>
          <ra:NonSpecifiedYear></ra:NonSpecifiedYear>
        </ra:Year>
        <ra:Month>
          <ra:SpecifiedMonth>12</ra:SpecifiedMonth>
        </ra:Month>
        <ra:DayOfMonth>
          <ra:SpecifiedDayOfMonth>25</ra:SpecifiedDayOfMonth>
        </ra:DayOfMonth>
        <ra:DayOfWeek>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:DayOfWeek>
      </ra:Date>
      <ra:ReferencedDay>2</ra:ReferencedDay>
    </ra:SpecialDay>
  </ra:TariffSwitchingTableSpecialDays>

```

Figure 123 - Read Tariff Secondary Element Parse Response Sample – Tariff Switching Tables

4.12 Read Maximum Demand Registers (4.12)

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 4.12 Service Request has been broken into two parts: 4.12.1 (Import) and 4.12.2 (Export).

4.12.1 Read Maximum Demand Import Registers (4.12.1)

Service Request Name	ReadMaximumDemandRegisters	
Service Reference	4.12	
Service Request Variant Name	ReadMaximumDemandImportRegisters	
Service Reference Variant	4.12.1	
Service Request Objective	To enable a DCC Service user to read the maximum demand import register values recorded on an ESME.	
Business Context Statement	The DCC Service user has conducted a network analysis survey for network planning purposes and wishes to retrieve maximum demand import register values.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request returns all the Maximum Demand Import Registers available at the meter. It isn't possible to request a read for only a subset of them. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). Users are advised not to read Maximum Demand Registers via Service Request 4.12.1 prior to using Service Request 6.18.1 to Set Maximum Demand Configurable Time Period, as there is a risk that it could cause an error in Parse software. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x002C	N/A
GBCS Use Case	ECS18b	N/A
GBCS Use Case Name	Read Maximum Demand Registers (import)	N/A
SMETS1 Applicability	No	No

Table 127 Read Maximum Demand Import Registers Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.12.1.1 Service Request

4.12.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadMaximumDemandImportRegisters XML element defines this Service Request and, for Future Dated Requests, contains the Execution Date and Time.

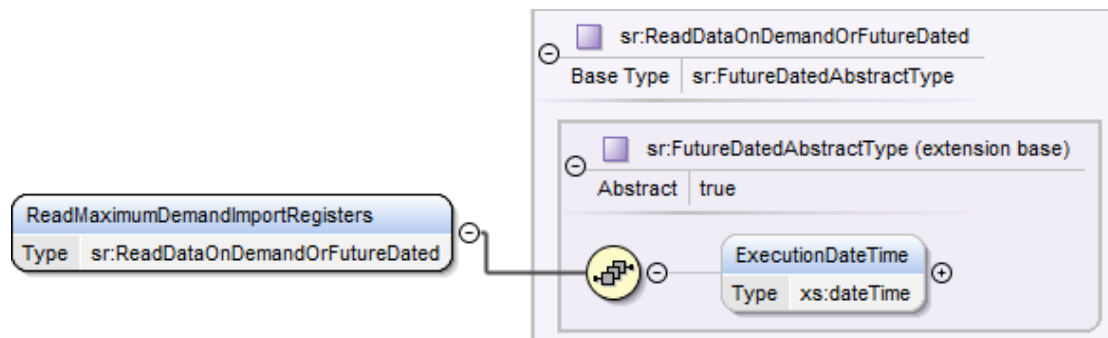


Figure 124 Read Maximum Demand Import Registers Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadMaximumDemandImportRegisters XML element defines this Service Request and doesn't contain any data items.

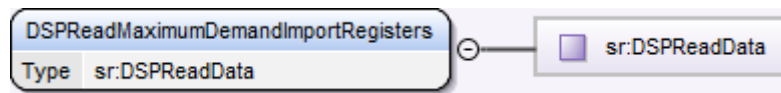


Figure 125 Read Maximum Demand Import Registers Service Request Structure (Create Schedule)

4.12.1.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.12.1.1.2.1 ReadMaximumDemandImportRegisters (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC Service User requires the command to be executed on the Device ID</p> <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 128 Read Maximum Demand Import Registers Service Request Data Items (Ad-hoc)

4.12.1.1.2.2 DSPReadMaximumDemandImportRegisters (Create Schedule)

N/A

4.12.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	Yes

Table 129 Read Maximum Demand Import Registers Modes of Operation

4.12.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 130 Read Maximum Demand Import Registers Command Variant Values (Ad-hoc)

4.12.1.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time validation.

4.12.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadMaximumDemandImportRegisters>
<ExecutionDateTime>2014-05-01T02:05:00.00Z</ExecutionDateTime>
</ReadMaximumDemandImportRegisters>
```

Figure 126 Sample Read Maximum Demand Import Registers Service Request (Body) Format (Ad-hoc)

4.12.1.2 Responses

The response messages for a "Read Maximum Demand Import Registers" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

When this Service Request is run as DSP Scheduled, the Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.12.1.2.1 Parse Output Format

4.12.1.2.1.1 Format - ReadMaximumDemandImportRegistersRsp

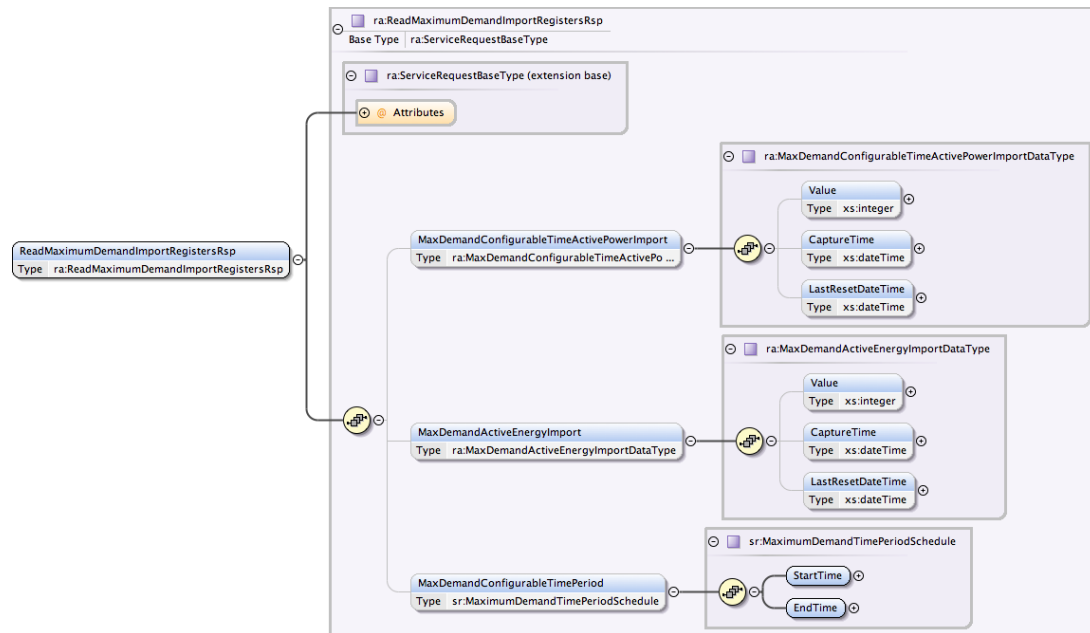


Figure 127 - Read Maximum Demand Import Registers Parse Response Structure

4.12.1.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	002C
GBCS Use Case Number (for information only - not in header)	ECS18b
GBCS Use Case Name (for information only - not in header)	Read Maximum Demand Registers (import)
SupplementaryRemotePartyID	Present where DSP scheduled
SupplementaryRemotePartyCounter	Present where DSP scheduled
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 131 - Read Maximum Demand Import Registers Parse Response Header Data Items

4.12.1.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
MaxDemandConfigurableTimeActivePowerImport	A store capable of holding the largest average value of Active Energy Import recorded in any 30 minute period (commencing at the start of minutes 00 and 30 in each hour) within the time period specified in Maximum Demand Configurable Time Period (including the UTC date and time at the end of the 30 minute period to which the data relates) since the value was last reset, together with the UTC date and time when the value was last reset, arranged such that the recording of a larger value shall cause the previous entry to be overwritten	ra:MaxDemandConfigurableTimeActivePowerImportDataType (see section 4.12.1.2.1.4)	None	N/A	Non-Sensitive
MaxDemandActiveEnergyImport	A store capable of holding the largest average value of Active Energy Import recorded in any 30 minute period (commencing at the start of minutes 00 and 30 in each hour and including the UTC date and time at the end of the 30 minute period to which the data relates) since the value was last, together with the UTC date and time when the value was last reset, arranged such that the recording of a larger value shall cause the previous entry to be overwritten.	ra:MaxDemandActiveEnergyImportDataType (see section 4.12.1.2.1.5)	None	N/A	Non-Sensitive
MaxDemandConfigurableTimePeriod	List of schedules defining the time periods when the Maximum Demand is to be stored	ra: MaximumDemandTimePeriodSchedule (see Annex 6 section 6.18.1.1.3 for the similar sr: MaximumDemandTimePeriodSchedule)	None	N/A	Non-Sensitive

Table 132 - Read Maximum Demand Import Registers Parse Response Body Data Items

4.12.1.2.1.4 MaxDemandConfigurableTimeActivePowerImportDataType Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Value	The largest average value of Active Power recorded in any 30 minute period (commencing at the start of minutes 00 and 30 in each hour) within the time period specified in Maximum Demand Configurable Time Period	xs:integer	None	W	Non-Sensitive
CaptureTime	The UTC date and time at the end of the 30 minute period to which the Value relates	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LastResetDateTime	UTC date time at which the MaximumDemand(ConfigurableTime)ActiveEnergyImportValue.reset method was last used	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 133 - Read Maximum Demand Import Registers Parse Response - MaxDemandConfigurableTimeActivePowerImportDataType Specific Data Items

4.12.1.2.1.5 MaxDemandActiveEnergyImportDataType Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Value	The largest average value of Active Energy Import recorded in any 30 minute period (commencing at the start of minutes 00 and 30 in each hour) within the time period specified in Maximum Demand Configurable Time Period	xs:integer	None	W	Non-Sensitive
CaptureTime	The UTC date and time at the end of the 30 minute period to which the Value relates	xs:dateTime	None	UTC Date-Time	Non-Sensitive
LastResetDateTime	UTC date time at which the MaximumDemandActiveEnergyImportValue.reset method was last used	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 134 - Read Maximum Demand Import Registers Parse Response - MaxDemandActiveEnergyImportDataType Specific Data Items

4.12.1.2.1.6 Sample Response body

```
<ra:ReadMaximumDemandImportRegistersRsp MessageSuccess="true">
  <ra:MaxDemandConfigurableTimeActivePowerImport>
    <ra:Value>50</ra:Value>
    <ra:CaptureTime>2014-08-23T09:00:00.00</ra:CaptureTime>
    <ra:LastResetDateTime>2006-05-04T18:13:51.00</ra:LastResetDateTime>
  </ra:MaxDemandConfigurableTimeActivePowerImport>
  <ra:MaxDemandActiveEnergyImport>
    <ra:Value>50</ra:Value>
    <ra:CaptureTime>2014-08-23T09:00:00.00</ra:CaptureTime>
    <ra:LastResetDateTime>2006-05-04T18:13:51.00</ra:LastResetDateTime>
  </ra:MaxDemandActiveEnergyImport>
  <ra:MaxDemandConfigurableTimePeriod>
    <ra:StartTime>06:00:00.00</ra:StartTime>
    <ra:EndTime>18:00:00.00</ra:EndTime>
  </ra:MaxDemandConfigurableTimePeriod>
</ra:ReadMaximumDemandImportRegistersRsp>
```

Figure 128 - Read Maximum Demand Import Registers Parse Response Sample

4.12.2 Read Maximum Demand Export Registers (4.12.2)

Service Request Name	ReadMaximumDemandRegisters
Service Reference	4.12

Service Request Variant Name	ReadMaximumDemandExportRegisters	
Service Reference Variant	4.12.2	
Service Request Objective	To enable a DCC Service user to read the maximum demand export register values recorded on an ESME.	
Business Context Statement	The DCC Service user has conducted a network analysis survey for network planning purposes and wishes to retrieve maximum demand values.	
User Role Access	<ul style="list-style-type: none"> Electricity Export Supplier (EES) Electricity Network Operator (ENO) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request returns all the Maximum Demand Export Registers available at the meter. It isn't possible to request a subset of them. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x002B	N/A
GBCS Use Case	ECS18a	N/A
GBCS Use Case Name	Read Maximum Demand Registers (export)	N/A
SMETS1 Applicability	No	No

Table 135 Read Maximum Demand Export Registers Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.12.2.1 Service Request

4.12.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadMaximumDemandExportRegisters XML element defines this Service Request and, for Future Dated Requests, contains the Execution Date and Time.

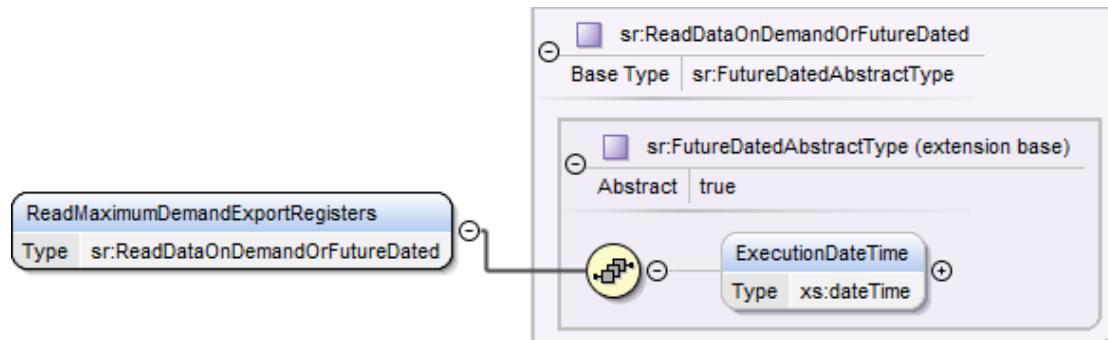


Figure 129 Read Maximum Demand Export Registers Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadMaximumDemandExportRegisters XML element defines this Service Request and doesn't contain any data items.

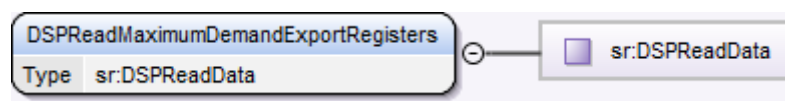


Figure 130 Read Maximum Demand Export Registers Service Request Structure (Create Schedule)

4.12.2.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.12.2.1.2.1 ReadMaximumDemandExortRegisters (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 136 Read Maximum Demand Export Registers Service Request Data Items (Ad-hoc)

4.12.2.1.2.2 DSPReadMaximumDemandExportRegisters (Create Schedule)

N/A

4.12.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	Yes

Table 137 Read Maximum Demand Export Registers Modes of Operation

4.12.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 138 Read Maximum Demand Export Registers Command Variant Values (Ad-hoc)

4.12.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time validation.

4.12.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadMaximumDemandExportRegisters>
<ExecutionDateTime>2014-05-01T02:05:00.00Z</ExecutionDateTime>
</ReadMaximumDemandExportRegisters>
```

Figure 131 Sample Read Maximum Demand Export Registers Service Request (Body) Format (Ad-hoc)

4.12.2.2 Responses

The response messages for a "Read Maximum Demand Export Registers" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

When this Service Request is run as DSP Scheduled, the Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.12.2.2.1 Parse Output Format

4.12.2.2.1.1 Format - ReadMaximumDemandExportRegistersRsp

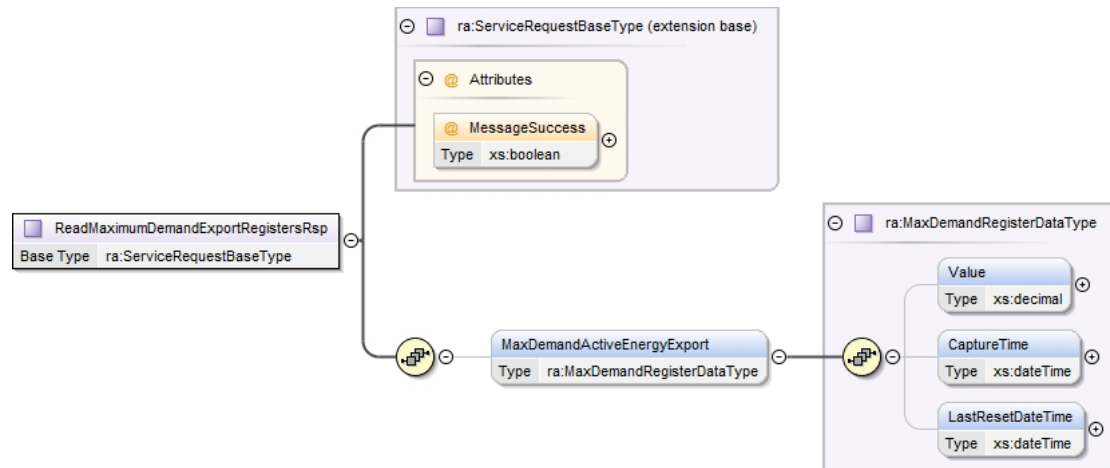


Figure 132 - Read Maximum Demand Export Registers Parse Response Structure

4.12.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	002B
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS18a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Maximum Demand Registers (export)</i>
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 139 - Read Maximum Demand Export Registers Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.12.2.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
MaxDemandActiveEnergyExport	A store capable of holding the largest average value of Active Energy Export recorded in any 30 minute period (commencing at the start of minutes 00 and 30 in each hour and including the UTC date and time at the end of the 30 minute period to which the data relates) since the value was last, together with the UTC date and time when the value was last reset, arranged such that the recording of a larger value shall cause the previous entry to be overwritten.	ra:MaxDemandRegisterDataType (see section 4.12.2.2.1.4)	None	N/A	Non-Sensitive

Table 140 - Read Maximum Demand Export Registers Parse Response Body Data Items

4.12.2.2.1.4 MaxDemandRegisterDataType Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Value	The largest average value of Active Energy Export recorded in any 30 minute period (commencing at the start of minutes 00 and 30 in each hour) within the time period specified in Maximum Demand Configurable Time Period	xs:integer	None	W	Non-Sensitive
CaptureTime	The UTC date and time at the end of the 30 minute period to which the Value relates	xs:dateTime	None	UTC Date-Time	Non-Sensitive
LastResetDateTime	UTC date time at which the MaximumDemandActiveEnergyExportValue.reset method was last used	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 141 - Read Maximum Demand Import Registers Parse Response - MaxDemandRegisterDataType Specific Data Items

4.12.2.2.1.5 Sample Response

```
<ra:ReadMaximumDemandExportRegistersRsp MessageSuccess="true">
  <ra:MaxDemandActiveEnergyExport>
    <ra:Value>50</ra:Value>
    <ra:CaptureTime>2014-08-23T09:00:00.00</ra:CaptureTime>
    <ra:LastResetDateTime>2014-06-12T10:00:00.00</ra:LastResetDateTime>
  </ra:MaxDemandActiveEnergyExport>
</ra:ReadMaximumDemandExportRegistersRsp>
```

Figure 133 - Read Maximum Demand Export Registers Parse Response Sample

4.13 Read Prepayment Configuration (4.13)

Service Request Name	ReadPrepaymentConfiguration
----------------------	-----------------------------

Service Reference	4.13	
Service Request Variant Name	ReadPrepaymentConfiguration	
Service Reference Variant	4.13	
Service Request Objective	To enable a DCC Service user to determine the prepayment specific configuration data that has been set on a smart meter. NB This Service request provides response for the configuration settings of the prepayment, rather than register values which may be retrieved using Service Request 4.3 (see section 4.3)	
Business Context Statement	The DCC Service User wishes to establish the basis on which the meter (operating in prepayment) mode is operating in response to a customer query.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: <i>SME.C.NC</i>	
Service Request Narrative (SMETS2 or later)	<p>This Service Request returns all the Prepayment Configuration data available at the meter as set up by Service Request 2.1 Update Prepay Configuration (see Annex section 2). It isn't possible to request the reading of a subset of the data.</p> <p>For reading the prepayment configuration values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users.</p> <p>Users are advised not to read the Prepayment Configuration from an ESME or GSME prior to the DebtRecoveryRatePeriod values being set using DUIS Service Request 2.1 Update Prepay Configuration and 2.3 Update Debt, as there is a risk that it could cause an error in Parse software.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x003B	0x00B5
GBCS Use Case	ECS26a	GCS21b
GBCS Use Case Name	Read ESME Configuration Data Prepayment	Read GSME Configuration Data Prepayment
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:	

	<ol style="list-style-type: none"> 1. The DCC shall set the values of MaxCreditMaxMeterBalance and CreditMaxCreditThreshold in the SMETS1 Response to the relevant Unsupported Values (see section 19.9). 2. For similar reasons, DCC Service Users are advised not to read the Prepayment Configuration from an ESME or GSME prior to the DebtRecoveryRatePeriod values being set using DUIS Service Request 2.1 Update Prepay Configuration and 2.3 Update Debt, as there is a risk that it could cause unexpected behaviour in responses
--	---

Table 142 Read Prepayment Configuration Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.13.1 Service Request

4.13.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadPrepaymentConfiguration XML element defines this Service Request and only contains the Execution Date Time for Future Dated requests.

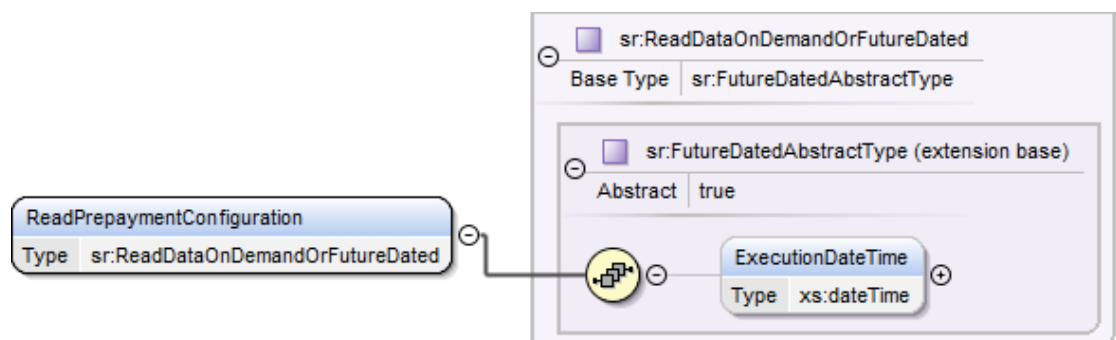


Figure 134 Read Prepayment Configuration Service Request Structure

4.13.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC Service User requires the command to be executed on the Device ID</p> <ul style="list-style-type: none"> • Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 143 Read Prepayment Configuration Service Request Data Items

4.13.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 144 Read Prepayment Configuration Modes of Operation

4.13.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 145 Read Prepayment Configuration Command Variant Values

4.13.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

4.13.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadPrepaymentConfiguration/>

Figure 135 Sample Read Prepayment Configuration Service Request Format

4.13.2 Responses

The response messages for a "Read Prepayment Configuration" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.13.2.1 Parse Output / SMETS1 Response Format

4.13.2.1.1 Format - ReadPrepaymentConfigurationRsp

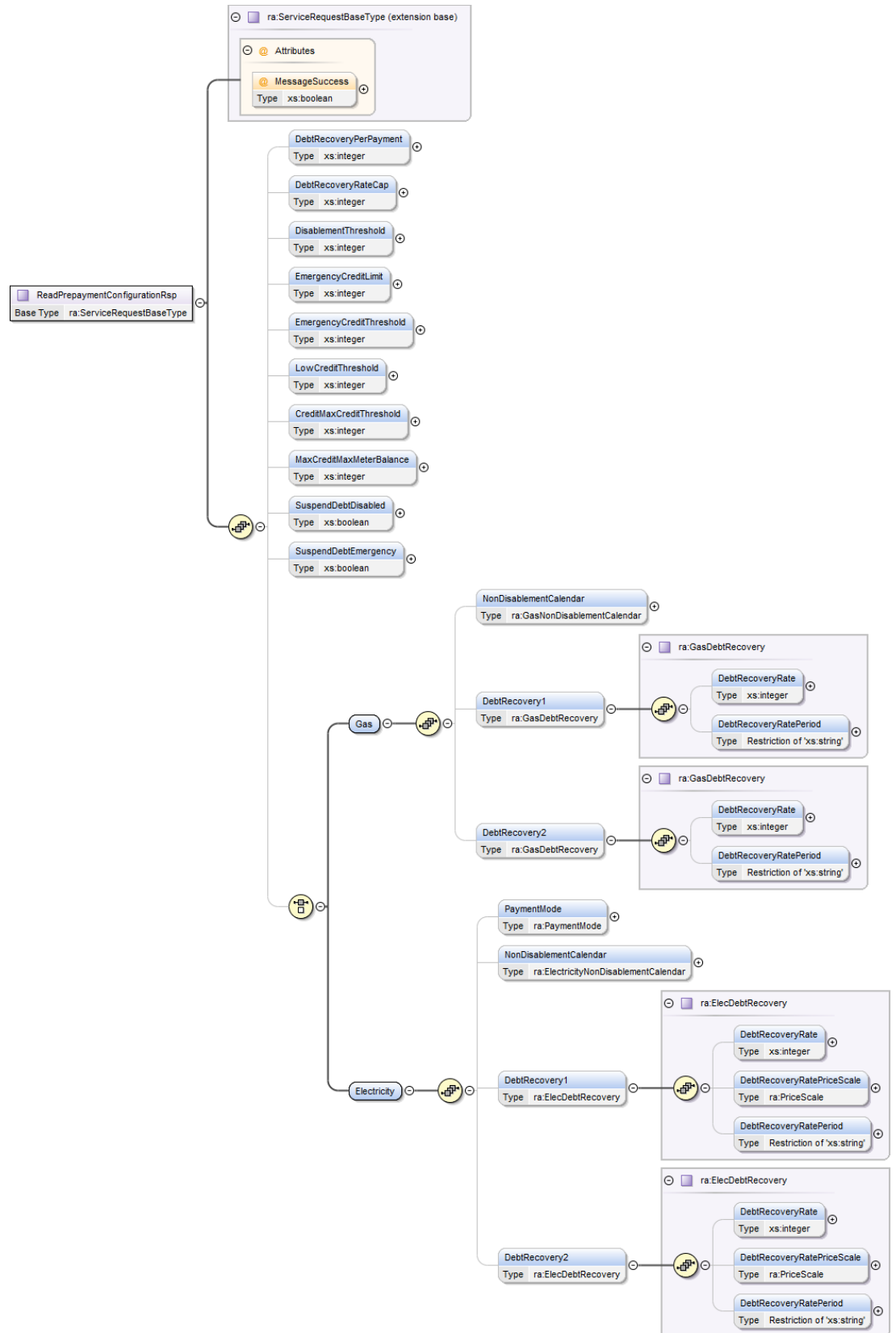


Figure 136 - Read Prepayment Configuration Parse Response / SMETS1 Response Structure

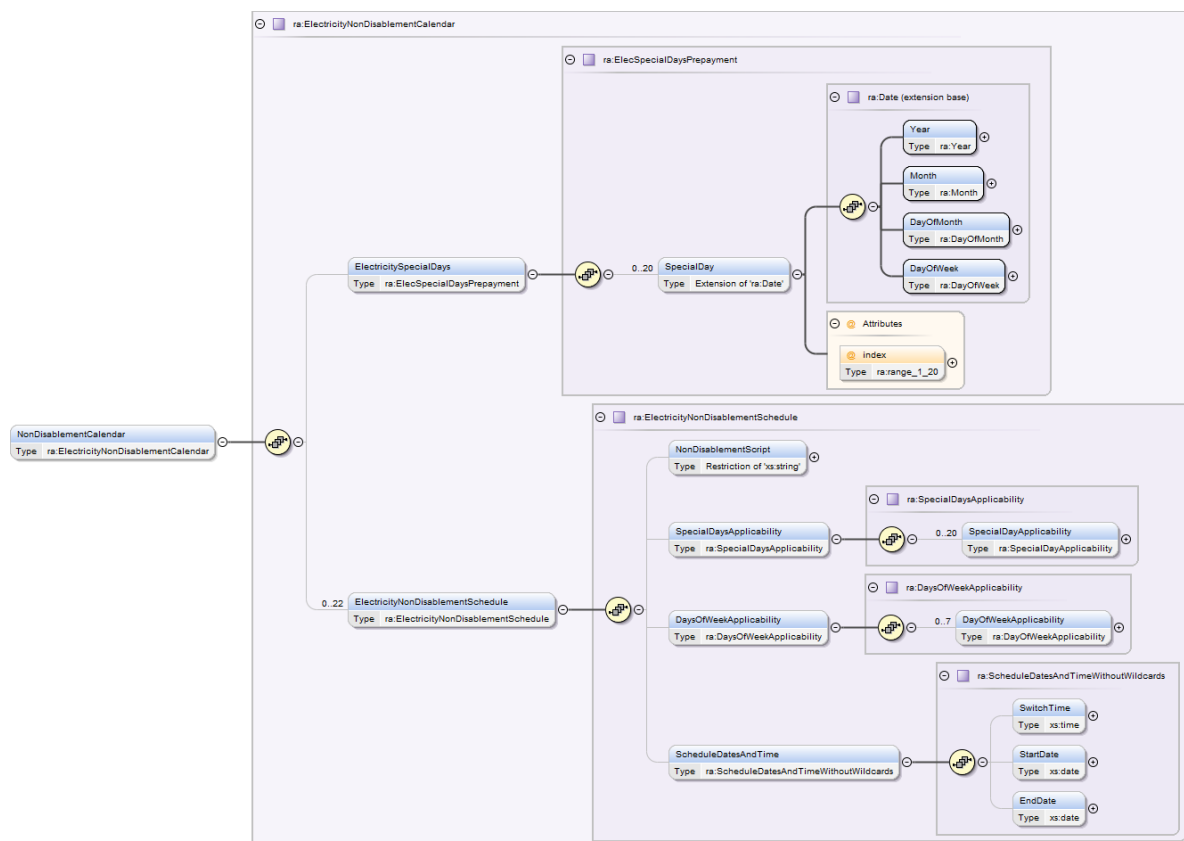


Figure 137 - Read Prepayment Configuration Parse Response / SMETS1 Response – Electricity Non-Disablement Calendar

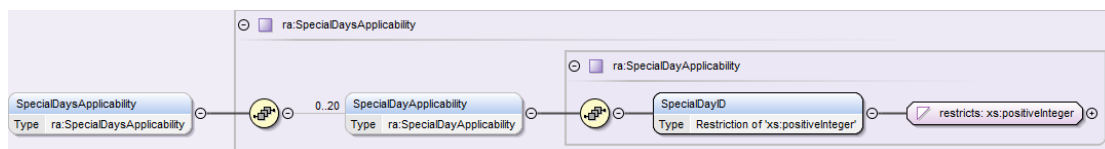


Figure 138 - Read Prepayment Configuration Parse Response / SMETS1 Response – Electricity SpecialDaysApplicability

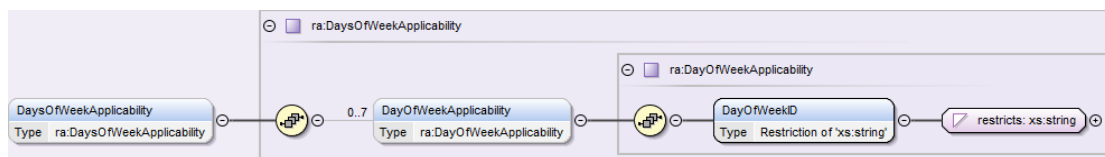


Figure 139 - Read Prepayment Configuration Parse Response / SMETS1 Response – Electricity DaysOfWeekApplicability

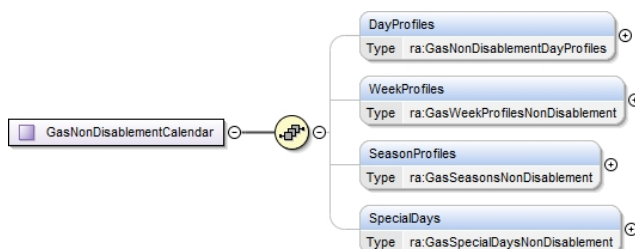


Figure 140 - Read Prepayment Configuration Parse Response / SMETS1 Response – Gas Non-Disablement Calendar

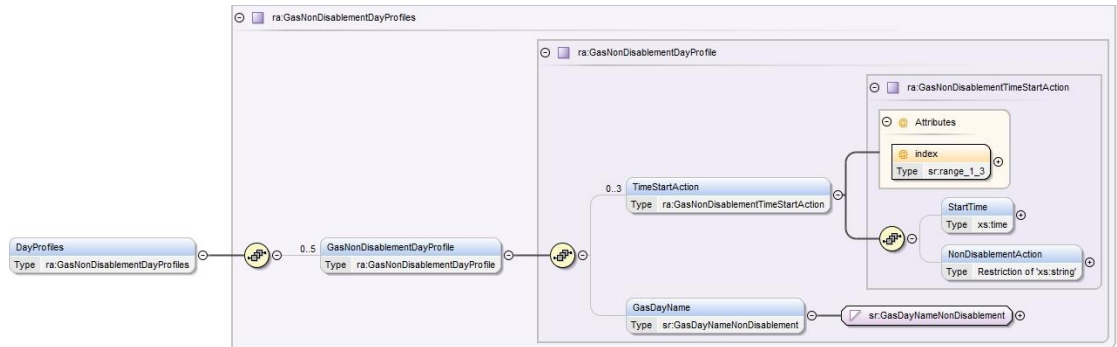


Figure 141 - Read Prepayment Configuration Parse Response / SMETS1 Response – Gas DayProfiles

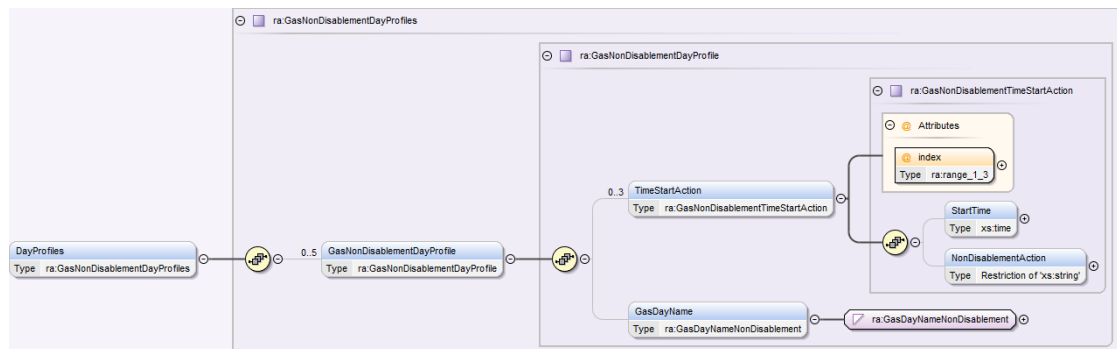


Figure 142 - Read Prepayment Configuration Parse Response / SMETS1 Response – Gas WeekProfiles

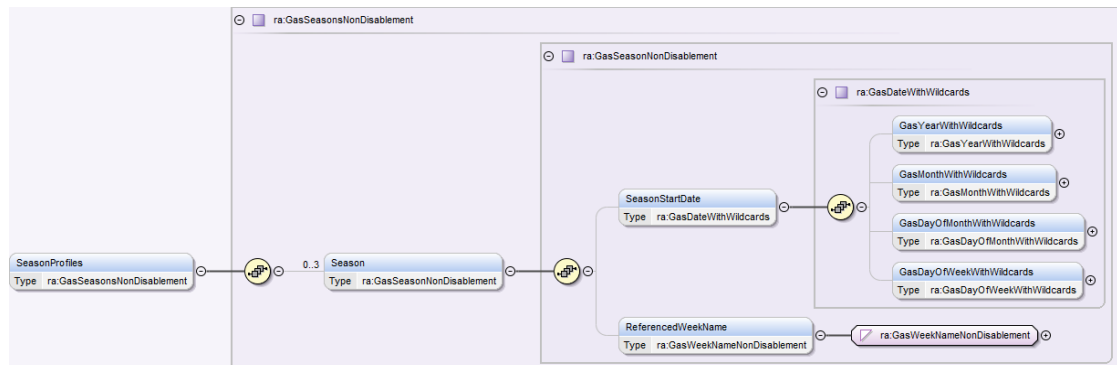


Figure 143 - Read Prepayment Configuration Parse Response / SMETS1 Response – Gas SeasonProfiles

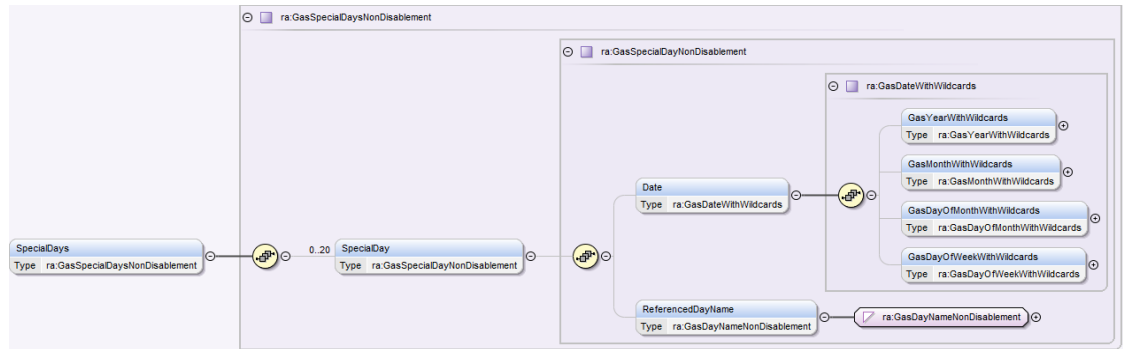


Figure 144 - Read Prepayment Configuration Parse Response / SMETS1 Response – Gas SpecialDays

4.13.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	003B	00B5
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26a</i>	<i>GCS21b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Prepayment</i>	<i>Read GSME Configuration Data Prepayment</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 146 - Read Prepayment Configuration Parse/SMETS1 Response Header Data Items

4.13.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DebtRecoveryPayment	The percentage of a payment to be recovered against debt when the Meter is operating Payment-based Debt Recovery in Prepayment Mode. Valid set: >= 0 and <= 10000 (100.00%)	xs:integer	None	0.01%	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DebtRecoveryRateCap	The maximum amount in Currency Units per unit time (week) that can be recovered through Payment-based Debt Recovery when the Meter is operating in Prepayment Mode.	xs:integer	None	Electricity: GBP / ECB per week Gas: 1000 th pence / cent per week	Non-Sensitive
DisablementThreshold	The threshold in Currency Units for controlling when to Disable the Supply.	xs:integer	None	1000 th pence / cent	Non-Sensitive
EmergencyCreditLimit	The amount of Emergency Credit in Currency Units to be made available to a Consumer when Emergency Credit is activated by the Consumer.	xs:integer	None	1000 th pence / cent	Non-Sensitive
EmergencyCreditThreshold	The threshold in Currency Units below which Emergency Credit may be activated by the Consumer, if so configured, when the Meter is operating in Prepayment Mode.	xs:integer	None	1000 th pence / cent	Non-Sensitive
LowCreditThreshold	The threshold in Currency Units below which a low credit Alert is signalled.	xs:integer	None	1000 th pence / cent	Non-Sensitive
CreditMaxCreditThreshold	Maximum amount of credit permitted per top up. SMETS1: The DCC shall set this value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:integer	None	1000 th pence / cent	Non-Sensitive
MaxCreditMaxMeterBalance	Maximum amount of credit permitted on meter. SMETS1: The DCC shall set this value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:integer	None	1000 th pence / cent	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SuspendDebtDisabled (Electricity only)	<p>A setting controlling whether debt should be collected when the Meter is operating in Prepayment Mode and Supply is Disabled. See SMETS for details.</p> <ul style="list-style-type: none"> true: If the supply is disabled due to lack of credit, then the Meter shall not collect the Time Debts however the Standing Charge is still collected from the Meter Balance false: If the supply is disabled due to lack of credit, then the Meter shall collect the Time Debts and the Standing Charge from the Meter Balance 	xs:Boolean	None	N/A	Non-Sensitive
SuspendDebtEmergency (Electricity only)	<p>A setting controlling whether debt should be collected when the Meter is operating in Prepayment Mode and Emergency Credit has been activated. See SMETS for details.</p> <ul style="list-style-type: none"> true: If Emergency Credit is in use, then the Meter shall not collect the Standing Charge or Time Debts from the Emergency Credit Balance and will instead increment the Accumulated Debt Register false: If Emergency Credit is in use, then the Meter shall collect the Standing Charge and Time Debts from the Emergency Credit Balance 	xs:Boolean	None	N/A	Non-Sensitive

Table 147 - Read Prepayment Configuration Parse Response / SMETS1 Response Body Data Items

¹ ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional

4.13.2.1.4 Gas Only Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Gas NonDisablementCalendar	Calendar defining the time periods when Non-Disablement applies or doesn't apply Gas Only	ra: GasNonDisablementCalendar ¹ (see Annex section 2.1 for the similar sr: GasNonDisablementCalendar)	None	N/A	Non-Sensitive
Gas DebtRecovery1	Structure defining the Debt Recovery Gas Only	ra:GasDebtRecovery (See 4.13.2.1.7)	None	N/A	Non-Sensitive

Gas DebtRecovery2	Structure defining the Debt Recovery Gas Only	ra:GasDebtRecovery (See 4.13.2.1.7)	None	N/A	Non-Sensitive
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4.13.2.1.5 Electricity Only Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PaymentMode	The payment mode in which the meter is operating. Valid set: <ul style="list-style-type: none"> Prepayment Credit 	Restriction of xs:string (enumeration)	None	N/A	Non-sensitive
Electricity NonDisablementCalendar	Structure defining the Non Disablement schedules Electricity Only	ra: ElectricityNonDisablementCalendar (see Annex section 2.1 for the similar sr: ElectricityNonDisablementCalendar)	None	N/A	Non-Sensitive
Electricity DebtRecovery1	Structure defining the Debt Recovery Electricity Only	ra:ElecDebtRecovery (See 4.13.2.1.6)	None	N/A	Non-Sensitive
Electricity DebtRecovery2	Structure defining the Debt Recovery Electricity Only	ra:ElecDebtRecovery (See 4.13.2.1.6)	None	N/A	Non-Sensitive

4.13.2.1.6 Electricity Debt Recovery Type

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DebtRecoveryRate	Debt recovery rate in Currency Units per unit time for the first time-based debt recovery register when the Meter is using Time-based Debt Recovery in Prepayment Mode. The period over which this debt is recovered is set in the DebtRecoveryRatePeriod field.	xs:integer	None	Value when multiplied by the scale is GBP/EUROs	Non-Sensitive
DebtRecoveryRatePriceScale	A multiplier applied to the DebtRecoveryRatevalue. Note this is the value of n in 10^n (10 to the power of n). For example a DebtRecoveryRate of 1 and a DebtRecoveryRatePriceScale of -2 would result in a DebtRecoveryRate of £0.01	ra:PriceScale (Restriction of xs:integer minimum = -128, maximum=127)	None	N/A	Non-Sensitive
DebtRecoveryRatePeriod	The period after which the debt is recovered. For an Electricity meter this can be; <ul style="list-style-type: none"> HOURLY DAILY WEEKLY MONTHLY QUARTERLY 	Restriction of xs:string (Enumeration)	None	N/A	Non-Sensitive

4.13.2.1.7 Gas Debt Recovery Type

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DebtRecoveryRate	Debt recovery rate in Currency Units per unit time for the first time-based debt recovery register when the Meter is using Time-based Debt Recovery in Prepayment Mode.	xs:integer	None	1000 th Pence / cent per Day	Non-Sensitive
DebtRecoveryRatePeriod	The unit time in which DebtRecoveryRate1 will apply. <ul style="list-style-type: none"> HOURLY DAILY 	Restriction of xs:string (Enumeration)	None	N/A	Non-Sensitive

Sample Response

<pre> <ra:ReadPrepaymentConfigurationRsp MessageSuccess="true"> <ra:DebtRecoveryPerPayment>25</ra:DebtRecoveryPerPayment> <ra:DebtRecoveryRateCap>50</ra:DebtRecoveryRateCap> <ra:DisablementThreshold>10000</ra:DisablementThreshold> <ra:EmergencyCreditLimit>50</ra:EmergencyCreditLimit> <ra:EmergencyCreditThreshold>5000000</ra:EmergencyCreditThreshold> <ra:LowCreditThreshold>5000000</ra:LowCreditThreshold> <ra:CreditMaxCreditThreshold>5000000</ra:CreditMaxCreditThreshold> <ra:MaxCreditMaxMeterBalance>5000000</ra:MaxCreditMaxMeterBalance> <ra:SuspendDebtDisabled>true</ra:SuspendDebtDisabled> <ra:SuspendDebtEmergency>true</ra:SuspendDebtEmergency> <ra:Electricity> <ra:PaymentMode>Prepayment</ra:PaymentMode> ← See Figure 146 for details of Electricity Non-Disablement Calendar → <ra:DebtRecovery1> <ra:DebtRecoveryRate>5000000</ra:DebtRecoveryRate> <ra:DebtRecoveryRatePriceScale>-5</ra:DebtRecoveryRatePriceScale> <ra:DebtRecoveryRatePeriod>DAILY</ra:DebtRecoveryRatePeriod> </ra:DebtRecovery1> <ra:DebtRecovery2> <ra:DebtRecoveryRate>50</ra:DebtRecoveryRate> <ra:DebtRecoveryRatePriceScale>-5</ra:DebtRecoveryRatePriceScale> <ra:DebtRecoveryRatePeriod>DAILY</ra:DebtRecoveryRatePeriod> </ra:DebtRecovery2> </ra:Electricity> </ra:ReadPrepaymentConfigurationRsp> </pre>

Figure 145 - Read Prepayment Configuration Parse Response Sample – Electricity

```
<ra:NonDisablementCalendar>
  <ra:ElectricitySpecialDays>
    <ra:SpecialDay index="1">
      <ra:Year>
        <ra:SpecifiedYear>2015</ra:SpecifiedYear>
      </ra:Year>
      <ra:Month>
        <ra:SpecifiedMonth>6</ra:SpecifiedMonth>
      </ra:Month>
      <ra:DayOfMonth>
        <ra:SpecifiedDayOfMonth>16</ra:SpecifiedDayOfMonth>
      </ra:DayOfMonth>
      <ra:DayOfWeek>
        <ra:NonSpecifiedDayOfWeek/>
      </ra:DayOfWeek>
    </ra:SpecialDay>
  </ra:ElectricitySpecialDays>
  <ra:ElectricityNonDisablementSchedule>
    <ra:NonDisablementScript>START</ra:NonDisablementScript>
    <ra:SpecialDaysApplicability>
      <ra:SpecialDayApplicability>
        <ra:SpecialDayID>1</ra:SpecialDayID>
      </ra:SpecialDayApplicability>
    </ra:SpecialDaysApplicability>
    <ra:DaysOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Monday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Tuesday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
    </ra:DaysOfWeekApplicability>
    <ra:ScheduleDatesAndTime>
      <ra:SwitchTime>01:01:01.00</ra:SwitchTime>
      <ra:StartDate>2015-09-07</ra:StartDate>
      <ra:EndDate>2020-12-31</ra:EndDate>
    </ra:ScheduleDatesAndTime>
  </ra:ElectricityNonDisablementSchedule>
</ra:NonDisablementCalendar>
```

Figure 146 - Read Prepayment Configuration Parse Response Sample – Electricity Non-Disablement Calendar

```
<ra:ReadPrepaymentConfigurationRsp MessageSuccess="true">
  <ra:DebtRecoveryPerPayment>25</ra:DebtRecoveryPerPayment>
  <ra:DebtRecoveryRateCap>5000000</ra:DebtRecoveryRateCap>

  <ra:DisablementThreshold>10000</ra:DisablementThreshold>
  <ra:EmergencyCreditLimit>5000000</ra:EmergencyCreditLimit>
  <ra:EmergencyCreditThreshold>5000000</ra:EmergencyCreditThreshold>
  <ra:LowCreditThreshold>5000000</ra:LowCreditThreshold>
  <ra:CreditMaxCreditThreshold>5000000</ra:CreditMaxCreditThreshold>
  <ra:MaxCreditMaxMeterBalance>5000000</ra:MaxCreditMaxMeterBalance>

  <ra:Gas>

← See Figure 148 for details of Gas Non-Disablement Calendar →
  <ra:DebtRecovery1>
    <ra:DebtRecoveryRate>5000000</ra:DebtRecoveryRate>
    <ra:DebtRecoveryRatePeriod>DAILY</ra:DebtRecoveryRatePeriod>
  </ra:DebtRecovery1>
  <ra:DebtRecovery2>
    <ra:DebtRecoveryRate>5000000</ra:DebtRecoveryRate>
    <ra:DebtRecoveryRatePeriod>DAILY</ra:DebtRecoveryRatePeriod>
  </ra:DebtRecovery2>
  </ra:Gas>
</ra:ReadPrepaymentConfigurationRsp>
```

Figure 147 - Read Prepayment Configuration Parse Response Sample – Gas

```
<ra:NonDisablementCalendar>
  <ra:DayProfiles>
    <ra:GasNonDisablementDayProfile>
      <ra:TimeStartAction index="1">
        <ra:StartTime>00:00:00.00</ra:StartTime>
        <ra:NonDisablementAction>START</ra:NonDisablementAction>
      </ra:TimeStartAction>
      <ra:TimeStartAction index="2">
        <ra:StartTime>01:00:00.00</ra:StartTime>
        <ra:NonDisablementAction>STOP</ra:NonDisablementAction>
      </ra:TimeStartAction>
      <ra:GasDayName>3</ra:GasDayName>
    </ra:GasNonDisablementDayProfile>
  </ra:DayProfiles>
  <ra:WeekProfiles>
    <ra:WeekProfile>
      <ra:WeekName>01</ra:WeekName>
      <ra:ReferencedDayName index="1">01</ra:ReferencedDayName>
      <ra:ReferencedDayName index="2">01</ra:ReferencedDayName>
      <ra:ReferencedDayName index="3">01</ra:ReferencedDayName>
      <ra:ReferencedDayName index="4">01</ra:ReferencedDayName>
      <ra:ReferencedDayName index="5">01</ra:ReferencedDayName>
      <ra:ReferencedDayName index="6">02</ra:ReferencedDayName>
      <ra:ReferencedDayName index="7">02</ra:ReferencedDayName>
    </ra:WeekProfile>
  </ra:WeekProfiles>
  <ra:SeasonProfiles>
    <ra:Season>
      <ra:SeasonStartDate>
        <ra:GasYearWithWildcards><ra:SpecifiedYear>2015</ra:SpecifiedYear></ra:GasYearWithWildcards>
        <ra:GasMonthWithWildcards><ra:SpecifiedMonth>12</ra:SpecifiedMonth></ra:GasMonthWithWildcards>
        <ra:GasDayOfMonthWithWildcards><ra:SpecifiedDayOfMonth>1</ra:SpecifiedDayOfMonth></ra:GasDayOfMonthWithWildcards>
        <ra:GasDayOfWeekWithWildcards>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:GasDayOfWeekWithWildcards>
      </ra:SeasonStartDate>
      <ra:ReferencedWeekName>1</ra:ReferencedWeekName>
    </ra:Season>
  </ra:SeasonProfiles>
  <ra:SpecialDays>
    <ra:SpecialDay>
      <ra:Date>
        <ra:GasYearWithWildcards><ra:SpecifiedYear>2015</ra:SpecifiedYear></ra:GasYearWithWildcards>
        <ra:GasMonthWithWildcards><ra:SpecifiedMonth>1</ra:SpecifiedMonth></ra:GasMonthWithWildcards>
        <ra:GasDayOfMonthWithWildcards><ra:SpecifiedDayOfMonth>1</ra:SpecifiedDayOfMonth></ra:GasDayOfMonthWithWildcards>
        <ra:GasDayOfWeekWithWildcards>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:GasDayOfWeekWithWildcards>
      </ra:Date>
      <ra:ReferencedDayName>1</ra:ReferencedDayName>
    </ra:SpecialDay>
    <ra:SpecialDay>
      <ra:Date>
        <ra:GasYearWithWildcards><ra:SpecifiedYear>2015</ra:SpecifiedYear></ra:GasYearWithWildcards>
        <ra:GasMonthWithWildcards><ra:SpecifiedMonth>12</ra:SpecifiedMonth></ra:GasMonthWithWildcards>
        <ra:GasDayOfMonthWithWildcards><ra:SpecifiedDayOfMonth>25</ra:SpecifiedDayOfMonth></ra:GasDayOfMonthWithWildcards>
        <ra:GasDayOfWeekWithWildcards>
          <ra:NonSpecifiedDayOfWeek></ra:NonSpecifiedDayOfWeek>
        </ra:GasDayOfWeekWithWildcards>
      </ra:Date>
      <ra:ReferencedDayName>3</ra:ReferencedDayName>
    </ra:SpecialDay>
  </ra:SpecialDays>
</ra:NonDisablementCalendar>
```

Figure 148 - Read Prepayment Configuration Parse Response Sample – Gas Non-Disablement Calendar

4.14 Read Prepayment Daily Read Log (4.14)

Service Request Name	ReadPrepaymentDailyReadLog
Service Reference	4.14
Service Request Variant Name	ReadPrepaymentDailyReadLog

Service Reference Variant	4.14
Service Request Objective	To enable a DCC Service User to obtain a Daily Read Log entry from an ESME, GPF/GSME for a specified date-time period.
Business Context Statement	Enables a DCC Service User to request the retrieval of a stored Daily Read Log entry for a specific date period (Enables a reading at a specific time (e.g. midnight) to be retrieved at a later time (for example on change of Supplier).
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical, Request is non-sensitive and Response is sensitive GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> The <i>Prepayment Daily Read Log</i>, as defined by SMETS, is a log capable of storing thirty one UTC date and time stamped entries of; <ul style="list-style-type: none"> <i>Meter Balance</i> <i>Emergency Credit Balance</i>, <i>Accumulated Debt Register</i>, <i>Payment Debt Register</i> and <i>Time Debt Registers [1 ... 2]</i> <p>arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten.</p> This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned. Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. This could be the 'current' or the 'old' Registered Supplier. Because this Service Request returns Sensitive data, URPs (i.e. the 'old' Registered Supplier), have to include in the Request the Public Security Credentials they want the Device to sign the Response with. <ol style="list-style-type: none"> Access Control will allow the 'old' Registered Import Supplier and the 'current' Registered Import Supplier to read the Prepayment Daily Read Log entry for a CoS Date identified from registration data. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. This will never be the 'old' Registered Supplier. Note also that this Service Request should not be scheduled for a GSME as the GSME will reject the commands if sent by the DSP as part of a schedule. The GPF should be the target device for DSP Scheduled commands. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents.

	<p>6. For reading the prepayment daily read log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users.</p> <p>7. Only the registered GIS may successfully request RetrieveBillingCalendarTriggeredBillingDataLog data from the GSME direct, all previously registered GIS Users must target the Service Request to the GPF.</p> <p>8. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example:</p> <ul style="list-style-type: none"> To ensure inclusive, use 20/11/2018 00:00:00, To ensure exclusive, use 19/11/2018 23:59:58 <p>9.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0034	0x0096
GBCS Use Case	ECS21b	GCS16b
GBCS Use Case Name	Read Electricity (Prepayment) Daily Read Log	Read GSME Daily Read log(s) (prepayment)
SMETS1 Applicability	No	No

Table 148 Read Prepayment Daily Read Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.14.1 Service Request

4.14.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadPrepaymentDailyReadLog XML element defines this Service Request and contains the date interval for which the log is to be retrieved, for URP the Key Agreement Public Security Credentials and, for Future Dated, the Execution Date Time.

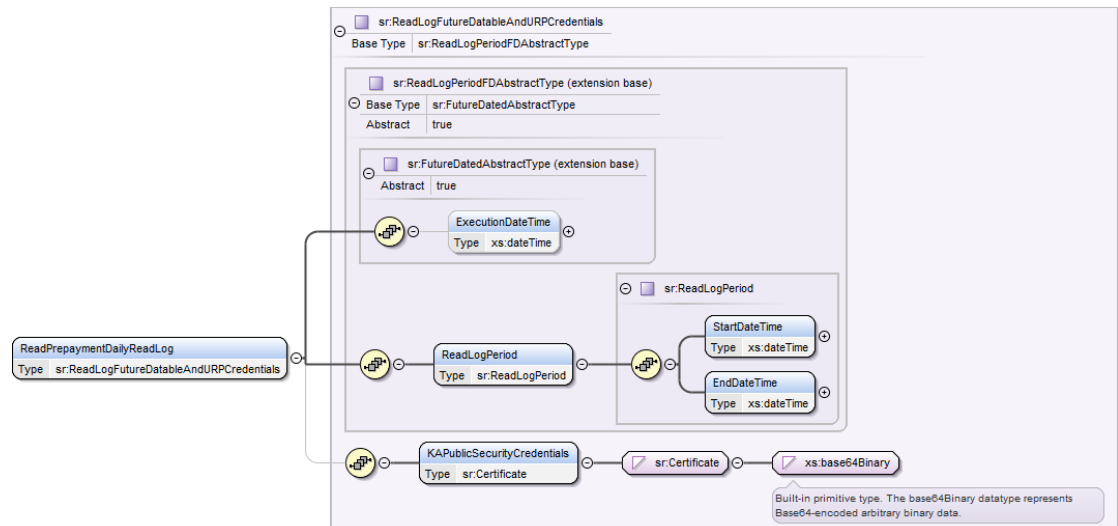


Figure 149 Read Prepayment Daily Read Log Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadPrepaymentDailyReadLog XML element defines this Service Request and contains the date-time interval for which the log is to be retrieved, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

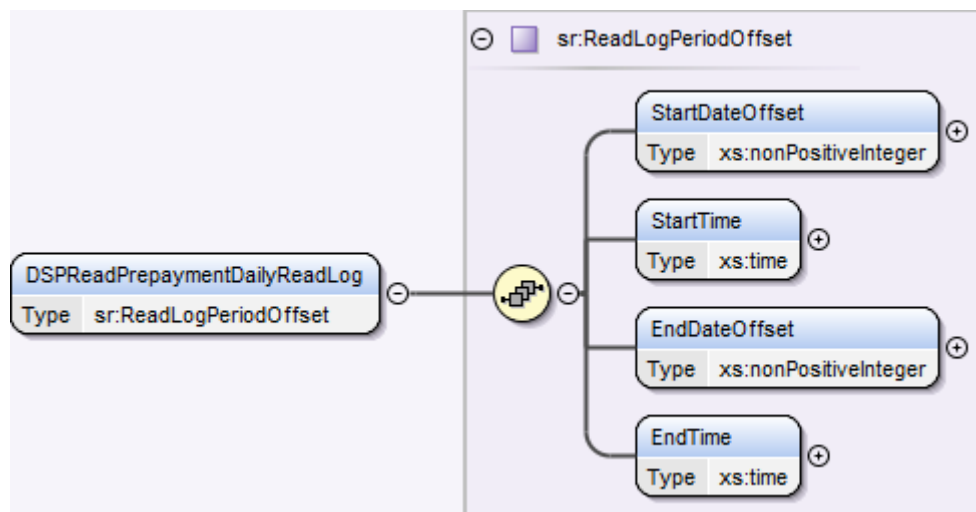


Figure 150 Read Prepayment Daily Read Log Service Request Structure (Create Schedule)

4.14.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.14.1.2.1.1 ReadPrepaymentDailyReadLog (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Old Registered Supplier)	sr:Certificate (xs:base64Binary)	Registered Supplier: N/A Old Registered Supplier ¹ : Yes	None	N/A	Non-Sensitive

Table 149 Read Prepayment Daily Read Log Service Request Data Items (Ad-hoc)

¹ Mandatory for User Roles EIS and GIS that were registered parties (KRPs) to the Device for the required time period, but they no longer are

4.14.1.2.1.2 DSPReadPrepaymentDailyReadLog (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPReadPrepaymentDailyReadLog	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriod Offset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 150 Read Prepayment Daily Read Log Service Request Data Items (Create Schedule)

4.14.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	Yes

Table 151 Read Prepayment Daily Read Log Modes of Operation

4.14.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 152 Read Prepayment Daily Read Log Command Variant Values (Ad-hoc)

4.14.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time, Key Agreement Public Security Credentials and Read Log Period, Public Security Credentials and Device Applicability validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset and Device Applicability validation.

4.14.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadPrepaymentDailyReadLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</ReadPrepaymentDailyReadLog>
```

Figure 151 Sample Read Prepayment Daily Read Log Service Request Format (Ad-hoc)

4.14.2 Responses

The response messages for a "Read Prepayment Daily Read Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device). Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

When this Service Request is run as DSP Scheduled, the Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.14.2.1 Parse Output Format

4.14.2.1.1 Format - ReadPrepaymentDailyReadLogRsp

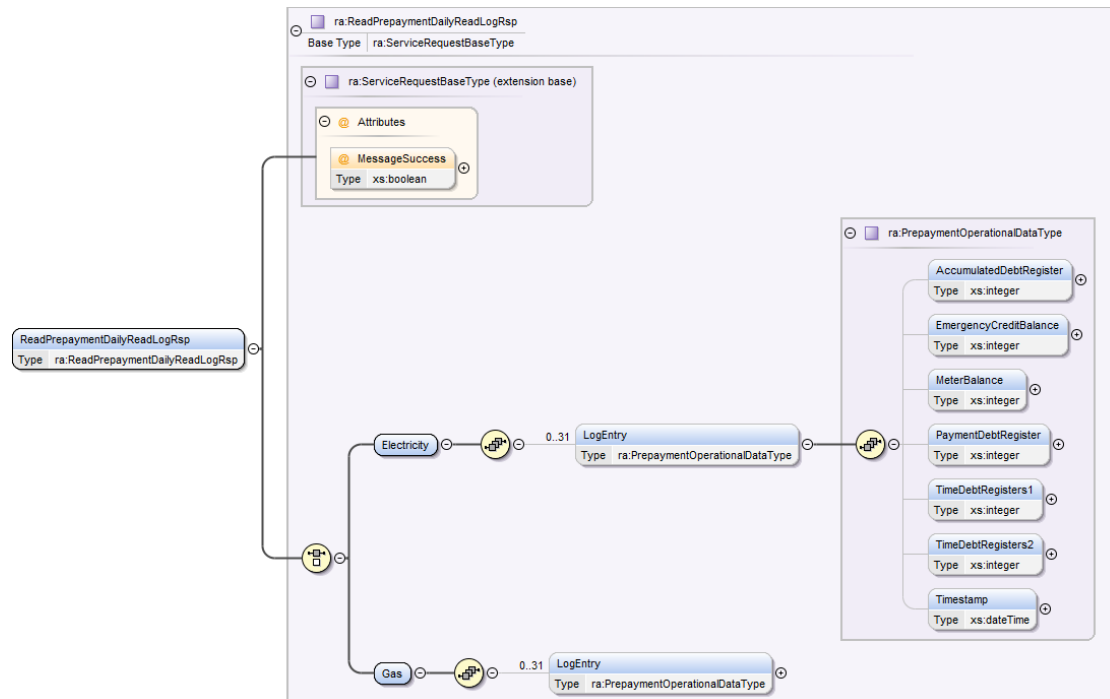


Figure 152 - Read Prepayment Daily Read Log Parse Response Structure

4.14.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0034	0096
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS21b</i>	<i>GCS16b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Electricity (Prepayment) Daily Read Log</i>	<i>Read GSME Daily Read log(s) (prepayment)</i>
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Present where originator is a URP	Present where originator is a URP
Timestamp	Not Present	Not Present

Table 153 - Read Prepayment Daily Read Log Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.14.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry ¹	Each of the up to 31 entries of the Prepayment Daily Read Log. This log is capable of storing thirty one UTC date and time stamped entries of Meter Balance, Emergency Credit Balance, Accumulated Debt Register, Payment Debt Register and Time Debt Registers [1 ..2] arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. Only log entries within the date range specified in the Service Request will be returned.	ra:PrepaymentOperationalDataType (see section 4.14.2.1.4)	None	N/A	Sensitive

Table 154 - Read Prepayment Daily Read Log Parse Response Body Data Items

¹ Maximum 31**4.14.2.1.4 PrepaymentOperationalDataType Specific Data Items**

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AccumulatedDebtRegister	The debt resulting from the collection of Standing Charge and/or time-based debt when Emergency Credit is in Use as configured by Suspend Debt Emergency, when operating in Prepayment Mode	xs:integer	None	1000th pence / cent	Sensitive
EmergencyCreditBalance	The amount of Emergency Credit available to the Consumer after it has been activated by the Consumer.	xs:integer	None	1000th pence / cent	Sensitive
MeterBalance	When operating in Prepayment Mode, the Meter Balance represents the Smart Meter's determination of the amount of credit available to the Consumer (excluding any Emergency Credit Balance)	xs:integer	None	1000th pence / cent	Sensitive
PaymentDebtRegister	Amount of debt to be recovered as a percentage of payment when using Payment-based Debt Recovery in Prepayment Mode	xs:integer	None	1000th pence / cent	Sensitive
TimeDebtRegisters 1	One of two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery in Prepayment Mode	xs:integer	None	1000th pence / cent	Sensitive
TimeDebtRegisters 2	One of two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery in Prepayment Mode	xs:integer	None	1000th pence / cent	Sensitive
Timestamp	The UTC date-time at which the corresponding log entry was taken	xs:dateTime	None	UTC Date-Time	Sensitive

Table 155 - Read Prepayment Daily Read Log Parse Response - PrepaymentOperationalDataTypeSpecific Data Items

4.14.2.1.5 Sample Response body

```
<ra:ReadPrepaymentDailyReadLogRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:LogEntry>
      <ra:AccumulatedDebtRegister>250000</ra:AccumulatedDebtRegister>
      <ra:EmergencyCreditBalance>100000</ra:EmergencyCreditBalance>
      <ra:MeterBalance>123000</ra:MeterBalance>
      <ra:PaymentDebtRegister>500</ra:PaymentDebtRegister>
      <ra:TimeDebtRegisters1>70</ra:TimeDebtRegisters1>
      <ra:TimeDebtRegisters2>80</ra:TimeDebtRegisters2>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntry>
  </ra:Electricity>
</ra:ReadPrepaymentDailyReadLogRsp>
```

Figure 153 - Read Prepayment Daily Read Log Parse Response Sample – Electricity

```
<ra:ReadPrepaymentDailyReadLogRsp MessageSuccess="true">
  <ra:Gas>
    <ra:LogEntry>
      <ra:AccumulatedDebtRegister>250000</ra:AccumulatedDebtRegister>
      <ra:EmergencyCreditBalance>100000</ra:EmergencyCreditBalance>
      <ra:MeterBalance>123000</ra:MeterBalance>
      <ra:PaymentDebtRegister>500</ra:PaymentDebtRegister>
      <ra:TimeDebtRegisters1>70</ra:TimeDebtRegisters1>
      <ra:TimeDebtRegisters2>80</ra:TimeDebtRegisters2>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntry>
  </ra:Gas>
</ra:ReadPrepaymentDailyReadLogRsp>
```

Figure 154 - Read Prepayment Daily Read Log Parse Response Sample – Gas

4.15 Read Load Limit Data (4.15)

Service Request Name	ReadLoadLimitData
Service Reference	4.15
Service Request Variant Name	ReadLoadLimitData
Service Reference Variant	4.15
Service Request Objective	To enable a DCC Service User to read the Load Limit Data on a specified Electricity Smart Meter.
Business Context Statement	When a customer has a load limited tariff and the DCC Service User needs to read how many times the load limiter has activated.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request reads the following data item values as defined in SMETS <ul style="list-style-type: none"> <i>Load Limit Counter</i> <i>Load Limit Supply State</i> <i>Load Limit Power Threshold</i> <i>Load Limit Period</i> <i>Load Limit Restoration Period</i> This Service Request returns the Load Limit Data available at the meter. It isn't possible to request a subset of it. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0042	N/A
GBCS Use Case	ECS27	N/A
GBCS Use Case Name	Read ESME Load Limit Data	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> The DCC shall set the values of LoadLimitPeriod and LoadLimitRestorationPeriod in the SMETS1 Response to the relevant Unsupported Values (see section 19.9). 	

Table 156 Read Load Limit Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.15.1 Service Request

4.15.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadLoadLimitData XML element defines this Service Request and, for Future Dated Requests, contains the Execution Date Time.

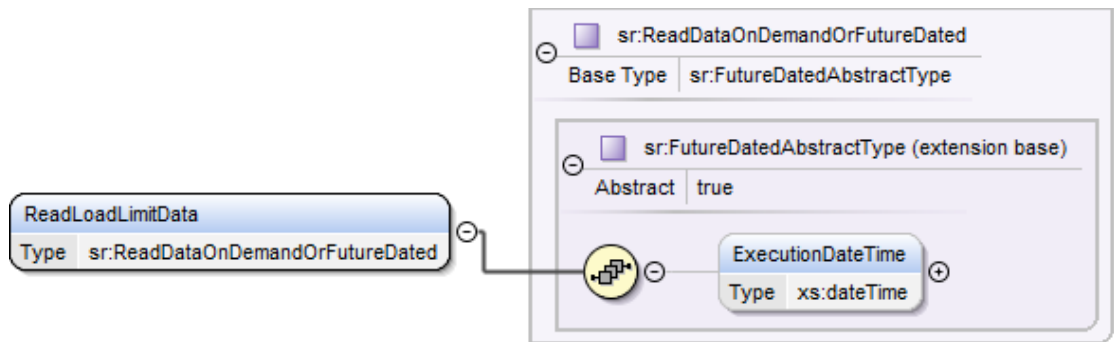


Figure 155 Read Load Limit Data Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadLoadLimitData XML element defines this Service Request and doesn't contain any data items.



Figure 156 Read Load Limit Data Service Request Structure (Create Schedule)

4.15.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.15.1.2.1.1 ReadLoadLimitData (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC Service User requires the command to be executed on the Device ID</p> <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 157 Read Load Limit Data Service Request Data Items (Ad-hoc)

4.15.1.2.1.2 DSPReadLoadLimitData (Create Schedule)

N/A.

4.15.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	Yes
SMETS1	No	Yes	No	DSP	Yes

Table 158 Read Load Limit Data Modes of Operation

4.15.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 159 Read Load Limit Data Command Variant Values (Ad-hoc)

4.15.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time validation.

4.15.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadLoadLimitData>  
<ExecutionDateTime>2014-03-01T02:00:00.00Z</ExecutionDateTime>  
</ReadLoadLimitData>
```

Figure 157 Sample Read Load Limit Data Service Request Format (Ad-hoc)

4.15.2 Responses

The response messages for a "Read Load Limit Data" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Service Response (from Device) is a variation of the generic one and it follows the structure defined in section 4.8.1.2.2 for Service Request 4.8.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.15.2.1 Parse Output / SMETS1 Response Format

4.15.2.1.1 Format - ReadLoadLimitDataRsp

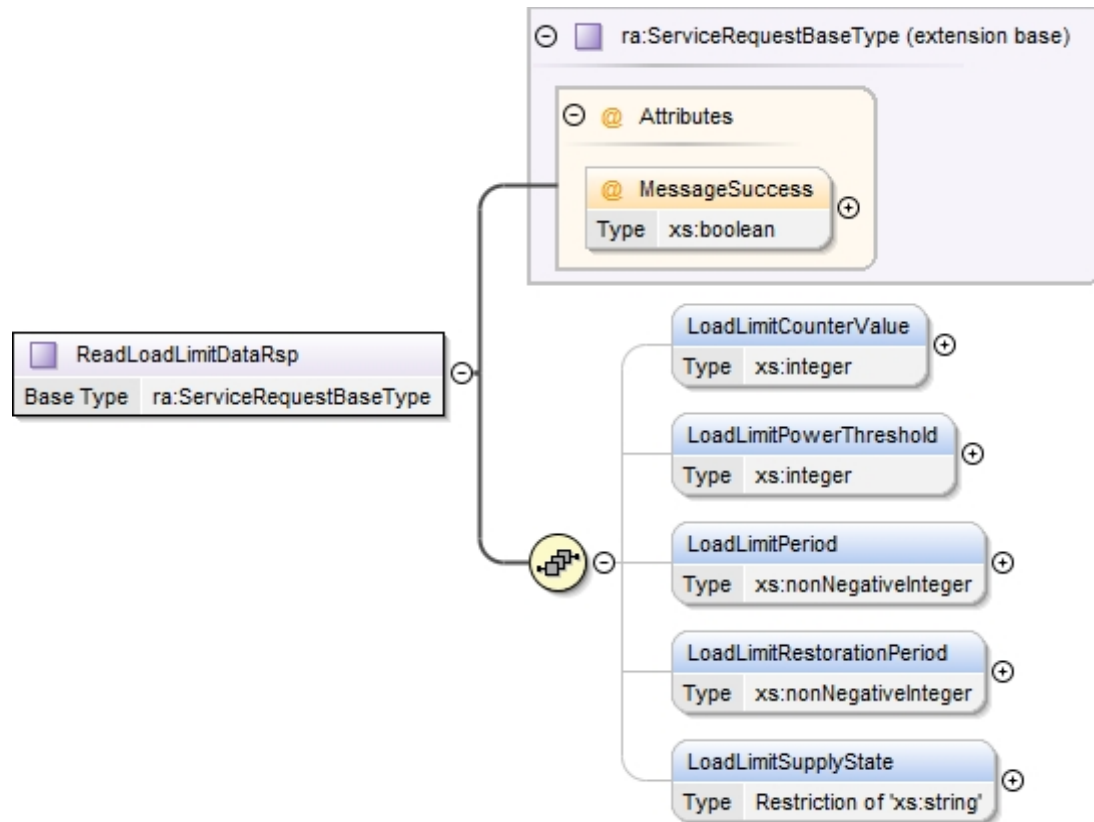


Figure 158 - Read Load Limit Data Parse Response / SMETS1 Response Structure

4.15.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0042
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS27</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Load Limit Data</i>
SupplementaryRemotePartyID	Present where DSP scheduled
SupplementaryRemotePartyCounter	Present where DSP scheduled
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 160 - Read Load Limit Data Parse Response Header Data Items

4.15.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LoadLimitCounterValue	The count of load limit events since last reset	xs:integer	None	N/A	Non-Sensitive
LoadLimitPowerThreshold	The Active Power threshold above which the measurement of a Load Limit Period is commenced	xs:integer	None	W	Non-Sensitive
LoadLimitPeriod	The length of time which the Active Power Import needs to continuously exceed the Load Limit Power Threshold before a load limiting event is deemed to have occurred SMETS1: The DCC shall set this value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:nonNegativeInteger	None	Seconds	Non-Sensitive
LoadLimitRestorationPeriod	The length of time after the Supply has been Armed following a Load Limiting Event before the Supply is Enabled by the Electricity Smart Meter SMETS1: The DCC shall set this value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:nonNegativeInteger	None	Seconds	Non-Sensitive
LoadLimitSupplyState	A setting to control the state of the Supply in the case of a load limiting occurring, being: <ul style="list-style-type: none"> Disable Unchanged 	Restriction of xs:string (Enumeration)	None	N/A	Non-Sensitive

Table 161 - Read Load Limit Data Parse Response / SMETS1 Response Body Data Items

4.15.2.1.4 Sample Response body

```
<ra:ReadLoadLimitDataRsp MessageSuccess="true">
  <ra:LoadLimitCounterValue>7</ra:LoadLimitCounterValue>
  <ra:LoadLimitPowerThreshold>10</ra:LoadLimitPowerThreshold>
  <ra:LoadLimitPeriod>300</ra:LoadLimitPeriod>
  <ra:LoadLimitRestorationPeriod>600</ra:LoadLimitRestorationPeriod>
  <ra:LoadLimitSupplyState>Unchanged</ra:LoadLimitSupplyState>
</ra:ReadLoadLimitDataRsp>
```

Figure 159 - Read Load Limit Data Parse Response Sample

4.16 Read Active Power Import (4.16)

Service Request Name	ReadActivePowerImport
Service Reference	4.16
Service Request Variant Name	ReadActivePowerImport
Service Reference Variant	4.16

Service Request Objective	To enable a DCC Service User to read the Active Power Import value(s) on a specified Electricity Smart Meter.	
Business Context Statement	To enable a DCC Service User to read the Active Power Import value(s) on a specified Electricity Smart Meter.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: <i>SME.C.NC</i>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request will return all the Active Power Import Registers. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0028	N/A
GBCS Use Case	ECS17c	N/A
GBCS Use Case Name	Read ESME Energy Registers (Power)	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 162 Read Active Power Import Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.16.1 Service Request

4.16.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its ReadActivePowerImport XML element defines this Service Request and doesn't contain any data items.

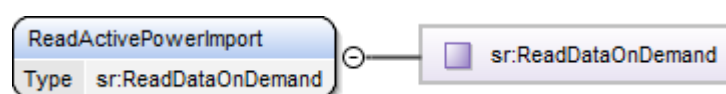


Figure 160 Read Active Power Import Service Request Structure (Ad-hoc)

Create Schedule: Its DSPReadActivePowerImport XML element defines this Service Request and doesn't contain any data items.

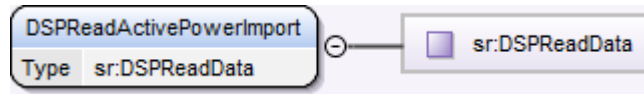


Figure 161 Read Active Power Import Service Request Structure (Create Schedule)

4.16.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	Yes
SMETS1	No	Yes	No	No	Yes

Table 163 Read Active Power Import Modes of Operation

4.16.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 164 Read Active Power Import Command Variant Values (Ad-hoc)

4.16.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

4.16.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadActivePowerImport/>
```

Figure 162 Sample Read Active Power Import Service Request Format (Ad-hoc)

4.16.2 Responses

The response messages for a "Read Active Power Import" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery

- Parse Output / SMETS1 Response

When this Service Request is run as DSP Scheduled, the SMETS2 or later Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1 and the SMETS1 Service Response (from Device) is a variation of the generic one and it follows the structure defined in section 4.8.1.2.2 for Service Request 4.8.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.16.2.1 Parse Output / SMETS1 Response Format

4.16.2.1.1 Format - ReadActivePowerImportRsp

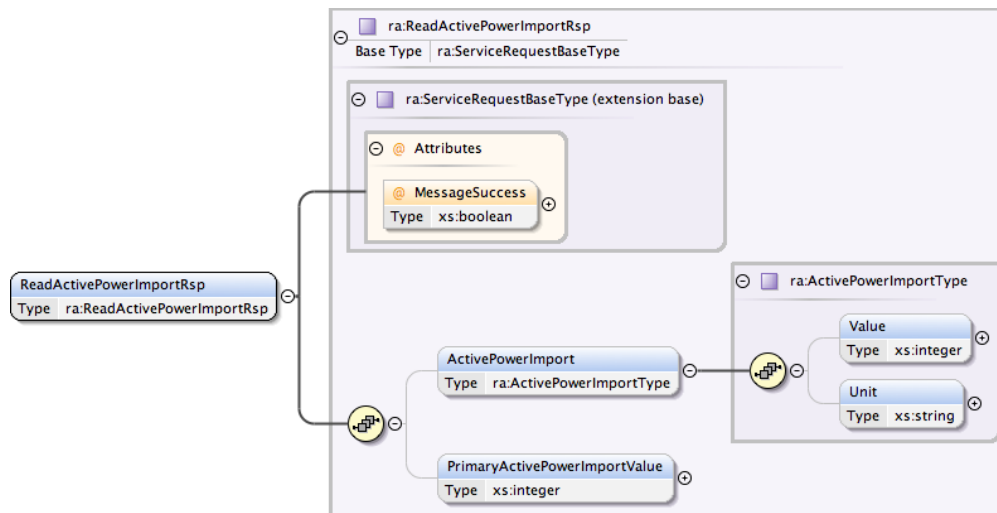


Figure 163 - Read Active Power Import Parse Response / SMETS1 Response Structure

4.16.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0028
GBCS Use Case Number (for information only - not in header)	ECS17c
GBCS Use Case Name (for information only - not in header)	Read ESME Energy Registers (Power)
SupplementaryRemotePartyID	Present where DSP scheduled
SupplementaryRemotePartyCounter	Present where DSP scheduled
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 165 - Read Active Power Import Parse Response Header Data Items

4.16.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActivePowerImportType.Value	The total active Power from all elements on the Meter	xs:integer	None	W	Non-Sensitive
ActiveImportType.Unit	W	xs:string	W	N/A	Non-Sensitive
PrimaryActivePowerImportValue	The total active Power from the first element on the Meter	xs:integer	None	W	Non-Sensitive

Table 166 - Read Active Power Import Parse Response / SMETS1 Response Body Data Items

4.16.2.1.4 Sample Response

```
<ra:ReadActivePowerImportRsp MessageSuccess="true">
  <ra:ActivePowerImport>
    <ra:Value>100000</ra:Value>
    <ra:Unit>W</ra:Unit>
  </ra:ActivePowerImport>
  <ra:PrimaryActivePowerImportValue>100000</ra:PrimaryActivePowerImportValue >
</ra:ReadActivePowerImportRsp>
```

Figure 164 - Read Active Power Import Parse Response Sample

4.17 Retrieve Daily Consumption Log (4.17)

Service Request Name	RetrieveDailyConsumptionLog
Service Reference	4.17
Service Request Variant Name	RetrieveDailyConsumptionLog
Service Reference Variant	4.17
Service Request Objective	To enable a DCC Service User to read the specified Daily Consumption Log entry(s) on the specified meter.
Business Context Statement	The DCC Service user needs to measure, over a period of up to two years, the consumption profile changes on a particular meter.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU)
Security Classification	Non-critical, Request is non-sensitive and Response is sensitive: GBCS XREF: SME.C.NC

Service Request Narrative	<ol style="list-style-type: none"> 1. The <i>Daily Consumption Log</i> as defined by SMETS is a log capable of storing 731 date stamped entries of Consumption arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. 2. This Service Request can be run Ad-hoc or be DSP Scheduled (via Create Schedule). In all cases, if the sender is not authorised to read data for the entire period requested, an error will be returned. 3. Ad-hoc: Available to User Roles with access to the Device during the entire date-time range requested. In the case of Import Supplier, this could be the 'current' or the 'old' Registered Supplier. Because this Service Request returns Sensitive data, URPs (i.e. the 'old' Registered Supplier and 'Other User'), have to include in the Request the Public Security Credentials they want the Device to sign the Response with. 4. DSP Scheduled: Available to User Roles with access to the Device at the time the Schedule is created. In the case of Import Supplier, this will never be the 'old' Registered Supplier. The URP Public Security Credentials (applicable to 'Other User') for the Device to sign the Response are included in the Create Schedule Service Request. See Annex section 5.1. 5. This Service Request (Gas) can't be part of a Sequence, because the Command Response status is encrypted and the DSP is not able to check its contents. 6. This Service Request (Gas) is only available on the GPF. 7. This Service Request returns records from the target device where the timestamp on the Daily Consumption Log falls between the Start Date time and End Date Time. 6. Due to variable device implementation, DSP adds one second to the end time to ensure that results will always include the end time of the period required. However, this means that if the intention is to exclude the end time then the DCC Service User should subtract two seconds from the end time of the period to ensure exclusivity. For example: <ul style="list-style-type: none"> • To ensure inclusive, use 20/11/2018 00:00:00, • To ensure exclusive, use 19/11/2018 23:59:58 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0060	0x00A0
GBCS Use Case	ECS66	GCS61
GBCS Use Case Name	Read ESME Daily Consumption Log	Read gas Daily Consumption Log
SMETS1 Applicability	No	No

Table 167 Retrieve Daily Consumption Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.17.1 Service Request

4.17.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its RetrieveDailyConsumptionLog XML element defines this Service Request (Ad-hoc) and contains the date-time interval for which the log is to be retrieved, for URP the Key Agreement Public Security Credentials and, for Future Dated, the Execution Date Time.

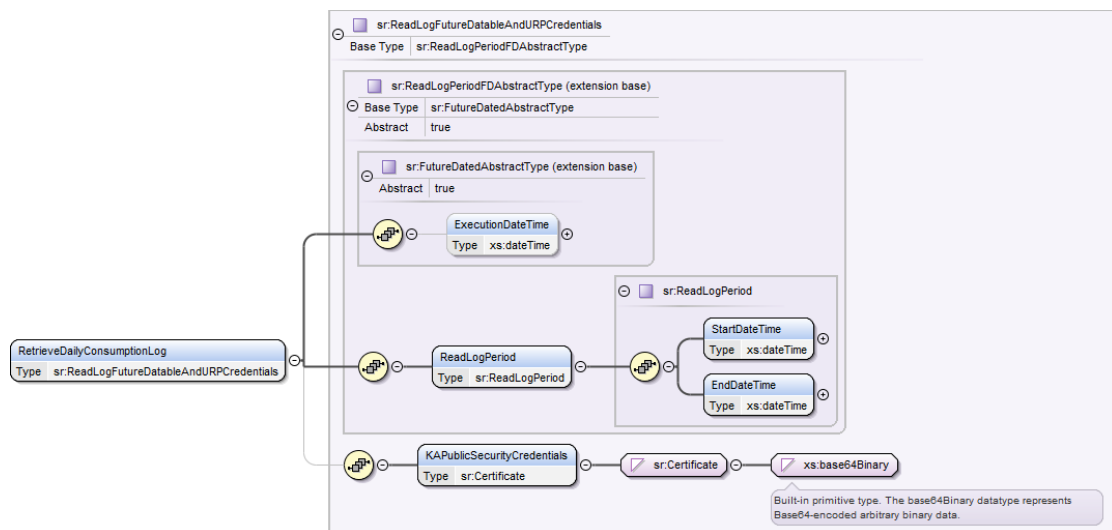


Figure 165 Retrieve Daily Consumption Log Service Request Structure (Ad-hoc)

Create Schedule: Its DSPRetrieveDailyConsumptionLog XML element defines this Service Request and contains the date-time interval for which the log is to be retrieved, defined relative to the current date at the point each Service Request is generated from the schedule. See Annex section 17 ReadLogPeriodOffset definition.

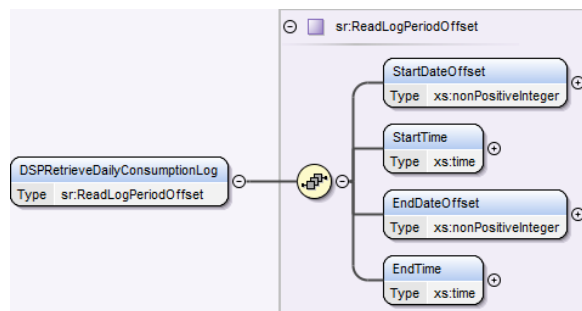


Figure 166 Retrieve Daily Consumption Log Service Request Structure (Create Schedule)

4.17.1.2 Specific Data Items Definition

The Data Items applicable depend on whether the Request is Ad-hoc or DSP Scheduled.

4.17.1.2.1.1 RetrieveDailyConsumptionLog (Ad-hoc)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
KAPublicSecurityCredentials	The Key Agreement Public Security Credentials (of the requesting party) to be used where the request is from an Unknown Remote Party (i.e. Other User)	sr:Certificate (xs:base64Binary)	User Role ¹ EIS, GIS, ENO, GNO: N/A User Role OU: Yes	None	N/A	Non-Sensitive

Table 168 Retrieve Daily Consumption Log Service Request Data Items (Ad-hoc)

¹ Also Mandatory for User Roles EIS and GIS that were registered parties (KRPs) to the Device for the required time period, but they no longer are

4.17.1.2.1.2 DSPRetrieveDailyConsumptionLog (Create Schedule)

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPRetrieveDailyConsumptionLog	The Start and End Date Offsets from the current date and the Start and End Times which together define the date-time period for which the data is required	sr:ReadLogPeriod Offset (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 169 Retrieve Daily Consumption Log Service Request Data Items (Create Schedule)

4.17.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	Yes

Table 170 Retrieve Daily Consumption Log Modes of Operation

4.17.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 171 Retrieve Daily Consumption Log Command Variant Values (Ad-hoc)

4.17.1.5 Validation

This Service Request specific validation is as follows. See Main Document of this documentation set section 7 for generic access control checks.

Ad-hoc: See also Annex section 17.2 for Execution Date Time, Read Log Period and Key Agreement Public Security Credentials validation.

Create Schedule: See also Annex section 17.2 for Read Log Period Offset validation.

Validation Check	Process	Response Code
Does the requested time period span at least 1 midnight?	Check that the ReadLogPeriod (ad-hoc) or the ReadLogPeriodOffset (Create Schedule) spans at least 1 midnight	E041701

Table 172 Retrieve Daily Consumption Service Request Validation

4.17.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveDailyConsumptionLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</RetrieveDailyConsumptionLog>
```

Figure 167 Sample Retrieve Daily Consumption Log Service Request Format (Ad-hoc)

4.17.2 Responses

The response messages for a "Retrieve Daily Consumption Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

When this Service Request is run as DSP Scheduled, the Service Response (from Device) is a variation of the generic one and it is defined in section 4.8.1.2.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.17.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E041701	Failed Validation – Log period does not span at least 1 midnight	Error	The ReadLogPeriod (or ReadLogPeriodOffset) does not span at least 1 midnight

Table 173 Failed Retrieve Daily Consumption Log Service Request Response Codes

4.17.2.2 Parse Output Format

4.17.2.2.1 Format - RetrieveDailyConsumptionLogRsp

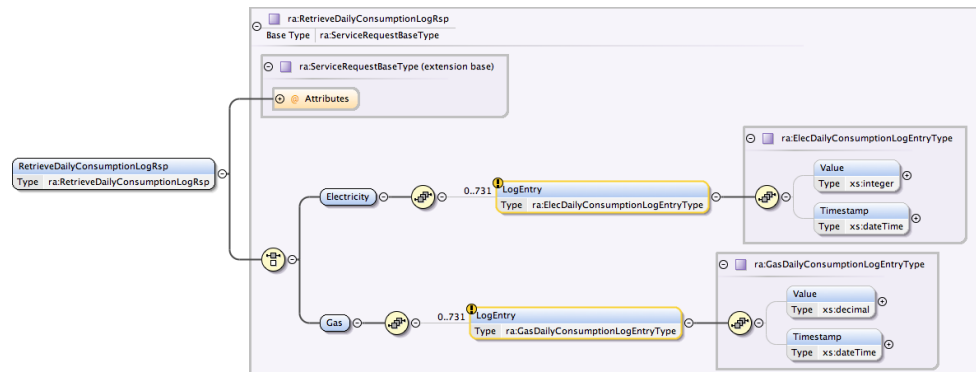


Figure 168 - Retrieve Daily Consumption Log Parse Response Structure

4.17.2.2.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0060	00A0
GBCS Use Case Number (for information only - not in header)	ECS66	GCS61
GBCS Use Case Name (for information only - not in header)	Read ESME Daily Consumption Log	Read gas Daily Consumption Log
SupplementaryRemotePartyID	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryRemotePartyCounter	Present where DSP scheduled or originator is a URP	Present where DSP scheduled or originator is a URP
SupplementaryOriginatorCounter	Present where originator is a URP	Present where originator is a URP
Timestamp	Not Present	Not Present

Table 174 - Retrieve Daily Consumption Log Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

4.17.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry ¹	Each of the up to 731 date stamped entries of Consumption arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. Only log entries within the date range specified in the Service Request will be returned.	See section 4.17.2.2.4 (Electricity) or 4.17.2.2.5 (Gas)	None	N/A	Sensitive

Table 175 - Retrieve Daily Consumption Log Parse Response Body Data Items

¹ Electricity: Maximum 731 Log Entries. Note that a value of 731 is considered as 'Unbounded' by the XSD validation

4.17.2.2.4 ElecDailyConsumptionLogEntryType Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Value	Consumption for that day	xs:integer	None	Wh	Sensitive
Timestamp	The UTC date-time at which the corresponding log entry was taken	xs:dateTime	None	UTC Date-Time	Sensitive

Table 176 - Retrieve Daily Consumption Log Parse Response - DailyConsumptionLogEntryType Specific Data Items

4.17.2.2.5 GasDailyConsumptionLogEntryType Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Value	Consumption for that day Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS	xs:decimal	None	m ³	Sensitive
Timestamp	The UTC date-time at which the corresponding log entry was taken	xs:dateTime	None	UTC Date-Time	Sensitive

Table 177 - Retrieve Daily Consumption Log Parse Response - DailyConsumptionLogEntryType Specific Data Items

4.17.2.2.6 Sample Response

```
<ra:RetrieveDailyConsumptionLogRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:LogEntry>
      <ra:Value>3</ra:Value>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntry>
  </ra:Electricity>
</ra:RetrieveDailyConsumptionLogRsp>
```

Figure 169 - Retrieve Daily Consumption Log Parse Response Sample – Electricity

```
<ra:RetrieveDailyConsumptionLogRsp MessageSuccess="true">
  <ra:Gas>
    <ra:LogEntry>
      <ra:Value>3</ra:Value>
      <ra:Timestamp>2014-08-24T00:01:02.00</ra:Timestamp>
    </ra:LogEntry>
  </ra:Gas>
</ra:RetrieveDailyConsumptionLogRsp>
```

Figure 170 - Retrieve Daily Consumption Log Parse Response Sample - Gas

4.18 Read Meter Balance (4.18)

Service Request Name	ReadMeterBalance
Service Reference	4.18
Service Request Variant Name	ReadMeterBalance
Service Reference Variant	4.18
Service Request Objective	To enable a DCC Service User to read the Balance of an ESME or a GSME operating in Credit or Prepayment Mode
Business Context Statement	This Service Request is for reading the meter balance on the Electricity Smart Meter or on the Gas Smart Meter
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical, non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request is available in respect of ESME or GSME operating in Credit or Prepayment Mode. For reading the Meter balance values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. For ESME this Service Request returns a single MeterBalance, but for GSME two MeterBalance values are returned and must be interpreted by the Requester on the basis of the Devices Operational Mode; Credit or Prepayment. Values returned represent - For ESME: if positive, credit available; if negative, money due. For GSME (CreditMode): if positive, money due; cannot be negative. For GSME (PrepaymentMode): if positive, credit available; if negative, money due.

GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to GBCS 4.2	0x0069	0x008D
GBCS Use Case prior to GBCS 4.2	ECS82	GCS60
GBCS Use Case Name prior to GBCS 4.2	Read Meter Balance for ESME	Read Meter Balance for GSME
GBCS Message Code v4.2 or later	0x0069	0x012A
GBCS Use Case v4.2 or later	ECS82	GCS60a
GBCS Use Case Name v4.2 or later	Read Meter Balance for ESME	Read Meter Balance for GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 178 Read Meter Balance Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

4.18.1 Service Request

4.18.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadMeterBalance XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

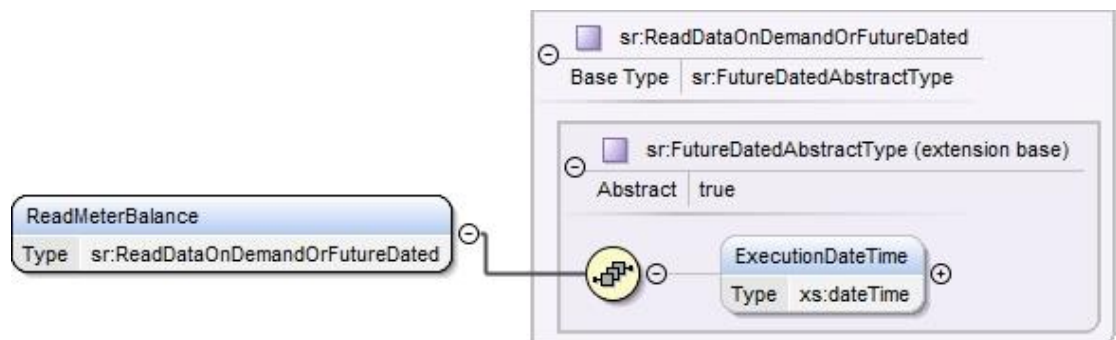


Figure 171 Read Meter Balance Service Request Structure

4.18.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC Service User requires the command to be executed on the device.</p> <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	N/A	UTC Date-Time	Non-Sensitive

Table 179 Read Meter Balance Service Request Data Items

4.18.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 180 Read Meter Balance Modes of Operation

4.18.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 181 Read Meter Balance Command Variant Values

4.18.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

4.18.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadMeterBalance/>

Figure 172 Sample Read Meter Balance Service Request Format

4.18.2 Responses

The response messages for a "Read Meter Balance" request follow the generic format for all "Device" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery

- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

4.18.2.1 Parse Output / SMETS1 Response Format

4.18.2.1.1 Format - ReadMeterBalanceRsp

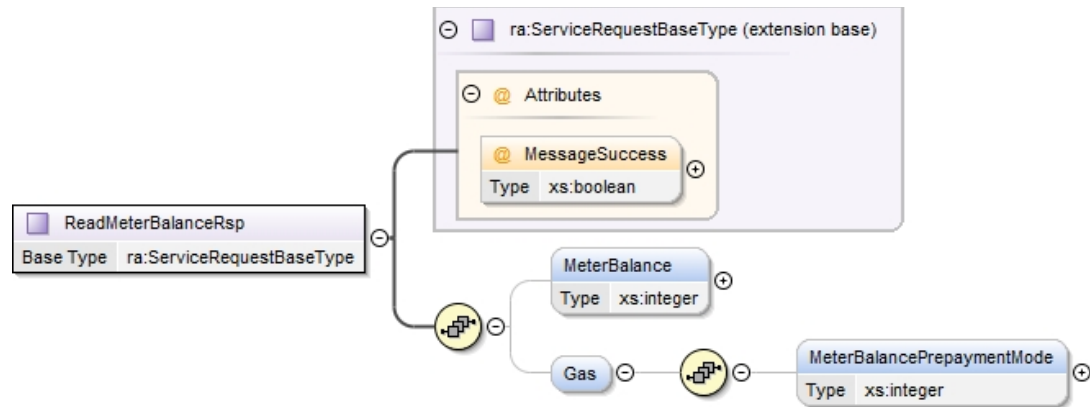


Figure 173 - Read Meter Balance Parse Response / SMETS1 Response Structure

4.18.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0069	008D
GBCS Use Case Number (for information only - not in header)	ECS82	GCS60
GBCS Use Case Name (for information only - not in header)	Read Meter Balance for ESME	Read Meter Balance for GSME
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 182 - Read Meter Balance Parse/ SMETS1 Response Header Data Items prior to GBCS v4.2

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0069	012A
GBCS Use Case Number (for information only - not in header)	ECS82	GCS60a
GBCS Use Case Name (for information only - not in header)	Read Meter Balance for ESME	Read Meter Balance for GSME
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Present ¹

Table 183.1- Read Meter Balance Parse/ SMETS1 Response Header Data Items – GBCS v4.2 or later

4.18.2.1.3 ¹ (SMETS2 only) Includes IsFromGSME and ClockStatus as described in Annex 18. Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
MeterBalance	For ESME, a positive value represents the amount of credit available and a negative value is the amount of money due. For GSME, a positive value represents the amount of money due and a negative value is not permitted.	xs:integer	None	1000 th pence / cent	Non-Sensitive
MeterBalancePrepaymentMode	For GSME, a positive value represents the amount of credit available and a negative value is the amount of money due. Gas Only	xs:integer	None	1000 th pence / cent	Non-Sensitive

Table 183 - Read Meter Balance Parse Response / SMETS1 Response Body Data Items

4.18.2.1.4 Sample Response body

```
<ra:ReadMeterBalanceRsp MessageSuccess="true">
  <ra:MeterBalance>10000</ra:MeterBalance>
</ra:ReadMeterBalanceRsp>
```

Figure 174 - Read Meter Balance Parse Response Sample – Electricity

```
<ra:ReadMeterBalanceRsp MessageSuccess="true">  
  <ra:MeterBalance>0</ra:MeterBalance>  
  <ra:Gas>  
    <ra:MeterBalancePrepaymentMode>15000</ra:MeterBalancePrepaymentMode>  
  </ra:Gas>  
</ra:ReadMeterBalanceRsp>
```

Figure 175 - Read Meter Balance Parse Response Sample – Gas

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

5 – Scheduling Service

Author: DCC
Version: 5.2a
Date: June 2023

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5 Scheduling Service (5 – SS)

This section sets out the full content of the DCC Scheduling Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	Scheduling	Service Id	5
Service Objective	To enable a DCC Service User to request that the DCC creates, maintains and operates a schedule of regular and repeating actions for a specified Device ID. Each time the UTC date/time specified in the schedule is reached, the DCC will initiate an action to the device (where the action is the equivalent of a service request). Billing data retrieval schedules are not part of this service. Please refer to the UpdateDeviceConfiguration(BillingCalendar) Service Request 6.8 (see Annex section 6).		
Business Context Statement	The service is concerned with the creation, reading and removal of a schedule within the DCC on behalf of the DCC Service User. A schedule may be created or deleted, however detail within a schedule may not be amended.		
User Roles	The following user roles have access to the list of service requests which make up the Scheduling Service: <ul style="list-style-type: none">Electricity Import Supplier (EIS)Electricity Export Supplier (EES)Gas Import Supplier (GIS)Electricity Network Operator (ENO)Gas Network Operator (GNO)Other User (OU)		

Table 1 Overview of Scheduling Service

The mapping between the Scheduling Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
5.1	5.1	Create Schedule	DSP Access Control Broker
5.2	5.2	Read Schedule	DSP Access Control Broker
5.3	5.3	Delete Schedule	DSP Access Control Broker

Table 2 SS - Service Requests / Devices

For each of the SS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)

- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

5.1 Create Schedule (5.1)

Service Request Name	CreateSchedule
Service Reference	5.1
Service Request Variant Name	CreateSchedule
Service Reference Variant	5.1
Service Request Objective	<p>To enable a DCC Service User to create a schedule to provide the specified Service on a recurring basis where the Service is identified as available as a Scheduled Service.</p> <p>On the creation of a schedule, the DCC Service User will then be automatically sent the relevant responses from the device ID, triggered by the commands sent to device ID at the scheduled time. Such response will be structured as for the same On-Demand command.</p>
Business Context Statement	<p>The DCC Service User requests the creation of a schedule within the DCC for a defined Device ID. This enables the DCC Service User to receive regular data (configuration and/or operational) from a device, e.g. interval/profile data, without having to raise a request each time.</p> <ul style="list-style-type: none"> • The Main Document of this documentation set Table 33 identifies the Service Request Variants that can be DSP Scheduled.
User Role Access	<ul style="list-style-type: none"> • Electricity Import Supplier (EIS) • Electricity Export Supplier (EES) • Gas Import Supplier (GIS) • Electricity Network Operator (ENO) • Gas Network Operator (GNO) • Other User (OU)
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.NC</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. Only the following 13 Service Request Variants may be scheduled by the DCC using this Service Request as defined in SEC. <ul style="list-style-type: none"> - SR 4.6.1 – Retrieve Import Daily Read Log - SR 4.6.2 - Retrieve Export Daily Read Log

- SR 4.8.1 – Read Active Import Profile Data
 - SR 4.8.2 – Read Reactive Import Profile Data
 - SR.4.8.3 – Read Export Profile Data
 - SR 4.10 – Read Network Data
 - SR 4.12.1 – Read Maximum Demand Import Registers
 - SR 4.12.2 – Read Maximum Demand Export Registers
 - SR 4.14 – Read Prepayment Daily Read Log
 - SR 4.15 – Read Load Limit Data
 - SR 4.16 – Read Active Power Import
 - SR 4.17 – Retrieve Daily Consumption Log
 - SR 14.1 – Record Network Data (Gas)
2. Schedules can only be created for sending commands over the SM WAN to Devices. There are no DSP scheduled Services to return commands for local delivery.
 3. Service Reference Variants 4.6.1, 4.6.2, 4.8.1, 4.8.2, 4.8.3, 4.14 and 4.17 are available to the 'old' Registered Import / Export Supplier when submitting them 'Ad-hoc', but not when submitting them via 'Create Schedule'.
 4. URPs (e.g. 'Other User') to the specified device creating DSP Schedules that return Sensitive data (i.e. those corresponding to Service Reference Variants: 4.8.1 (OU), 4.10 (GNO (GSME)) and 4.17 (OU)), have to include in the Create Schedule Request the Key Agreement Public Security Credentials they want the target Device to encrypt the response with.
 5. The Schedule Frequency options are as follows (for each scheduled execution, the Schedule Execution Start Time will be as defined in this Service Request or, if not defined, the default of 00:01:00):
 - a. Daily. The Service Request Variant will be scheduled once a day. E.g. for Schedule Start Date = 31/01/2015 it would be scheduled on the 31/01/2015, 01/02/2015, 02/02/2015, etc.
 - b. Weekly. The Service Request Variant will be scheduled once a week, on the Schedule Start Date day of the week. E.g. for Schedule Start Date = 31/01/2015 it would be scheduled on the 31/01/2015, 07/02/2015, 14/02/2015, etc.
 - c. Monthly. The Service Request Variant will be scheduled once a month, on the Schedule Start Date day of the month, where possible. For those months where the Schedule Start Date day of the month doesn't exist, the Service Request Variant will be scheduled on the last day of that month. E.g. for Schedule Start Date = 31/01/2015 it would be scheduled on the 31/01/2015, 28/02/2015, 31/03/2015, 30/04/2015, etc.
 - d. Quarterly. The Service Request Variant will be scheduled once every three months, on the Schedule Start Date day of the month, where possible. For those months where the Schedule Start Date day of the

	month doesn't exist, the Service Request Variant will be scheduled on the last day of that month. E.g. for Schedule Start Date = 30/11/2014 it would be scheduled on the 30/11/2014, 28/02/2015, 30/05/2015, etc.	
	e. Half-Yearly. The Service Request Variant will be scheduled once every six months, on the Schedule Start Date day of the month, where possible. For those months where the Schedule Start Date day of the month doesn't exist, the Service Request Variant will be scheduled on the last day of that month. E.g. for Schedule Start Date = 31/08/2015 it would be scheduled on the 31/08/2015, 29/02/2016, 31/08/2016, 28/02/2017, etc.	
	f. Yearly. The Service Request Variant will be scheduled once every twelve months, on the Schedule Start Date day of the month, where possible. For those months where the Schedule Start Date day of the month doesn't exist, the Service Request Variant will be scheduled on the last day of that month. E.g. for Schedule Start Date = 29/02/2016 it would be scheduled on the 29/02/2016, 28/02/2017, etc.	
	6. The following Service Reference Variants should not be scheduled on a GSME as the GSME will reject these commands if sent by the DSP as part of a schedule. The DCC Service User is advised to target these schedules at the corresponding GPF:	
	<ul style="list-style-type: none">- SR 4.6.1 – Retrieve Import Daily Read Log- SR 4.8.1 – Read Active Import Profile Data- SR 4.14 – Read Prepayment Daily Read Log	
	If any of these are targeted at a GSME, for each scheduled request the device will generate a security alert. However, this alert cannot be matched to a corresponding request and the DSP will continue to retry the scheduled request for up to 24 hours before eventually sending DCC Alert N11.	
	7. Guidance note: for scheduling delivery of overnight readings based on data for a calendar day, Service Users are recommended to use the default setting for the start time, i.e. 00:01:00, in order to maximise efficiency in DCC systems. This may be achieved by omitting the specification of ScheduleExecutionStartTime (see section 5.1.1.2). See DUGIDS main document section 2.3.7 for more information about DSP scheduling.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A

SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Only the following 7 (SMETS1) Service Request Variants may be scheduled by the DCC using this Service Request as defined in SEC. <ul style="list-style-type: none"> SR 4.6.1 – Retrieve Import Daily Read Log SR 4.8.1 – Read Active Import Profile Data SR 4.8.2 – Read Reactive Import Profile Data SR.4.8.3 – Read Export Profile Data SR 4.10 – Read Network Data SR 4.15 – Read Load Limit Data SR 4.16 – Read Active Power Import Although for SMETS2 Devices, URPs (e.g. 'Other User') to the specified device creating DSP Schedules that return Sensitive data (i.e. those corresponding to Service Reference Variants: 4.8.1 (OU) and 4.10 (GNO (GSME))), have to include in the Create Schedule Request the Key Agreement Public Security Credentials they want the target Device to encrypt the response with, these are not required for SMETS1 Devices. Please note the DCC Data Systems will not validate whether this data item has been included in a SMETS1 Service 	

Table 3 Create Schedule Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

5.1.1 Service Request

5.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its CreateSchedule XML element defines this Service Request and the Service Request to be scheduled, its frequency, start and end dates and start time of execution and, if Sensitive data is required for URP, the Key Agreement Public Security Credentials.

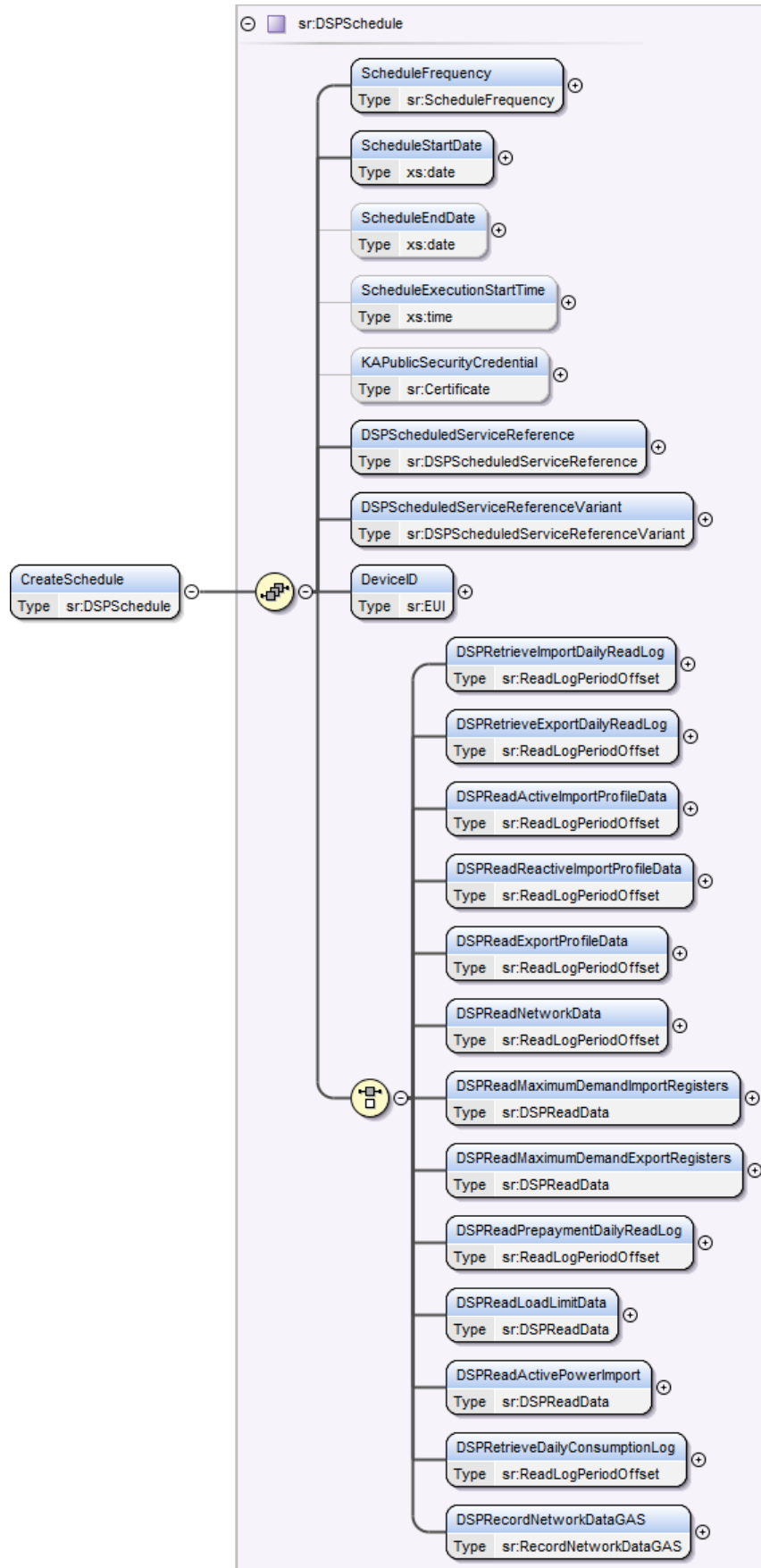


Figure 1 Create Schedule Service Request Structure

5.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ScheduleFrequency	The frequency of which the required service reference is executed. Valid set: <ul style="list-style-type: none"> Daily Weekly Monthly Quarterly Half-Yearly Yearly 	sr:ScheduleFrequency (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
ScheduleStartDate	The UTC date that the scheduled request is required to commence from <ul style="list-style-type: none"> Valid date in the future 	xs:date	Yes	None	UTC Date	Non-Sensitive
ScheduleEndDate	The UTC date that the scheduled request is required to cease, or if not present then the schedule shall remain in force until deleted by the DCC Service User (see section 5.3) or by the DCC Data Systems, e.g. because of Device Decommission <ul style="list-style-type: none"> Valid date in the future >= ScheduleStartDate 	xs:date	User Role EIS, GIS, EES, ENO, GNO: No User Role OU: Yes	None	UTC Date	Non-Sensitive
ScheduleExecutionStartTime	The UTC start time of the window during a day when a scheduled Command may be run ¹ <ul style="list-style-type: none"> Valid time 	xs:time	No	00:01:00	UTC Time	Non-Sensitive
KAPublicSecurityCredential	The Key Agreement Public Security Credentials, associated with the Service User submitting the request, that will be relied upon for Sensitive data responses. Only applicable to those Scheduled Service Requests that can be submitted by DCC Service User Roles for which the Device doesn't hold credentials. See Section 5.1 Service Request Narrative note 4. KAPublicSecurityCredential is N/A to SMETS1 Services	sr:Certificate (xs:base64Binary)	SMETS2 or later Service and (User Role EIS, GIS, EES, ENO: N/A User Role GNO: Yes ³ User Role OU: Yes ²) SMETS1 Service: N/A	None	N/A	Non-Sensitive
DSPScheduledServiceReference	Reference of the Service Request to be Scheduled. Valid Set: See Main Document of this documentation set Table 33, where DSP Scheduled column is set to "Yes"	sr:DSPScheduledServiceReference (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduledServiceReferenceVariant	Reference Variant of the Service Request to be Scheduled. Valid Set: See Main Document of this documentation set Table 33, where DSP Scheduled column is set to "Yes"	sr:DSPScheduledServiceReferenceVariant (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
DeviceID	This is the Device ID to which the DSP Schedule is targeted.	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
Choice of Service Requests to be Scheduled	Name and Request Data Items corresponding to DSPScheduledServiceReferenceVariant to be Scheduled. See Annex section 4 - RS: <ul style="list-style-type: none"> 4.6.1 for DSPRetrieveImportDailyReadLog 4.6.2 for DSPRetrieveExportDailyReadLog⁴ 4.8.1. for DSPReadActiveImportProfileData 4.8.2. for DSPReadReactiveImportProfileData 4.8.3 for DSPReadExportProfileData 4.10 for DSPReadNetworkData 4.12.1 for DSPReadMaximumDemandImportRegisters⁴ 4.12.2 for DSPReadMaximumDemandExportRegisters⁴ 4.14 for DSPReadPrepaymentDailyReadLog⁴ 4.15 for DSPReadLoadLimitData 4.16 for DSPReadActivePowerImport 4.17 for DSPRetrieveDailyConsumptionLog⁴ 14.1 – for DSPRecordNetworkDataGAS⁴ 				N/A	

Table 4 Create Schedule Service Request Data Items

¹ Each CSP region has one or more "DSP scheduling windows" that specify when DSP Scheduled Service Requests should be sent. The Schedule Execution Start Time (or 00:01:00 if none specified) specifies the earliest time when the Service Request can be considered for execution. The scheduler takes into account both the Schedule Execution Start Time and the DSP scheduling window when determining when to send a Scheduled Service Request. If the Schedule Execution Start Time is inside a "DSP scheduling window", the Service Request should be started during that window. Otherwise it should be started in the next available "DSP scheduling window" (which might occur on the following calendar day). For DSP Schedules that read logs, the Start and End Dates of the period to be read will be calculated without taking into account the "DSP scheduling windows"

² Only applicable to OU for those Service Reference Variants for which the Response includes Sensitive data: 4.8.1 and 4.17.

³ Only applicable to GNO for those Service Reference Variants targeted to a Gas Smart Meter and for which the Response includes Sensitive data: 4.8.1 and 4.10

⁴ N/A to SMETS1 Services

5.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 5 Create Schedule Modes of Operation

5.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 6 Create Schedule Command Variant Values

5.1.1.5 Validation

The Validation (Access Control Checks) to be applied is that corresponding to the Create Schedule and to the DSP Schedule Service Requests.

The Create Schedule Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks which apply to the Create Schedule and to the Scheduled Service Request and Annex section 17.2 for Create Schedule Device ID existence validation):

Validation Check	Process	Response Code
Is the ScheduleStartDate a future date?	Check that the ScheduleStartDate is a date is in the future	E050101
Is the ScheduleEndDate included?	For User Role "OU" check that the ScheduleEndDate has been included in the Request	E050102
Is the ScheduleEndDate valid?	If included in the Request, check that the ScheduleEndDate is a date in the future and it isn't earlier than the ScheduleStartDate	E050103
Is the DSP Service Reference / DSP ServiceReferenceVariant combination valid?	Check that the combination of DSP Service Reference and DSP Service Reference Variant is correct, i.e. it aligns to the definitions in Main Document of this documentation set Table 33.	E050105

Validation Check	Process	Response Code
Are the DCC Service User's Key Agreement Public Security Credentials included in the Request?	Check that if the DCC Service User's Role is URP to the Device and the DSP Scheduled Service Response contains Sensitive data, the Create Schedule Request includes the DCC Service User's Key Agreement Public Security Credentials and that in all other cases, these credentials aren't included in the Request. This check is N/A to SMETS1 Services	E050107
Has the maximum number of DCC Service User DSP Schedules / Device been reached?	Check that the number of active DSP Schedules owned by the DCC Service User for the Device is less than 99	E050108
Is the DSP Scheduled Request Format correct for the DSP Scheduled Request?	Check that the format for the DSP Scheduled Request matches the DSP Service Reference Variant in the Create Schedule message	E050109
Is the DSP Scheduled Service Reference Variant valid for a SMETS1 Service?	For SMETS1 Services, check that the DSPScheduledServiceReferenceVariant is one of: <ul style="list-style-type: none"> • 4.6.1 • 4.8.1 • 4.8.2 • 4.8.3 • 4.10 • 4.15 • 4.16 	E050110

Table 7 Create Schedule Service Request Validation

For validation on the Scheduled Service Request at the point the DSP Schedule is created, see Annex section 4.

5.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<CreateSchedule>
  <ScheduleFrequency>Weekly</ScheduleFrequency>
  <ScheduleStartDate>2015-01-31Z</ScheduleStartDate>
  <DSPScheduledServiceReference>4.8</DSPScheduledServiceReference>
  <DSPScheduledServiceReferenceVariant>4.8.1</DSPScheduledServiceReferenceVariant>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
  <DSPReadActiveImportProfileData>
    <StartDateOffset>-7</StartDateOffset>
    <StartTime>00:00:00.00Z</StartTime>
    <EndDateOffset>0</EndDateOffset>
    <EndTime>23:59:59.00Z</EndTime>
  </DSPReadActiveImportProfileData>
</CreateSchedule>
```

Figure 2 Create Schedule Service Request (Body) Format

5.1.2 Responses

The response messages for a "Create Schedule" request follow the generic format for all "DCC Only" Service Responses that include specific data in the response.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

5.1.2.1 Service Response (from DCC)

Applicable to cases where a DSP Schedule is successfully created and its ID returned to the DCC Service User.

5.1.2.1.1 Format

This Service Request response is defined in the XSD ResponseMessage DSPScheduleID XML element, which contains the DSP Schedule ID.

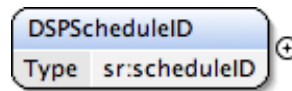


Figure 3 Create Schedule Service Response (from DCC) Structure

5.1.2.1.2 Specific Data Items

Returned if the DCC Data Items successfully create a schedule.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	Schedule ID generated by the DCC Data Systems Valid Set: > 0	sr:scheduleID (See Annex 17)	Yes	None	N/A	Non-Sensitive

Table 8 Create Schedule Service Request Response Data Items

5.1.2.1.3 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```

<ResponseMessage>
  <ServiceReference>5.1</ServiceReference>
  <ServiceReferenceVariant>5.1</ServiceReferenceVariant>
  <DSPScheduleID>500</DSPScheduleID>
</ResponseMessage>
  
```

Figure 4 Sample Create Schedule Service Response (from DCC) Format

5.1.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E050101	Failed Validation – Schedule Start Date not in the future	Error	The Schedule Date is not a future date
E050102	Failed Validation – Schedule End Date missing	Error	The Schedule End Date is mandatory for User Role "OU"
E050103	Failed Validation – Invalid Schedule End Date	Error	The Schedule End Date is earlier than the Schedule Start Date
E050105	Failed Validation – DSP Service Reference and DSP Service Reference Variant mismatch	Error	Invalid combination of DSP Service Reference and DSP Service Reference Variant

Response Code	Response Code Name	Response Code Type	Description
E050107	Failed Validation - Invalid DCC Service User's Role / Key Agreement Public Security Credentials combination for DSP Scheduled Response Data (Sensitive / Non-sensitive)	Error	One of: <ul style="list-style-type: none"> DCC Service User's Role is URP to the Device and the DSP Scheduled Service Response contains Sensitive data and Request doesn't include the DCC Service User's Key Agreement Public Security Credentials Or <ul style="list-style-type: none"> DCC Service User's Role is KRP to the Device and / or the DSP Scheduled Service Response doesn't contain Sensitive data and Request includes the DCC Service User's Key Agreement Public Security Credentials
E050108	Failed Validation – Maximum Number of DCC Service User DSP Schedules for Device already exist	Error	Unable to create Schedule, because the DCC Service User already owns 99 active DSP Schedules for the Device
E050109	Failed Validation – DSP Service Request Format and DSP Service Reference Variant mismatch	Error	The DSP Service Request format doesn't match the DSP Service Reference Variant in the Create Schedule message
E050110	Failed Validation – Invalid SMETS1 DSP Scheduled Service Reference Variant	Error	The DSP Scheduled Service Reference Variant is not applicable to SMETS1 Services

Table 9 Failed Create Schedule Service Request Response Codes

For specific Response Codes returned when the Scheduled Service Request validation fails at the point the DSP Schedule is created, see Annex section 4.

5.2 Read Schedule (5.2)

Service Request Name	ReadSchedule
Service Reference	5.2
Service Request Variant Name	ReadSchedule
Service Reference Variant	5.2
Service Request Objective	To enable a DCC Service User to retrieve a named schedule, or all of their schedules, held by the DCC for a specified device.
Business Context Statement	<p>A DCC Service user wishes to determine the data retrieval frequency they have scheduled for a particular schedule ID. Alternatively, a DCC Service User wishes to see all schedules they have created against a particular device.</p> <p>The Main Document of this documentation set Table 33 identifies the Service Request Variants that can be DSP Scheduled.</p>

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.NC</i>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> Each Schedule within the DCC Data Systems can only be read by the Service User who created it i.e. DCC Service Users cannot read other DCC Service Users schedules. When requesting DSP Schedules for a Device, only those schedules that relate to the requestor will be returned so DCC Service Users can only read their own set up DSP Schedules on the specified Device. DCC Service Users can only read active schedules. There is no functionality to read deleted schedules. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 10 Read Schedule Service Request

This section should be read in conjunction with Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

5.2.1 Service Request

5.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadSchedule XML element defines this Service Request and contains either the DSPScheduleID or the DeviceID.

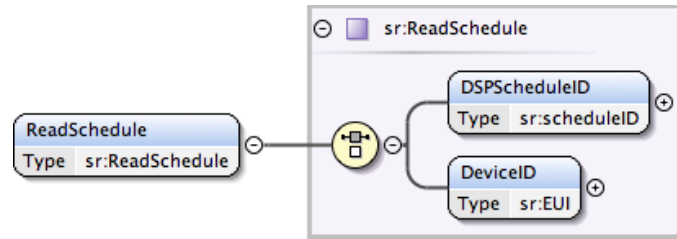


Figure 5 Read Schedule Service Request Structure

5.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	Schedule ID generated by the DCC Data Systems when the schedule was created Valid Set: > 0	sr:scheduleID (See Annex section 17)	No ¹	None	N/A	Non-Sensitive
DeviceID	This is the Device ID for which schedules are to be read.	sr:EUI (see Annex section 17)	No ¹	None	N/A	Non-Sensitive

Table 11 Read Schedule Service Request Data Items

¹ Choice, so one of these 2 options is mandatory

5.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 12 Read Schedule Modes of Operation

5.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set) section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 13 Read Schedule Command Variant Values

5.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set) section 7 for generic access control checks):

Validation Check	Process	Response Code
------------------	---------	---------------

Validation Check	Process	Response Code
Is the DSPScheduleID valid? ¹	Check that the DSPScheduleID exists and it is owned by the DCC Service User submitting the request	E050201
Is the DeviceID valid?	Check that the DeviceID exists.	E050202
Do schedules exist for the Device?	Check that the DCC Service User has one or more schedules set up against the specified Device.	W050201

Table 14 Read Schedule Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E4. See Main Document of this documentation set section 7.4

5.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for each variant of this Service Request (Body) is as follows:

```
<ReadSchedule>  
<DSPScheduleID>500</DSPScheduleID>  
</ReadSchedule>
```

Figure 6 Read Schedule Service Request (Body) Format

```
<ReadSchedule>  
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>  
</ReadSchedule>
```

Figure 7 Read (All) Schedules Service Request (Body) Format

5.2.2 Responses

The response messages for a “Read Schedule” request follow the generic format for all “DCC Only” Service Responses that include specific data in the response.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

5.2.2.1 Service Response (from DCC)

Applicable to cases where the DSP Schedule ID in the request is successfully read and its details returned to the DCC Service User or all schedules for the Device ID in the request are read and returned to the DCC Service User. Only the schedules owned by the DCC Service User are returned i.e. the Import Supplier cannot see the Network Operator’s schedules.

5.2.2.1.1 Format

This Service Request response is defined in the XSD ResponseMessage DSPSchedulesRead XML element, which can included between 1 and 99 DSP Schedules and for each DSP Schedule it contains the DSP Schedule ID and the DSP Schedule details.

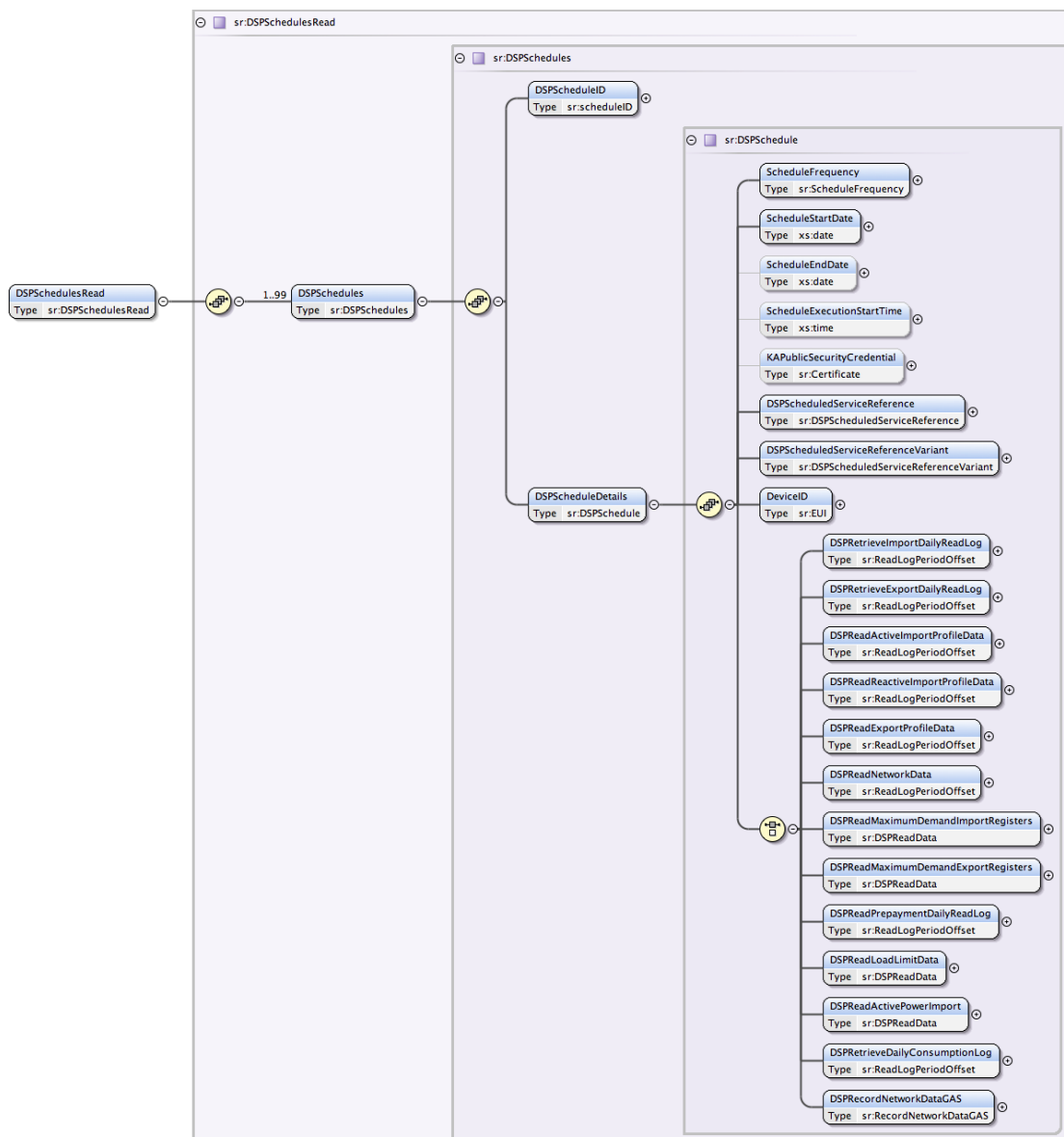


Figure 8 Read Schedule Service Response (from DCC) Structure

5.2.2.1.2 Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DPSchedules	Details of all the Schedules read	sr:DPSchedules	Yes ¹	None	N/A	Non-Sensitive

Table 15 Read Schedule Service Request Response Data Items

¹ Minimum 1 and maximum 99

5.2.2.1.3 DPSchedules Specific Data Items

Returned for each Schedule successfully read by the DCC Data Systems.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
-----------	-------------------------	------	-----------	---------	-------	-------------

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	Schedule ID generated by the DCC Data Systems when the schedule was created Valid Set: > 0	sr:scheduleID (See Annex section 17)	Yes	None	N/A	Non-Sensitive
DSPScheduleDetails	Schedule details provided when the schedule was created	sr:DSPSchedule (See section 5.1.1.2)	Yes	None	N/A	Non-Sensitive

Table 16 Read Schedule Service Request Response – DSPSchedules Data Items

5.2.2.1.4 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```

<ResponseMessage>
  <ServiceReference>5.2</ServiceReference>
  <ServiceReferenceVariant>5.2</ServiceReferenceVariant>
  <DSPSchedulesRead>
    <DSPSchedules>
      <DSPScheduleID>500</DSPScheduleID>
      <DSPScheduleDetails>
        <ScheduleFrequency>Weekly</ScheduleFrequency>
        <ScheduleStartDate>2015-01-31</ScheduleStartDate>
        <DSPScheduledServiceReference>4.8</DSPScheduledServiceReference>
        <DSPScheduledServiceReferenceVariant>4.8.1</DSPScheduledServiceReferenceVariant>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
        <DSPReadActiveImportProfileData>
          <StartDateOffset>-7</StartDateOffset>
          <StartTime>00:00:00.05</StartTime>
          <EndDateOffset>0</EndDateOffset>
          <EndTime>23:59:59.05</EndTime>
        </DSPReadActiveImportProfileData>
      </DSPScheduleDetails>
    </DSPSchedules>
    <DSPSchedules>
      <DSPScheduleID>501</DSPScheduleID>
      <DSPScheduleDetails>
        <ScheduleFrequency>Weekly</ScheduleFrequency>
        <ScheduleStartDate>2015-01-31</ScheduleStartDate>
        <DSPScheduledServiceReference>4.8</DSPScheduledServiceReference>
        <DSPScheduledServiceReferenceVariant>4.8.2</DSPScheduledServiceReferenceVariant>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
        <DSPReadReactiveImportProfileData>
          <StartDateOffset>-7</StartDateOffset>
          <StartTime>00:00:00.05</StartTime>
          <EndDateOffset>0</EndDateOffset>
          <EndTime>23:59:59.05</EndTime>
        </DSPReadReactiveImportProfileData>
      </DSPScheduleDetails>
    </DSPSchedules>
  </DSPSchedulesRead>
</ResponseMessage>

```

Figure 9 Sample Read Schedule Service Response (from DCC) Format

5.2.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E050201	Failed Validation – Invalid DSP Schedule Id	Error	The DSPScheduleID doesn't exist or it isn't owned by the DCC Service User submitting the request
E050202	Failed Validation – Invalid Device ID	Error	The Device ID doesn't exist.
W050201	Validation Warning – no schedules specified	Warning	The DCC Service User does not have any schedules created against the specified device.

Table 17 Failed Read Schedule Service Request Response Codes

5.3 Delete Schedule (5.3)

Service Request Name	DeleteSchedule
Service Reference	5.3
Service Request Variant Name	DeleteSchedule
Service Reference Variant	5.3
Service Request Objective	To enable a DCC Service User to delete the details stored by the DCC for the specified schedule or all of their schedules for a specified device, to prevent any future recurring commands to the specified Device.
Business Context Statement	The DCC Service User requires the removal of a specific existing schedule held by the DCC for a defined device ID to no longer be actioned, e.g. as a result of a Change of Supplier. Alternatively, a DCC Service User wishes to delete all schedules they have created against a particular device ID.
User Role Access	<ul style="list-style-type: none">Electricity Import Supplier (EIS)Electricity Export Supplier (EES)Gas Import Supplier (GIS)Electricity Network Operator (ENO)Gas Network Operator (GNO)Other User (OU)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. This Service Request allows the DCC Service Users to remove DSP Schedules created by them via Service Request 5.1 (see section 5.1), that are still active but no longer needed. 2. When requesting DSP Schedules for a Device, only those schedules that relate to the requestor will be deleted so DCC Service Users can only delete their own set up DSP Schedules on the specified Device. 3. The DCC Data Systems will automatically remove DSP Schedules for the corresponding Device and inform the DCC Service User via a DCC Alert on successful completion of the following Service Requests: <ol style="list-style-type: none"> a. 3.2 Restrict Access For Change of Tenancy (see Annex section 3.2). Other User DSP Schedules. DCC Alert Code N4 (Schedule removal because of CoT) b. 8.5 Service Opt Out (see Annex section 8.5). All Users DSP Schedules. DCC Alert Code N5 (Schedule removal because of Device withdrawal) c. 8.3 Decommission Device (see Annex section 8.3). All Users DSP Schedules. DCC Alert Code N6 (Schedule removal because of Device decommission) d. 6.23 Update Security Credentials (CoS) (see Annex section 6.23). Previously Registered Import Supplier DSP Schedules. DCC Alert Code N17 (Schedule removal because of CoS) 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. 8.5 Service Opt Out is not applicable to SMETS1 Devices 	

Table 18 Delete Schedule Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

5.3.1 Service Request

5.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its DeleteSchedule XML element defines this Service Request and contains either the DSPScheduleID to be deleted or the DeviceID for which all schedules are to be deleted.

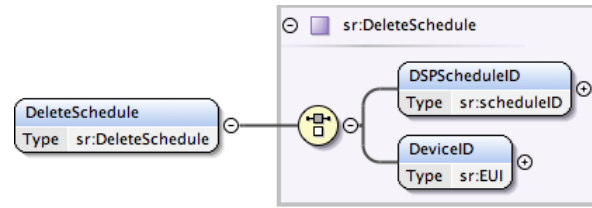


Figure 10 Delete Schedule Service Request Structure

5.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	Schedule ID generated by the DCC Data Systems when the schedule was created Valid Set: > 0	sr:scheduleID (See Annex section 17)	No ¹	None	N/A	Non-Sensitive
DeviceID	This is the Device ID for which schedules are to be deleted.	sr:EUI (see Annex section 17)	No ¹	None	N/A	Non-Sensitive

Table 19 Delete Schedule Service Request Data Items

¹ Choice, so one of these 2 options is mandatory

5.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 20 Delete Schedule Modes of Operation

5.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 21 Delete Schedule Command Variant Values

5.3.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
------------------	---------	---------------

Validation Check	Process	Response Code
Is the DSPScheduleID valid? ¹	Check that the DSPScheduleID exists and it is owned by the DCC Service User submitting the request.	E050301
Is the DeviceID valid?	Check that the DeviceID exists.	E050302
Do schedules exist for the Device?	Check that the DCC Service User has one or more schedules set up against the specified Device.	W050301

Table 22 Delete Schedule Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E4. See Main Document of this documentation set section 7.4

Only the schedules owned by the DCC Service User are deleted i.e. the Import Supplier cannot delete the Network Operator's schedules.

5.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<DeleteSchedule>
  <DSPScheduleID>50</DSPScheduleID>
</DeleteSchedule>
```

Figure 11 Delete Schedule Service Request (Body) Format

```
<DeleteSchedule>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
</DeleteSchedule>
```

Figure 12 Delete (All) Schedules Service Request (Body) Format

5.3.2 Responses

The response messages for a "Delete Schedule" request follow the generic format for all "DCC Only" Service Responses that don't include specific data in the response, the generic responses applicable to this Service Request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

5.3.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E050301	Failed Validation – Invalid DSP Schedule Id	Error	The DSPScheduleID doesn't exist or it isn't owned by the DCC Service User submitting the request
E050302	Failed Validation – Invalid Device ID	Error	The Device ID doesn't exist.
W050301	Validation Warning – no schedules specified	Warning	The DCC Service User does not have any schedules created against the specified device.

Table 23 Failed Delete Schedule Service Request Response Codes

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

6 – Device Management Service

Author: DCC
Version: 5.2a
Date: June 2023

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6 Device Management Service (6 – DMS)

This section sets out the full content of the DCC Device Management Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	DeviceManagement	Service Id	6
Service Objective	To allow a DCC Service User to manage the products/operating settings associated with a specific device at a specified Device ID, such that the device can update its configuration and confirm that the operation has completed or otherwise fail to action the request and return the reason for its failure.		
Business Context Statement	The DCC Service User requires an update to be made to the current set of configuration parameters for a specified device, for example to configure the device following a CoS (Change of Supplier).		
User Roles	<p>The following user roles have access to the list of service requests which make up the Device Management Service:</p> <ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Supplier Nominated Agent (SNA) Other User (read only) (OU) 		

Table 1 Overview of Device Management Service

The mapping between the Device Management Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
6.2	6.2.1	Read Device Configuration (Voltage)	ESME
6.2	6.2.2	Read Device Configuration (Randomisation)	ESME
6.2	6.2.3	Read Device Configuration (Billing Calendar)	ESME GPF GSME
6.2	6.2.4	Read Device Configuration (Identity Exc MPxN)	ESME GSME CHF
6.2	6.2.5	Read Device Configuration (Instantaneous Power Thresholds)	ESME

Service Reference	Service Reference Variant	Name	Business Target ID
6.2	6.2.7	Read Device Configuration (MPxN)	ESME GPF GSME
6.2	6.2.8	Read Device Configuration (Gas)	GSME
6.2	6.2.9	Read Device Configuration (Payment Mode)	ESME GPF GSME
6.2	6.2.10	Read Device Configuration (Event and Alert Behaviours)	ESME GSME
6.4	6.4.1	Update Device Configuration (Load Limiting General Settings)	ESME
6.4	6.4.2	Update Device Configuration (Load Limiting Counter Reset)	ESME
6.5	6.5	Update Device Configuration (Voltage)	ESME
6.6	6.6	Update Device Configuration (Gas Conversion)	GSME
6.7	6.7	Update Device Configuration (Gas Flow)	GSME
6.8	6.8	Update Device Configuration (Billing Calendar)	ESME GSME
6.11	6.11	Synchronise Clock	ESME GSME
6.12	6.12	Update Device Configuration (Instantaneous Power Threshold)	ESME
6.13	6.13	Read Event Or Security Log	ESME GPF GSME CHF
6.14	6.14.1	Update Device Configuration (Auxiliary Load Control Description)	ESME
6.14	6.14.2	Update Device Configuration (Auxiliary Load Control Scheduler)	ESME
6.14	6.14.3	Update Device Configuration (Auxiliary Controller Scheduler)	ESME

Service Reference	Service Reference Variant	Name	Business Target ID
6.15	6.15.1	Update Security Credentials (KRP)	ESME GSME GPF HCALCS (N/A to SMETS1)
6.15	6.15.2	Update Security Credentials (Device)	ESME GSME GPF
6.17	6.17	Issue Security Credentials	ESME GSME GPF
6.18	6.18.1	Set Maximum Demand Configurable Time Period	ESME
6.18	6.18.2	Reset Maximum Demand Registers	ESME
6.20	6.20.1	Set Device Configuration (Import MPxN)	ESME GSME
6.20	6.20.2	Set Device Configuration (Export MPAN)	ESME
6.21	6.21	Request Handover Of DCC Controlled Device	ESME GSME GPF HCALCS (N/A to SMETS1)
6.22	6.22	Configure Alert Behaviour	ESME GSME
6.23	6.23	Update Security Credentials (CoS)	ESME GSME GPF HCALCS (N/A to SMETS1)
6.24	6.24.1	Retrieve Device Security Credentials (KRP)	ESME GSME GPF HCALCS (N/A to SMETS1)
6.24	6.24.2	Retrieve Device Security Credentials (Device)	ESME GSME GPF

Service Reference	Service Reference Variant	Name	Business Target ID
6.25	6.25	Set Electricity Supply Tamper State	ESME
6.26	6.26	Update Device Configuration (daily resetting of Tariff Block Counter Matrix)	ESME
6.27	6.27	Update Device Configuration (RMS Voltage Counter Reset)	ESME
6.28	6.28	Set CHF Sub GHz Configuration	CHF (Dual Band Only)
6.29	6.29	Request CHF Sub GHz Channel Scan	CHF (Dual Band Only)
6.30	6.30	Read CHF Sub GHz Configuration	CHF (Dual Band Only)
6.31	6.31	Read CHF Sub GHz Channel	CHF (Dual Band Only)
6.32	6.32	Read CHF Sub GHz Channel Log	CHF (Dual Band Only)

Table 2 DMS - Service Requests / Devices

For each of the DMS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.1 Section 6.1

This section has been intentionally left blank as there is no Service Reference 6.1.

6.2 Read Device Configuration (6.2)

SMETS2 or later

This Service Request maps to seven Electricity, five Gas and one Communications Hub Function GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 6.2 Service Request has been broken into nine parts: 6.2.1 (Voltage) – applicable to Electricity, 6.2.2 (Randomisation) – applicable to Electricity, 6.2.3 (Billing Calendar) – applicable to Electricity and Gas, 6.2.4 (Identity Exc MPxN) – applicable to Electricity, Gas and Communications Hub Function, 6.2.5 (Power Thresholds) – applicable to Electricity, 6.2.7 (MPxN) – applicable to Electricity and Gas, 6.2.8 (Gas) – applicable to Gas, 6.2.9 (Payment Mode) – applicable to Electricity and Gas and 6.2.10 (Event and Alert Behaviours) – applicable to Electricity and Gas.

SMETS1

This Service Request maps to Service Reference Variant 6.2.1 (Voltage) – applicable to Electricity, 6.2.3 (Billing Calendar) – applicable to Electricity and Gas, 6.2.5 (Power Thresholds) – applicable to Electricity, 6.2.8 (Gas) – applicable to Gas and 6.2.9 (Payment Mode) – applicable to Electricity and Gas

6.2.1 Read Device Configuration (Voltage) (6.2.1)

Service Request Name	ReadDeviceConfiguration
Service Reference	6.2
Service Request Variant Name	ReadDeviceConfiguration(Voltage)
Service Reference Variant	6.2.1
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration voltage data values as defined in SMETS that are currently held on Electricity Smart Meter Equipment and that determine the configurable aspects of its behaviour.
Business Context Statement	The DCC Service User wishes to read the current configuration voltage parameters for a specified Electricity Smart Meter Equipment ID, e.g. to enable them to obtain / confirm the current configuration settings of the device for diagnostic purposes.
User Role Access	<ul style="list-style-type: none">Electricity Import Supplier (EIS)Electricity Network Operator (ENO)Supplier Nominated Agent (SNA)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. The Voltage data returned depends on whether the Electricity Smart Meter is single phase or polyphase. 2. Where the Electricity Smart Metering Equipment notified and recorded in the Smart Metering Inventory as Twin Element Electricity Metering Equipment as defined in SMETS, then the voltage quality data and data settings are the same as for the first element. 3. Where the Electricity Smart Metering Equipment notified and recorded in the Smart Metering Inventory as Polyphase Electricity Metering Equipment as defined in SMETS (ESME Variant = 'C'), then the voltage quality settings will be returned that relate specifically to the polyphase meter. 4. These values are configured on the Device by Service Request 6.5 – Update Device Configuration (Voltage). See section 6.5 5. If the ESME Firmware is certified to GBCS v2.0 or later, the Average RMS Over and Under Voltage Counters can be explicitly reset by Service Request 6.27 – Update Device Configuration (RMS Voltage counter reset). See section 6.27. They can also be automatically reset by Service Request 6.5 – Update Device Configuration (Voltage). See section 6.5 6. If the ESME Firmware is certified to GBCS v1.0 the Average RMS Over and Under Voltage Counters are reset automatically as part of Service Request 6.5 – Update Device Configuration (Voltage). See section 6.5 		
GBCS Cross Reference	Electricity (Single Phase)	Electricity (Poly Phase)	Gas
GBCS Message Code	0x003C	0x00C6	N/A
GBCS Use Case	ECS26b	ECS26k	N/A
GBCS Use Case Name	Read ESME Configuration Voltage Data	Read ESME Configuration Voltage Data - 3 phase	N/A
SMETS1 Applicability	Yes	N/A	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. Only single phase ESME behaviour is applicable to SMETS1 Devices. 2. The setting of Average RMS Over and Under Voltage Counters for SMETS1 ESME Devices is aligned to the behaviour of GBCS v2.0 ESME Devices. 		

Table 3 Read Device Configuration (Voltage) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.1.1 Service Request

6.2.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationVoltage XML element defines this Service Request and doesn't contain any data items.

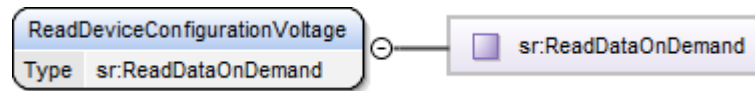


Figure 1 Read Device Configuration (Voltage) Service Request Structure

6.2.1.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 4 Read Device Configuration (Voltage) Modes of Operation

6.2.1.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 5 Read Device Configuration (Voltage) Command Variant Values

6.2.1.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.1.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationVoltage/>
```

Figure 2 Read Device Configuration (Voltage) Service Request (Body) Format

6.2.1.2 Responses

The response messages for a “Read Device Configuration (Voltage)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.1.2.1 Parse Output / SMETS1 Response Format

6.2.1.2.1.1 Format - ReadDeviceConfigurationVoltageResp

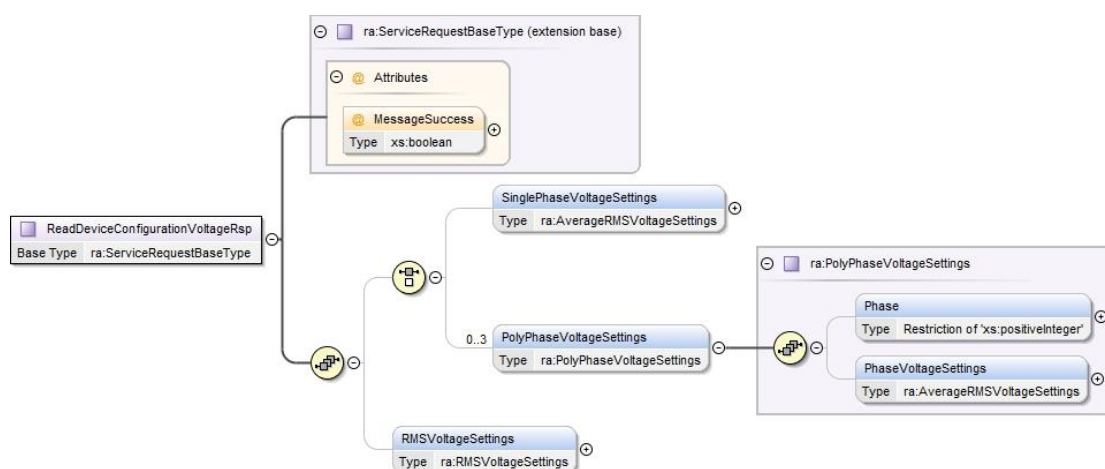


Figure 3 - Read Device Configuration (Voltage) Parse Response / SMETS1 Response Structure

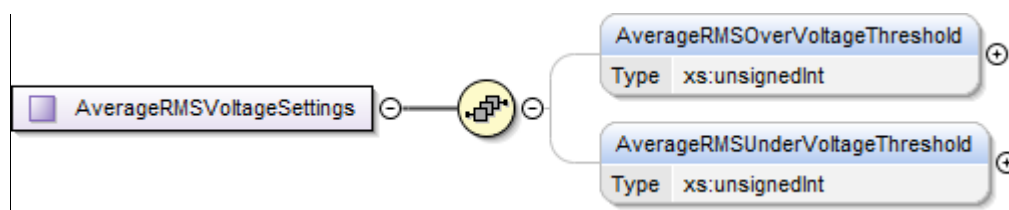


Figure 4 – AverageRMSVoltageSettings Structure

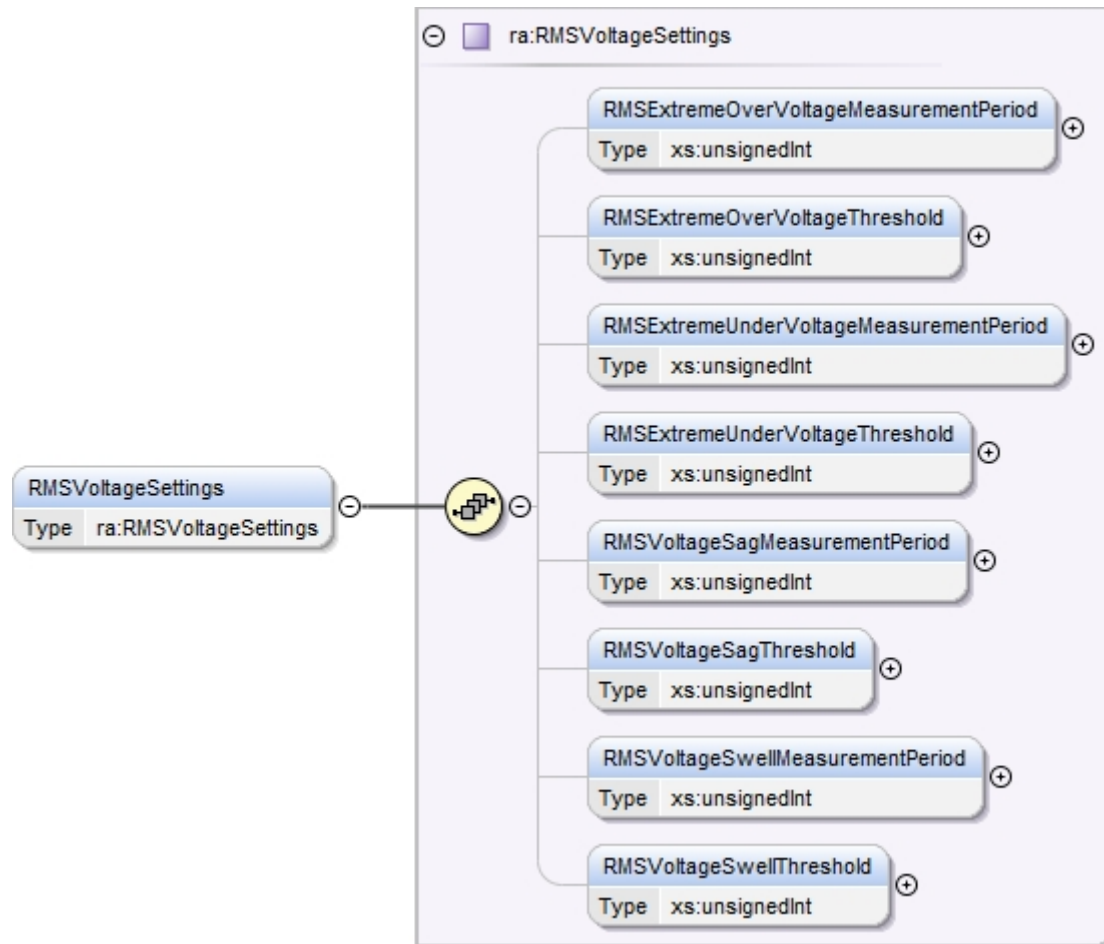


Figure 5 - RMSVoltageSettings Structure

6.2.1.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Electricity Response (3 Phase) (N/A to SMETS1)
GBCSHexadecimalMessageCode	003C	00C6
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26b</i>	<i>ECS26k</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Voltage Data</i>	<i>Read ESME Configuration Voltage Data - 3 phase</i>
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 6 - Read Device Configuration (Voltage) Parse/SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.1.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SinglePhaseVoltageSettings	The Average Voltage settings applicable to a Single Phase (Single or Twin Element) Electricity Smart Meter.	ra:AverageRMSVoltageSettings (see section 6.2.1.2.1.3.1)	None	N/A	Non-Sensitive
PolyPhaseVoltageSettings	The Average Voltage settings applicable to a PolyPhase Electricity Smart Meter	ra:PolyPhaseVoltageSettings (see section 6.2.1.2.1.3.2)	None	N/A	Non-Sensitive
RMSVoltageSettings	The non-average RMS Voltage settings applicable to a Single Phase (Single or Twin Element) Electricity Smart Meter or to a Polyphase Electricity Smart Meter phase.	ra: RMSVoltageSettings (see section 6.2.1.2.1.3.3)	None	N/A	Non-Sensitive

Table 6.1 - Read Device Configuration (Voltage) Parse Response Body Data Items

6.2.1.2.1.3.1 AverageRMSVoltageSettings Data Items

Note that the average RMS voltage settings measurement period, which is updated by the equivalent update Service Request (6.5), is not returned in this Service Request 6.2.1. To read the measurement period it is necessary to use Service Request 4.10 Read Network Data.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AverageRMSOverVoltageThreshold	The average RMS voltage for phase [n] above which an over voltage condition is reported. The threshold shall be configurable within the specified operating range of ESME.	xs:unsignedInt	None	10 th Volt	Non-Sensitive
AverageRMSUnderVoltageThreshold	The average RMS voltage for phase [n] below which an under voltage condition is reported. The threshold shall be configurable within the specified operating range of ESME.	xs:unsignedInt	None	10 th Volt	Non-Sensitive

Table 6.2 - AverageRMSVoltageSettings Data Items

6.2.1.2.1.3.2 PolyPhaseVoltageSettings Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Phase	The number (enumerated value: 1, 2, 3) of the phase to which the Phase Voltage Settings apply. Not applicable to single phase meters.	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 3)	None	N/A	Non-Sensitive
PhaseVoltageSettings	The Average Voltage settings applicable to a Single Phase (Single or Twin Element) Electricity Smart Meter.	ra:AverageRMSVoltageSettings (see section 6.2.1.2.1.3.1)	None	N/A	Non-Sensitive

Table 6.3 - PolyPhaseVoltageSettings Data Items

6.2.1.2.1.3.3 RMSVoltageSettings Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RMSExtremeOverVoltageMeasurementPeriod	The duration in seconds used to measure an extreme over voltage condition.	xs:unsignedInt	None	Seconds	Non-Sensitive
RMSExtremeOverVoltageThreshold	The RMS voltage above which an extreme over voltage condition is reported. The threshold shall be configurable within the specified operating range of ESME.	xs:unsignedInt	None	10 th Volt	Non-Sensitive
RMSExtremeUnderVoltageMeasurementPeriod	The duration in seconds used to measure an extreme under voltage condition.	xs:unsignedInt	None	Seconds	Non-Sensitive
RMSExtremeUnderVoltageThreshold	The RMS voltage below which an extreme under voltage condition is reported. The threshold shall be configurable within the specified operating range of ESME.	xs:unsignedInt	None	10 th Volt	Non-Sensitive
RMSVoltageSagMeasurementPeriod	The duration in seconds used to measure a voltage sag condition.	xs:unsignedInt	None	Seconds	Non-Sensitive
RMSVoltageSagThreshold	The RMS voltage below which a sag condition is reported. The threshold shall be configurable within the specified operating range of ESME.	xs:unsignedInt	None	10 th Volt	Non-Sensitive
RMSVoltageSwellMeasurementPeriod	The duration in seconds used to measure a voltage swell condition.	xs:unsignedInt	None	Seconds	Non-Sensitive
RMSVoltageSwellThreshold	The RMS voltage above which a swell condition is reported. The threshold shall be configurable within the specified operating range of ESME.	xs:unsignedInt	None	10 th Volt	Non-Sensitive

Table 6.4 - RMSVoltageSettings Data Items

6.2.1.2.1.4 Sample Response

```

<ra:ReadDeviceConfigurationVoltageRsp MessageSuccess="true">
  <ra:SinglePhaseVoltageSettings>
    <ra:AverageRMSOverVoltageThreshold>20</ra:AverageRMSOverVoltageThreshold>
    <ra:AverageRMSUnderVoltageThreshold>10</ra:AverageRMSUnderVoltageThreshold>
  </ra:SinglePhaseVoltageSettings>
  <ra:RMSVoltageSettings>
    <ra:RMSExtremeOverVoltageMeasurementPeriod>50</ra:RMSExtremeOverVoltageMeasurementPeriod>
    <ra:RMSExtremeOverVoltageThreshold>20</ra:RMSExtremeOverVoltageThreshold>
    <ra:RMSExtremeUnderVoltageMeasurementPeriod>40</ra:RMSExtremeUnderVoltageMeasurementPeriod>
    <ra:RMSExtremeUnderVoltageThreshold>30</ra:RMSExtremeUnderVoltageThreshold>
    <ra:RMSVoltageSagMeasurementPeriod>30</ra:RMSVoltageSagMeasurementPeriod>
    <ra:RMSVoltageSagThreshold>20</ra:RMSVoltageSagThreshold>
    <ra:RMSVoltageSwellMeasurementPeriod>40</ra:RMSVoltageSwellMeasurementPeriod>
    <ra:RMSVoltageSwellThreshold>40</ra:RMSVoltageSwellThreshold>
  </ra:RMSVoltageSettings>
</ra:ReadDeviceConfigurationVoltageRsp>

```

Figure 6 - Read Device Configuration Voltage Parse Response Sample

6.2.2 Read Device Configuration (Randomisation) (6.2.2)

Service Request Name	ReadDeviceConfiguration
----------------------	-------------------------

Service Reference	6.2	
Service Request Variant Name	ReadDeviceConfiguration(Randomisation)	
Service Reference Variant	6.2.2	
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration randomisation data values as defined in SMETS that are currently held on specified Smart Meter Equipment and that determine the configurable aspects of its behaviour.	
Business Context Statement	The DCC Service User wishes to read the current configuration randomisation parameters of a specified Electricity Smart Meter Equipment Device ID, e.g. to enable them to obtain / confirm the current configuration settings of the device for diagnostic purposes.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO) Supplier Nominated Agent (SNA) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> Randomisation Configuration settings are used to delay the Tariff Switching Table times and the Auxiliary Load Control Switch switching times. The Randomised Offset Limit is configured on the Device by Service Request 7.12 - Set Randomised Offset Limit. See Annex section 7.12. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x003D	N/A
GBCS Use Case	ECS26c	N/A
GBCS Use Case Name	Read ESME Configuration Data Device Information (randomisation)	N/A
SMETS1 Applicability	No	No

Table 7 Read Device Configuration (Randomisation) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.2.1 Service Request

6.2.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its

ReadDeviceConfigurationRandomisation XML element defines this Service Request and doesn't contain any data items.

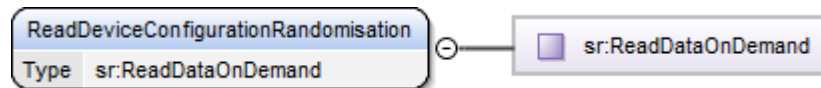


Figure 7 Read Device Configuration (Randomisation) Service Request Structure

6.2.2.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 8 Read Device Configuration (Randomisation) Modes of Operation

6.2.2.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 9 Read Device Configuration (Randomisation) Command Variant Values

6.2.2.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.2.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationRandomisation/>
```

Figure 8 Read Device Configuration (Randomisation) Service Request (Body) Format

6.2.2.2 Responses

The response messages for a "Read Device Configuration (Randomisation)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.2.2.1 Parse Output Format

6.2.2.2.1.1 Format - ReadDeviceConfigurationRandomisationRsp

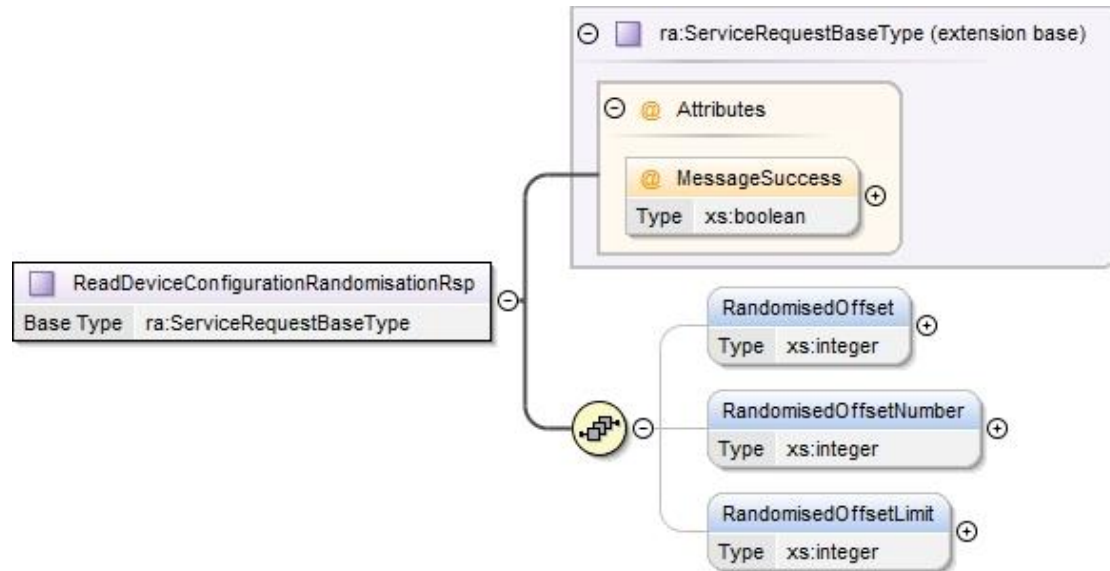


Figure 9 - Read Device Configuration (Randomisation) Parse Response Structure

6.2.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	003D
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Device Information (randomisation)</i>
SupplementaryRemotePartyID	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 10 - Read Device Configuration (Randomisation) Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.2.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RandomisedOffset	RandomisedOffsetNumber * RandomisedOffsetLimit * (10 to the power -4) rounded to the nearest integer number of seconds. This value is used to delay the Tariff Switching Table times and the Auxiliary Load Control Switch switching times.	xs:integer	None	Seconds	Non-Sensitive
RandomisedOffset Number	Integer between 1 and 10,000 randomly set at manufacture	xs:integer	None	N/A	Non-Sensitive
RandomisedOffsetLimit	A value in seconds in the range 0 to 1799.	xs:integer	None	seconds	Non-Sensitive

6.2.2.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationRandomisationRsp MessageSuccess="true">
  <ra:RandomisedOffset>50</ra:RandomisedOffset>
  <ra:RandomisedOffsetNumber>5000</ra:RandomisedOffsetNumber>
  <ra:RandomisedOffsetLimit>100</ra:RandomisedOffsetLimit>
</ra:ReadDeviceConfigurationRandomisationRsp>
```

Figure 10 - Read Device Configuration Randomisation Parse Response Example

6.2.3 Read Device Configuration (Billing Calendar) (6.2.3)

Service Request Name	ReadDeviceConfiguration
Service Reference	6.2
Service Request Variant Name	ReadDeviceConfiguration(BillingCalendar)
Service Reference Variant	6.2.3
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration Billing Calendar data values as defined by SMETS that are currently held on Gas and Electricity Smart Metering Equipment and that determine the configurable aspects of its behaviour.
Business Context Statement	The DCC Service User wishes to read the current configuration Billing Calendar parameters for a specified Gas or Electricity Smart Metering Equipment ID, e.g. to enable them to obtain / confirm the current configuration settings of the device for diagnostic purposes
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 for later)	<div>1. The Billing Calendar is a calendar as defined by SMETS for the ESME and GSME, defining User configured billing dates for the storage of billing related information in the Billing Data Log as defined by SMETS.</div> <div>2. These values are configured on the Device by Service Request 6.8 – Update Device Configuration (Billing Calendar). Users are advised not to read Billing Calendar information prior to using Service Request 6.8 to set it. See section 6.8</div> <div>3. For reading the Billing Calendar from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query (or if the GPF Firmware version is certified to GBCS v1.0 and the GSME Firmware version is certified to a later GBCS version) should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users</div> <div>4. For note - Potential Interoperability issue - In order for the Gas Billing Calendar functionality to work successfully E2E across the HAN for all billing periods, both the GSME and the GPF devices operating within the HAN MUST be operating in accordance with GBCS v2.0 specifications. If the GPF is not operating in line with GBCS 2.0 (and operating still to GBCS v1.0 whilst the GSME is operating to GBCS v2.0), then the GPF will not by definition support TOM Commands for Use Case GCS25a correctly and interoperability issues may arise as the Gas meter will support more billing periods than the GPF does and the two devices will not support the same functionality. If a GSME is installed within a HAN then the DCC Service User should ensure that the associated GPF is also operating to GBCS v2.0 to avoid any potential interoperability issues.</div> <div>5. Quarterly, Six Monthly and Yearly billing periodicities are only supported by Devices with a Firmware version certified to GBCS v2.0 or later</div>		
	GBCS Cross Reference	Electricity	Gas
	GBCS v1.0 Message Code	0x003E	0x009D
	GBCS v1.0 Use Case	ECS26d	GCS21d
	GBCS v1.0 Use Case Name	Read ESME Configuration Data Device Information (Billing Calendar)	Read GSME Configuration Data Device Information (BillingCalendar)
	GBCS v2.0 Message Code	0x00D9	0x00DA
GBCS v2.0 Use Case	ECS26l	GCS21k	

GBCS v2.0 Use Case Name	Read ESME Configuration Data Device Information (Billing Calendar - all periodicities)	Read GSME Configuration Data Device Information (BillingCalendar - all periodicities)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: 1. SMETS1 behaviour is aligned to GBCS v2.0 behaviour.	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	ECS26d	ECS26l
DUIS 2 or later: DEFAULT - No specific XML criteria	ECS26d	ECS26l
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	GCS21d	GCS21k
DUIS 2 or later: DEFAULT - No specific XML criteria	GCS21d	GCS21k
Device Type	GPF	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	GCS21d	GCS21k
DUIS 2 or later: DEFAULT - No specific XML criteria	GCS21d	GCS21k

Table 11 Read Device Configuration (Billing Calendar) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.3.1 Service Request

6.2.3.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its

ReadDeviceConfigurationBillingCalendar XML element defines this Service Request and doesn't contain any data items.

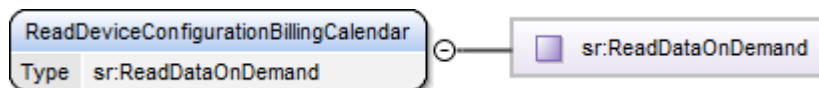


Figure 11 Read Device Configuration (Billing Calendar) Service Request Structure

6.2.3.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 12 Read Device Configuration (Billing Calendar) Modes of Operation

6.2.3.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 13 Read Device Configuration (Billing Calendar) Command Variant Values

6.2.3.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.3.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationBillingCalendar/>
```

Figure 12 Read Device Configuration (Billing Calendar) Service Request (Body) Format

6.2.3.2 Responses

The response messages for a "Read Device Configuration (Billing Calendar)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.3.2.1 Parse Output / SMETS1 Response Format

6.2.3.2.1.1 Format - ReadDeviceConfigurationDataBillingCalendarRsp

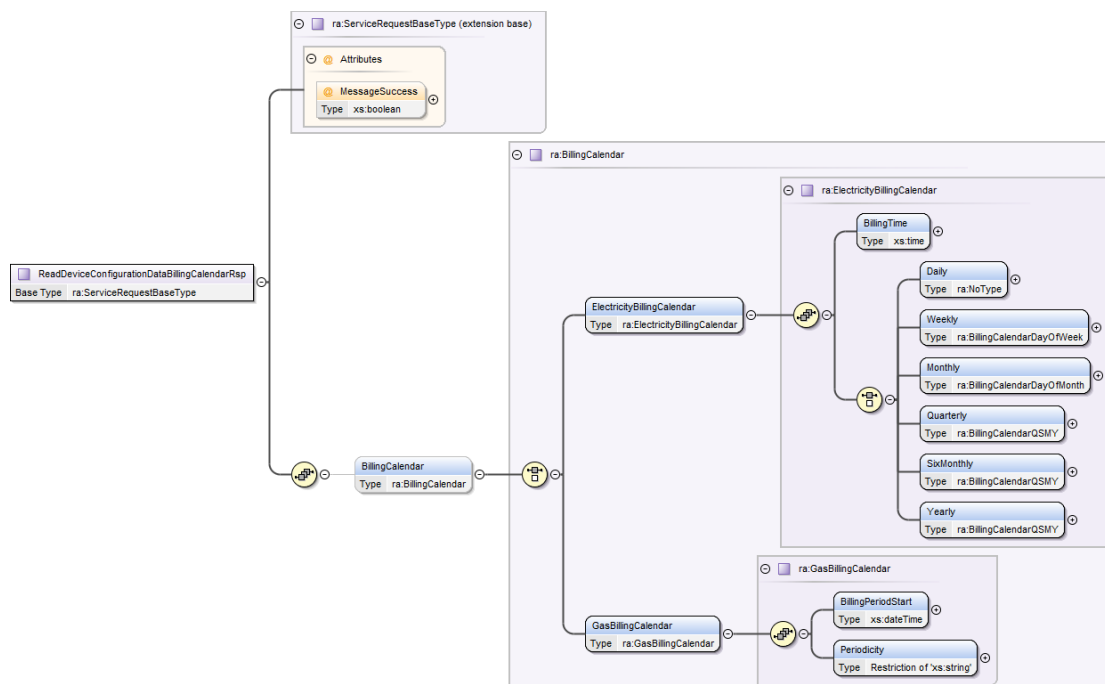


Figure 13 - Read Device Configuration (Billing Calendar) Parse Response / SMETS1 Response Structure

6.2.3.2.1.2 Specific Header Data Items

GBCS v1.0:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	003E	009D
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26d</i>	<i>GCS21d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Device Information (Billing Calendar)</i>	<i>Read GSME Configuration Data Device Information (BillingCalendar)</i>
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 14 - Read Device Configuration (Billing Calendar) Parse Response Header Data Items – GBCS v1.0

GBCS v2.0 or SMETS1:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00D9	00DA
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26l</i>	<i>GCS21k</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Device Information (Billing Calendar - all periodicities)</i>	<i>Read GSME Configuration Data Device Information (BillingCalendar - all periodicities)</i>
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 15 - Read Device Configuration (Billing Calendar) Parse Response Header Data Items – GBCS v2.0 & SMETS1

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.3.2.1.3 Specific Data Items

Only 1 BillingCalendar with 1 period is permitted.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ElectricityBillingCalendar	Indicates that the Billing Calendar is that of an ESME	ra:ElectricityBillingCalendar (see the similar sr:ElectricityBillingCalendar in section 6.8.1.3)	N/A	None	N/A
GasBillingCalendar	Indicates that the Billing Calendar is that of a GSME	ra:GasBillingCalendar (see the similar sr:GasBillingCalendar in section 6.8.1.4)	N/A	None	N/A

6.2.3.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationDataBillingCalendarRsp MessageSuccess="true">
  <ra:BillingCalendar>
    <ra:ElectricityBillingCalendar>
      <ra:BillingTime>00:05:00.00</ra:BillingTime>
      <ra:Daily/>
    </ra:ElectricityBillingCalendar>
  </ra:BillingCalendar>
</ra:ReadDeviceConfigurationDataBillingCalendarRsp>
```

**Figure 14 - Read Device Configuration (Billing Calendar) Parse Response Example
(Electricity - Daily)**

```
<ra:ReadDeviceConfigurationDataBillingCalendarRsp MessageSuccess="true">
  <ra:BillingCalendar>
    <ra:ElectricityBillingCalendar>
      <ra:BillingTime>00:05:00.00</ra:BillingTime>
      <ra:Quarterly>
        <ra:DayOfMonth>3</ra:DayOfMonth>
        <ra:BillingPeriodStartMonth>8</ra:BillingPeriodStartMonth>
      </ra:Quarterly>
    </ra:ElectricityBillingCalendar>
  </ra:BillingCalendar>
</ra:ReadDeviceConfigurationDataBillingCalendarRsp>
```

**Figure 15 - Read Device Configuration (Billing Calendar) Parse Response Example
(Electricity - Quarterly)**

6.2.3.2.1.5 Sample Response

```
<ra:ReadDeviceConfigurationDataBillingCalendarRsp MessageSuccess="true">
  <ra:BillingCalendar>
    <ra:GasBillingCalendar>
      <ra:BillingPeriodStart>2006-05-04T18:13:51.00</ra:BillingPeriodStart>
      <ra:Periodicity>Daily</ra:Periodicity>
    </ra:GasBillingCalendar>
  </ra:BillingCalendar>
</ra:ReadDeviceConfigurationDataBillingCalendarRsp>
```

**Figure 16 - Read Device Configuration (Billing Calendar) Parse Response Example
(Gas – Daily)**

```
<ra:ReadDeviceConfigurationDataBillingCalendarRsp MessageSuccess="true">
  <ra:BillingCalendar>
    <ra:GasBillingCalendar>
      <ra:BillingPeriodStart>2017-05-04T18:13:51.00</ra:BillingPeriodStart>
      <ra:Periodicity>Quarterly</ra:Periodicity>
    </ra:GasBillingCalendar>
  </ra:BillingCalendar>
</ra:ReadDeviceConfigurationDataBillingCalendarRsp>
```

**Figure 17 - Read Device Configuration (Billing Calendar) Parse Response Example
(Gas - Quarterly)**

6.2.4 Read Device Configuration (Identity Exc MPxN) (6.2.4)

Service Request Name	ReadDeviceConfiguration
Service Reference	6.2
Service Request Variant Name	ReadDeviceConfiguration(IdentityExcMPxN)
Service Reference Variant	6.2.4
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration Identity (except MPxN) data values that are currently held on a Device.
Business Context Statement	The DCC Service User wishes to read the current configuration Identity (except MPxN) parameters for a specified Smart Metering Device ID, e.g. to enable them to obtain / confirm the current configuration / constant settings of the device for diagnostic purposes
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Supplier Nominated Agent (SNA) Other User (OU)
Security Classification	Non-critical and non-sensitive: SMETS2 or later: GBCS XREF: SME.C.NC
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request reads primarily the Constant data from a specified Device as described in SMETS These values are configured on the Device during the manufacturing process, except for the Gas Smart Meter Equipment Depletion State, which is configured via Service Request 6.7. See section 6.7. This Service Request can no longer be sent to a GPF For CHF Read only the first 3 data items are returned and no Electricity or Gas specifics are returned in the response <p>Response information for this Service Request:</p> <p>All Devices should return ZigBee OTA based values for this Service Request, specifically:</p> <ul style="list-style-type: none"> 'Manufacturer Identifier' should be the value equivalent to the OTA cluster's Manufacturer ID attribute / Manufacturer Code parameters, which is a string. For 'Model Type', there should be two parts (as used in OTA, CPL and SMI to identify a specific hardware model within manufacturer): <ul style="list-style-type: none"> an equivalent to the OTA 'Image Type' parameter so a string and

	<ul style="list-style-type: none"> an equivalent to the OTA 'Hardware Version' parameter, so again a string <p>This means that, in all bar error states:</p> <ul style="list-style-type: none"> the value returned for Manufacturer ID should be the same as the value returned from the SMI in the DUIS data item '<i>DeviceManufacturer</i>'; and the value returned for Model Type should be the same as the value returned from the SMI in the DUIS data item '<i>DeviceModel</i>' 		
GBCS Cross Reference	Electricity	Gas	Communications Hub Function
GBCS v1.0 Message Code	0x003F	0x009E	0x0092
GBCS v1.0 Use Case	ECS26e	GCS21e	ECS26i
GBCS v1.0 Use Case Name	Read ESME Configuration Data Device Information (device identity exc MPAN)	Read GSME/GPF Configuration Data Device Information (device identity)	Read Configuration Data Device Information (CHF identity)
GBCS v2.0 Message Code	0x00F9	0x00FB	0x00FA
GBCS v2.0 Use Case	ECS26m	GCS21m	ECS26n
GBCS v2.0 Use Case Name	Read ESME Configuration Data Device Information (identity, type and supply tamper state)	Read GSME Configuration Data Device Information (identity, type and supply tamper / depletion state)	Read CHF Configuration Data Device Information (CH identity and type)
SMETS1 Applicability	Yes	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document. The S1SP shall not include DeviceIdentifier, MeterVariant or ModelType fields since those do not have to be supported by SMETS1 Devices. The S1SP shall only return ManufacturerIdentifier where the target SMETS1 Device has a Device Identifier with its SMETS1 meaning. 		

GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	ECS26e	ECS26m
DUIS 2 or later: DEFAULT - No specific XML criteria	ECS26e	ECS26m
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	GCS21e	GCS21m
DUIS 2 or later: DEFAULT - No specific XML criteria	GCS21e	GCS21m
Device Type	GPF	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DEFAULT - No specific XML criteria	Response Code - E57	Response Code - E57
Device Type	CHF	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: DEFAULT - No specific XML criteria	ECS26i	ECS26n
DUIS 2 or later: DEFAULT - No specific XML criteria	ECS26i	ECS26n

Table 16 Read Device Configuration (Identity Exc MPxN) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.4.1 Service Request

6.2.4.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationIdentityExcMPxN XML element defines this Service Request and doesn't contain any data items.

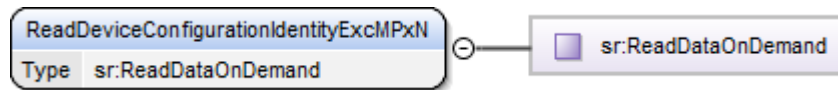


Figure 18 Read Device Configuration (Identity Exc MPxN) Service Request Structure

6.2.4.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 17 Read Device Configuration (Identity Exc MPxN) Modes of Operation

6.2.4.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 18 Read Device Configuration (Identity Exc MPxN) Command Variant Values

6.2.4.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.4.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadDeviceConfigurationIdentityExcMPxN/>

Figure 19 Read Device Configuration (Identity Exc MPxN) Service Request (Body) Format

6.2.4.2 Responses

The response messages for a “Read Device Configuration (Identity Exc MPxN)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output/ SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.4.2.1 Parse Output/ SMETS1 Response Format

6.2.4.2.1.1 Format - ReadDeviceConfigurationIdentityExcMPxNRsp

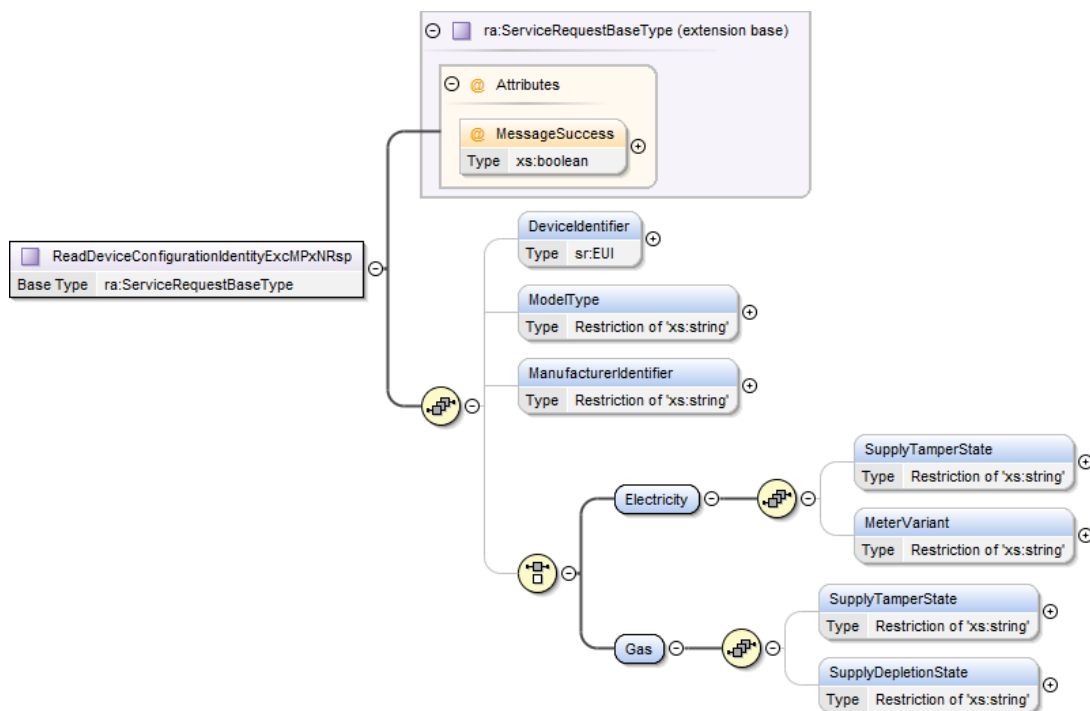


Figure 20 - Read Device Configuration (Device Identity Excluding MPxN) Parse Response/ SMETS1 Response Structure

6.2.4.2.1.2 Specific Header Data Items

GBCS v1.0:

Data Item	Electricity Response	Gas Response	CHF Response
GBCSHexadecimalMessageCode	003F	009E	0092
GBCS Use Case Number (for information only - not in header)	ECS26e	GCS21e	ECS26i
GBCS Use Case Name (for information only - not in header)	Read ESME Configuration Data Device Information (device identity exc MPAN)	Read GSME Configuration Data Device Information (device identity)	Read Configuration Data Device Information (CHF identity)
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP	Present
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP	Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

**Table 19 - Read Device Configuration (Device Identity Excluding MPxN) Parse
Response Header Data Items – GBCS v1.0**

GBCS v2.0/SMETS1:

Data Item	Electricity Response	Gas Response	CHF Response
GBCSHexadecimalMessageCode	00F9	00FB	00FA
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26m</i>	<i>GCS21m</i>	<i>ECS26n</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Device Information (identity, type and supply tamper state)</i>	<i>Read GSME Configuration Data Device Information (identity, type and supply tamper / depletion state)</i>	<i>Read CHF Configuration Data Device Information (CH identity and type)</i>
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP	Present
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP	Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

**Table 20 - Read Device Configuration (Device Identity Excluding MPxN) Parse
Response Header Data Items – GBCS v2.0/SMETS1**

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.4.2.1.3 Specific Body Data Items

The response structure is common for each of the three use cases it services. Some of the data items do not apply in each instance, these are detailed in the “Description/Valid Set” column of the table below.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceIdentifier	A globally unique identifier used to identify the device based on the EUI-64 Institute of Electrical and Electronic Engineers standard DeviceIdentifier is only supported (and hence returned within the response) on Devices with a Firmware version certified to GBCS v1.0	ra:EUI	None	N/A	Non-Sensitive
ModelType	An identifier used to identify the model of the device.	xs:string (maxLength = 8)	None	N/A	Non-Sensitive
ManufacturerIdentifier	An identifier used to identify the manufacturer of the device.	xs:string (maxLength = 32)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SupplyTamperState	A setting which determines the action of the ESME or GSME to control the state of the Supply in the case of a Tamper Event being detected. Not present when reading CHF Identity information. Statuses are: <ul style="list-style-type: none"> Unchanged Locked 	Restriction of xs:string (enumeration)	None	N/A	Non-Sensitive
MeterVariant	A data item to indicate if ESME is Single Element Electricity Metering Equipment (A), Twin Element Electricity Metering Equipment (B) or Polyphase Electricity Metering Equipment (C). Electricity Only Not present when reading CHF or gas identity information.	xs:string (maxLength = 1)	None	N/A	Non-Sensitive
SupplyDepletionState	A setting which determines the action of the GSME to control the state of the Supply in the case of loss of power to GSME. Statuses are: <ul style="list-style-type: none"> Unchanged Locked Gas Only	Restriction of xs:string (enumeration)	None	N/A	Non-Sensitive

6.2.4.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationIdentityExcMPxNRsp MessageSuccess="true">
  <ra:DeviceIdentifier>99-00-AA-BB-CC-DD-EE-FF</ra:DeviceIdentifier>
  <ra:ModelType>ModelType</ra:ModelType>
  <ra:ManufacturerIdentifier>Man</ra:ManufacturerIdentifier>
  <ra:Electricity>
    <ra:SupplyTamperState>Unchanged</ra:SupplyTamperState>
    <ra:MeterVariant>A</ra:MeterVariant>
  </ra:Electricity>
</ra:ReadDeviceConfigurationIdentityExcMPxNRsp>
```

Figure 21 - Read Device Configuration Device Identity Excluding MPxN Parse Response Example – GBCS v1.0

```
<ra:ReadDeviceConfigurationIdentityExcMPxNRsp MessageSuccess="true">
  <ra:ModelType>B74F5E32</ra:ModelType>
  <ra:ManufacturerIdentifier>CD04</ra:ManufacturerIdentifier>
  <ra:Electricity>
    <ra:SupplyTamperState>Unchanged</ra:SupplyTamperState>
    <ra:MeterVariant>A</ra:MeterVariant>
  </ra:Electricity>
</ra:ReadDeviceConfigurationIdentityExcMPxNRsp>
```

Figure 22 - Read Device Configuration Device Identity Excluding MPxN Parse Response Example – GBCS v2.0/SMETS1

6.2.5 Read Device Configuration (Instantaneous Power Thresholds) (6.2.5)

Service Request Name	ReadDeviceConfiguration	
Service Reference	6.2	
Service Request Variant Name	ReadDeviceConfiguration(InstantaneousPowerThresholds)	
Service Reference Variant	6.2.5	
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration Instantaneous Power Thresholds data values that are currently held on a specified Electricity Smart Metering Equipment.	
Business Context Statement	The DCC Service User wishes to read the current configuration Instantaneous Power Thresholds parameters for a specified Electricity Smart Metering Equipment, e.g. to enable them to obtain / confirm the current configuration settings of the device for diagnostic purposes	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Supplier Nominated Agent (SNA) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request allows a DCC Service User to read the two configurable Instantaneous Power Thresholds that can be configured within the ESME as specified by SMETS; <ul style="list-style-type: none"> <i>Low Medium Power Threshold - A value in kW defining the threshold between an indicative low and medium Active Power Import level.</i> <i>Medium High Power Threshold - A value in kW defining the threshold between an indicative medium and high Active Power Import level.</i> These values are configured on the Device by Service Request 6.12 – Update Device Configuration (Instantaneous Power Threshold). See section 6.12. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0040	N/A
GBCS Use Case	ECS26f	N/A
GBCS Use Case Name	Read ESME Configuration Data Device Information (instantaneous power thresholds)	N/A

SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 21 Read Device Configuration (Instantaneous Power Thresholds) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.5.1 Service Request

6.2.5.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationInstantaneousPowerThresholds XML element defines this Service Request and doesn't contain any data items.

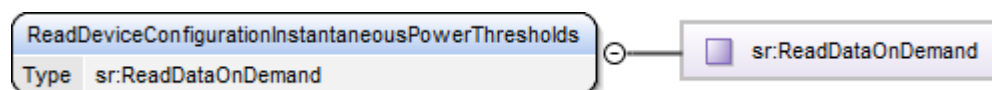


Figure 23 Read Device Configuration (Instantaneous Power Thresholds) Service Request Structure

6.2.5.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 22 Read Device Configuration (Instantaneous Power Thresholds) Modes of Operation

6.2.5.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 23 Read Device Configuration (Instantaneous Power Thresholds) Command Variant Values

6.2.5.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.5.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationInstantaneousPowerThresholds/>
```

Figure 24 Read Device Configuration (Instantaneous Power Thresholds) Service Request (Body) Format

6.2.5.2 Responses

The response messages for a “Read Device Configuration (Instantaneous Power Thresholds)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.5.2.1 Parse Output / SMETS1 Response Format

6.2.5.2.1.1 Format - ReadDeviceConfigurationInstantaneousPowerThresholdsRsp

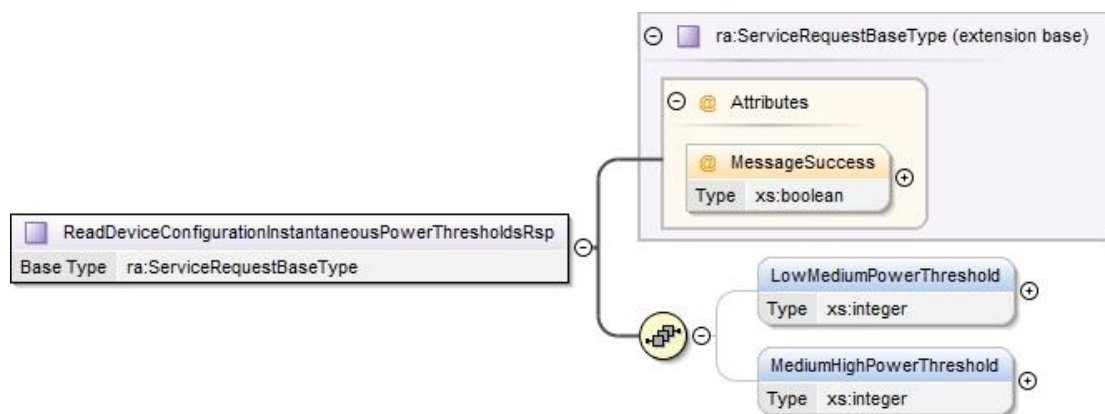


Figure 25 – Read Device Configuration Instantaneous Power Thresholds Parse Response / SMETS1 Response Structure

6.2.5.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0040

Data Item	Electricity Response
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26f</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Device Information (instantaneous power thresholds)</i>
SupplementaryRemotePartyID	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 24 - Read Device Configuration (Instantaneous Power Thresholds) Parse/SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.5.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LowMediumPowerThreshold	A value in W defining the threshold between an indicative low and medium Active Power Import level.	xs:integer	None	W	Non-Sensitive
MediumHighPowerThreshold	A value in W defining the threshold between an indicative medium and high Active Power Import level	xs:integer	None	W	Non-Sensitive

6.2.5.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationInstantaneousPowerThresholdsRsp MessageSuccess="true">
  <ra:LowMediumPowerThreshold>50</ra:LowMediumPowerThreshold>
  <ra:MediumHighPowerThreshold>100</ra:MediumHighPowerThreshold>
</ra:ReadDeviceConfigurationInstantaneousPowerThresholdsRsp>
```

Figure 26 - Read Device Configuration (Instantaneous Power Thresholds) Parse Response Example

6.2.6 Section 6.2.6

This section has been intentionally left blank as there is no Service Reference Variant 6.2.6.

6.2.7 Read Device Configuration (MPxN) (6.2.7)

Service Request Name	ReadDeviceConfiguration
Service Reference	6.2
Service Request Variant Name	ReadDeviceConfiguration(MPxN)

Service Reference Variant	6.2.7	
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration MPxN data values that are currently held on an ESME, GSME or GPF.	
Business Context Statement	The DCC Service User wishes to read the current configured MPxN set for a specified Device, e.g. to enable them to obtain / confirm the current configuration / constant settings of the device for diagnostic purposes	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) Supplier Nominated Agent (SNA) Other User (OU) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> For Electricity Smart Metering Equipment, all the MPANs associated to the meter will be returned to all User Roles. For Electricity Smart Metering Equipment, the Import MPANs are combined into a single string for storage within the Device, the first 13 bytes represents primary MPAN and the second 13 bytes represents secondary MPAN. The Export MPAN value is stored separately within the Device. For reading the MPRN value from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. These values are configured on the Device by one of Service Requests: 6.20.1 –Set Device Configuration (Import MPxN). See section 6.20.1 6.20.2 –Set Device Configuration (Export MPAN). See section 6.20.2 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x004E	0x0089
GBCS Use Case	ECS40	GCS46
GBCS Use Case Name	Read MPAN Value on the ESME	Read MPRN on the GSME

SMETS1 Applicability	No	No
----------------------	----	----

Table 25 Read Device Configuration (MPxN) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.7.1 Service Request

6.2.7.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationMPxN XML element defines this Service Request and doesn't contain any data items.

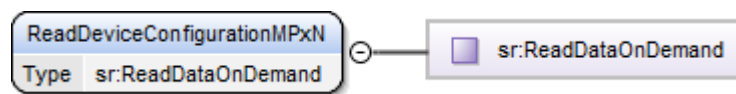


Figure 27 Read Device Configuration (MPxN) Service Request Structure

6.2.7.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 26 Read Device Configuration (MPxN) Modes of Operation

6.2.7.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 27 Read Device Configuration (MPxN) Command Variant Values

6.2.7.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.7.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationMPxN/>
```

Figure 28 Read Device Configuration (MPxN) Service Request (Body) Format

6.2.7.2 Responses

The response messages for a “Read Device Configuration (MPxN)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.7.2.1 Parse Output Format

6.2.7.2.1.1 Format - ReadDeviceConfigurationMPxNRsp

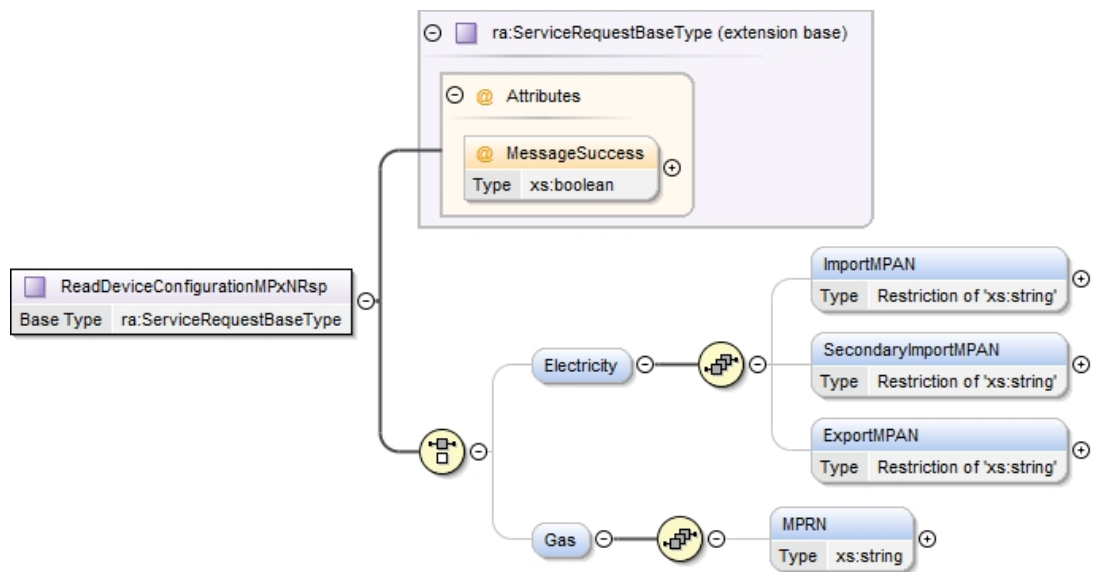


Figure 29 - Read Device Configuration (MPxN) Parse Response Structure

6.2.7.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	004E	0089
GBCS Use Case Number (for information only - not in header)	ECS40	GCS46

Data Item	Electricity Response	Gas Response
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read MPAN Value on the ESME</i>	<i>Read MPRN on the GSME</i>
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 28 - Read Device Configuration (MPxN) Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.7.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ImportMPAN	Primary MPAN Electricity Only	xs:string (maxLength = 13)	None	N/A	Non-Sensitive
SecondaryImportMPAN	Secondary MPAN Electricity Only Twin Element Only	xs:string (maxLength = 13)	None	N/A	Non-Sensitive
ExportMPAN	The MPAN associated with Export Consumption Electricity Only Export Only	xs:string (maxLength = 13)	None	N/A	Non-Sensitive
MPRN	The MPRN associated with Gas Consumption Gas Only	xs:string (maxLength = 10)	None	N/A	Non-Sensitive

6.2.7.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationMPxNRsp MessageSuccess="true">
  <ra:Electricity>
    <ra:ImportMPAN>1800000123456</ra:ImportMPAN>
    <ra:SecondaryImportMPAN>1800000654321</ra:SecondaryImportMPAN>
    <ra:ExportMPAN>1800000044444</ra:ExportMPAN>
  </ra:Electricity>
</ra:ReadDeviceConfigurationMPxNRsp>
```

Figure 30 - Read Device Configuration (MPxN) Parse Response Example

6.2.8 Read Device Configuration (Gas) (6.2.8)

Service Request Name	ReadDeviceConfiguration
Service Reference	6.2
Service Request Variant Name	ReadDeviceConfiguration(Gas)

Service Reference Variant	6.2.8	
Service Request Objective	This Service Request enables an authorised DCC Service User to read the Gas configuration specific data values that are currently held on a GSME that determine the configurable aspects of its behaviour.	
Business Context Statement	The DCC Service User wishes to read the current Gas configuration parameters for a specified GSME, e.g. to enable them to obtain / confirm the current configuration / constant settings of the device for diagnostic purposes	
User Role Access	<ul style="list-style-type: none"> Gas Import Supplier (GIS) Gas Network Operator (GNO) Supplier Nominated Agent (SNA) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request is only applicable to the GSME, i.e. it isn't possible to read the data from the GPF. These values are configured on the Device by Service Requests: <ul style="list-style-type: none"> 6.6 – Update Device Configuration (Gas Conversion). See section 6.6 6.7 – Update Device Configuration (Gas Flow). See section 6.7 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	0x007B
GBCS Use Case	N/A	GCS21a
GBCS Use Case Name	N/A	Read Gas Configuration Data Device Information
SMETS1 Applicability	N/A	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Where the SMETS1 Device does not support the setting of values equivalent to the StabilisationPeriod or MeasurementPeriod values, the S1SP shall, in populating a SMETS1 Response, set the values to the relevant Unsupported Value as detailed in section 6.2.8.2.1.3. 	

Table 29 Read Device Configuration (Gas) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.8.1 Service Request

6.2.8.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationGas XML element defines this Service Request and doesn't contain any data items.



Figure 31 Read Device Configuration (Gas) Service Request Structure

6.2.8.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 30 Read Device Configuration (Gas) Modes of Operation

6.2.8.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 31 Read Device Configuration (Gas) Command Variant Values

6.2.8.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.8.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationGas/>
```

Figure 32 Read Device Configuration (Gas) Service Request (Body) Format

6.2.8.2 Responses

The response messages for a "Read Device Configuration (Gas)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.8.2.1 Parse Output / SMETS1 Response Format

6.2.8.2.1.1 Format - ReadDeviceConfigurationGasRsp

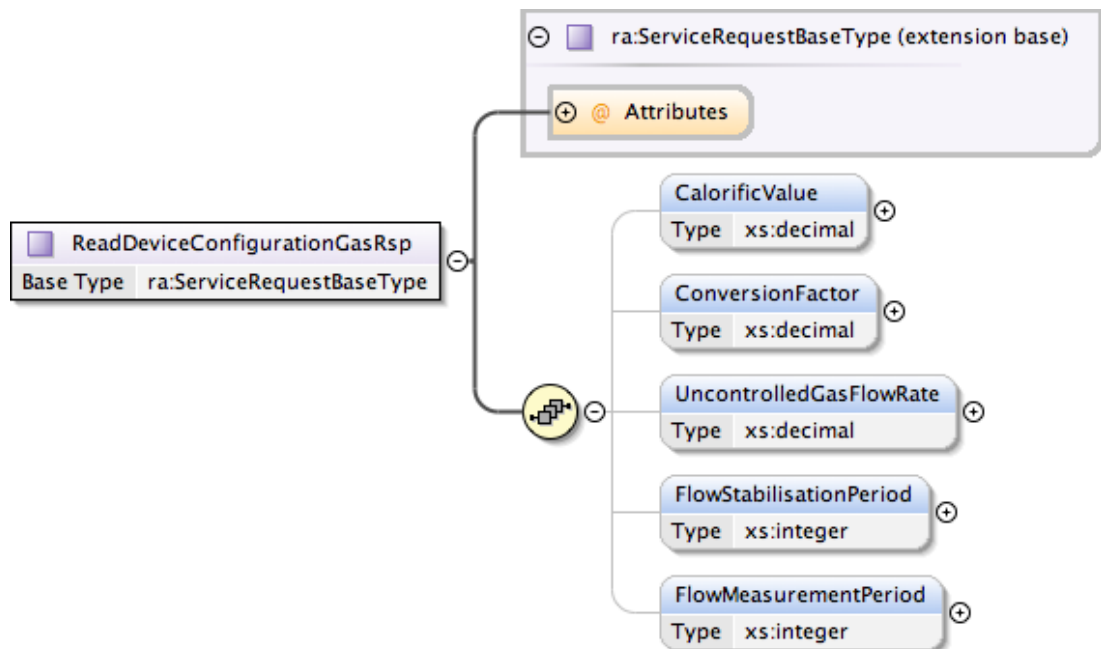


Figure 33 - Read Device Configuration (Gas) Parse Response / SMETS1 Response Structure

6.2.8.2.1.2 Specific Header Data Items

Data Item	Gas Response
GBCSHexadecimalMessageCode	007B
GBCS Use Case Number (for information only - not in header)	GCS21a
GBCS Use Case Name (for information only - not in header)	Read Gas Configuration Data Device Information

Data Item	Gas Response
SupplementaryRemotePartyID	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 32 - Read Device Configuration (Gas) Parse/SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.8.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
CalorificValue	<p>The value used in the conversion of gas volume to kWh usage, based on the energy stored in one cubic metre of gas released when burnt at a standard temperature and pressure.</p> <p>The value is expected to have 1 digit to the right of the decimal</p> <p>Parse Response: Note that the Multiplier and Divisor values have been automatically applied by the P&C software. The most significant nibble indicates the number of digits to the right of the decimal point</p>	xs:decimal	None	MJ/m ³	Non-Sensitive
ConversionFactor	<p>The value used in the conversion of gas volume to kWh usage, based on the pressure, temperature and compressibility of the gas.</p> <p>The value is expected to have 5 digits to the right of the decimal</p> <p>Parse Response: Note that the Multiplier and Divisor values have been automatically applied by the P&C software. The most significant nibble indicates the number of digits to the right of the decimal point</p>	xs:decimal	None	N/A	Non-Sensitive
UncontrolledGasFlowRate	<p>The flow rate in units of volume per unit time used in the detection of uncontrolled flow of gas on Enablement of Supply</p> <p>Parse Response: Note that the Multiplier and Divisor values have been automatically applied by the P&C software.</p>	xs:decimal	None	m ³ /h	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
FlowStabilisationPeriod	The time given to allow the flow to stabilize. It is defined in units of tenths of a second SMETS1 only: where a SMETS1 Device does not support the setting of this values the DCC shall set these values to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter	xs:integer	None	10 th second	Non-Sensitive
FlowMeasurementPeriod	The period over which the flow is measured and compared against the Uncontrolled Flow Threshold attribute. It is defined in units of seconds SMETS1 only: where a SMETS1 Device does not support the setting of this values the DCC shall set these values to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter	xs:integer	None	seconds	Non-Sensitive

6.2.8.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationGasRsp MessageSuccess="true">
  <ra:CalorificValue>110.6</ra:CalorificValue>
  <ra:ConversionFactor>2</ra:ConversionFactor>
  <ra:UncontrolledGasFlowRate>25.5</ra:UncontrolledGasFlowRate>
  <ra:FlowStabilisationPeriod>100</ra:FlowStabilisationPeriod>
  <ra:FlowMeasurementPeriod>200</ra:FlowMeasurementPeriod>
</ra:ReadDeviceConfigurationGasRsp>
```

Figure 34 - Read Device Configuration (Gas) Parse Response Example

6.2.9 Read Device Configuration (Payment Mode) (6.2.9)

Service Request Name	ReadDeviceConfiguration
Service Reference	6.2
Service Request Variant Name	ReadDeviceConfiguration(PaymentMode)
Service Reference Variant	6.2.9
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration Payment Mode data values that are currently held on a Device.
Business Context Statement	The DCC Service User wishes to read the current configuration Payment Mode for a specified Device, e.g. to enable them to obtain / confirm the current configuration / constant settings of the device for diagnostic purposes

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> For reading the Gas configuration values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. These values are configured on the Device by Service Request 1.6 – Update Payment Mode. See Annex section 1.6. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x00BE	0x00BF
GBCS Use Case	ECS26j	GCS21j
GBCS Use Case Name	Read ESME Configuration Data Device Information (Payment Mode)	Read GSME Configuration Data Device Information (Payment Mode)
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: <ol style="list-style-type: none"> Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document, which states that where the SMETS1 Device does not support the setting of values equivalent to the StabilisationPeriod or MeasurementPeriod values, the S1SP shall, in populating a SMETS1 Response, set the values to the relevant Unsupported Value. 	

Table 33 Read Device Configuration (Payment Mode) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.9.1 Service Request

6.2.9.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationPaymentMode XML element defines this Service Request and doesn't contain any data items.

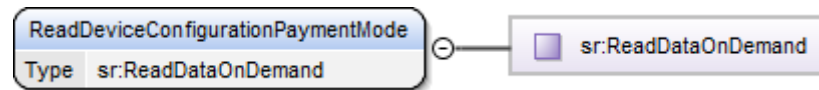


Figure 35 Read Device Configuration (Payment Mode) Service Request Structure

6.2.9.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 34 Read Device Configuration (Payment Mode) Modes of Operation

6.2.9.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 35 Read Device Configuration (Payment Mode) Command Variant Values

6.2.9.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.9.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationPaymentMode/>
```

Figure 36 Read Device Configuration (Payment Mode) Service Request (Body) Format

6.2.9.2 Responses

The response messages for a “Read Device Configuration (Payment Mode)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.9.2.1 Parse Output / SMETS1 Response Format

6.2.9.2.1.1 Format - ReadDeviceConfigurationPaymentModeRsp

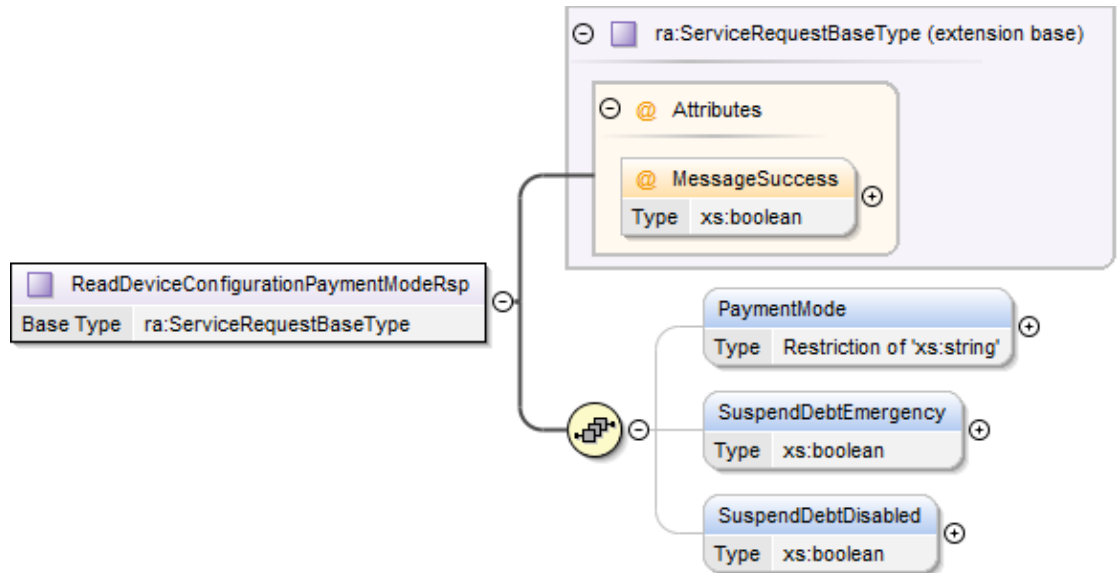


Figure 37 - Read Device Configuration (Payment Mode) Parse Response / SMETS1 Response Structure

6.2.9.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00BE	00BF
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS26j</i>	<i>GCS21j</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Configuration Data Device Information (Payment Mode)</i>	<i>Read GSME Configuration Data Device Information (Payment Mode)</i>
SupplementaryRemotePartyID	Present of the originator is a URP	Present of the originator is a URP
SupplementaryRemotePartyCounter	Present of the originator is a URP	Present of the originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 36 - Read Device Configuration (Payment Mode) Parse/SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.2.9.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
PaymentMode	The current mode of operation, being Prepayment or Credit.	xs:string (Enumeration)	None	N/A	Non-Sensitive
SuspendDebtEmergency	If Payment Mode is Prepayment, it indicates whether Suspend Debt Emergency is true (if Emergency Credit is in use, then the Meter shall not collect the Standing Charge or Time Debts from the Emergency Credit Balance and will instead increment the Accumulated Debt Register) or false (if Emergency Credit is in use, then the Meter shall collect the Standing Charge and Time Debts from the Emergency Credit Balance). See SMETS2 or later for details. SMETS1 only: the meaning of this value shall be as defined in the SMETS1 Supporting Requirements Gas Only	xs:boolean	None	N/A	Non-Sensitive
SuspendDebtDisabled	If Payment Mode is Prepayment, it indicates whether Suspend Debt Disabled is true (if the supply is disabled due to lack of credit, then the Meter shall not collect the Time Debts however the Standing Charge is still collected from the Meter Balance) or false (if the supply is disabled due to lack of credit, then the Meter shall collect the Time Debts and the Standing Charge from the Meter Balance). See SMETS for details. SMETS1 only: the meaning of this value shall be as defined in the SMETS1 Supporting Requirements Gas Only	xs:boolean	None	N/A	Non-Sensitive

6.2.9.2.1.4 Sample Response

```
<ra:ReadDeviceConfigurationPaymentModeRsp MessageSuccess="true">
  <ra:PaymentMode>Credit</ra:PaymentMode>
</ra:ReadDeviceConfigurationPaymentModeRsp>
```

Figure 38 - Read Device Configuration (Payment Mode) Parse Response Example (Electricity)

```
<ra:ReadDeviceConfigurationPaymentModeRsp MessageSuccess="true">
  <ra:PaymentMode>Credit</ra:PaymentMode>
  <ra:SuspendDebtEmergency>true</ra:SuspendDebtEmergency>
  <ra:SuspendDebtDisabled>>false</ra:SuspendDebtDisabled>
</ra:ReadDeviceConfigurationPaymentModeRsp>
```

Figure 39 - Read Device Configuration (Payment Mode) Parse Response Example (Gas)

6.2.10 Read Device Configuration (Event and Alert Behaviours) (6.2.10)

Service Request Name	ReadDeviceConfiguration	
Service Reference	6.2	
Service Request Variant Name	ReadDeviceConfiguration(EventAndAlertBehaviours)	
Service Reference Variant	6.2.10	
Service Request Objective	This Service Request enables an authorised DCC Service User to read the configuration of non-critical Event and Alert Behaviours values that are currently held on a Device.	
Business Context Statement	The DCC Service User wishes to read the current configuration of non-critical Event and Alert Behaviours for a specified Device, e.g. to enable them to obtain / confirm the current configuration / constant settings of the device for diagnostic purposes	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request is only applicable to ESME and GSME with a Firmware version certified to GBGS v2.0 or later and it provides functionality (not previously available) to read the current configuration of the Event and Alert Behaviours on the meter. Those WAN Alerts, HAN Alerts, audible Alarms and Events to be logged set to "Enable" in the Parse Response are "turned on" and those set to "Disable" are "turned off" on the Device The Event and Alert Behaviours values are configured on the Device by Service Request 6.22 – Configure Event Behaviour. See section 6.22. This Service Request only returns details for the currently configured, non critical alert and event behaviours. Critical Alerts cannot be configured and so cannot be read using this Service Request as they are assumed to be by definition ALWAYS ON For Service Requests sent to the GSME, as defined in the GBGS Use Case GCS20r, the response will contain configuration details of all Event / Alert Codes starting 0x081 which GBGS mandates a GSME to support and any non-mandated ones which the GSME also supports DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBGS v2.0 or later 	
GBCS Cross Reference	Electricity	Gas

GBCS v1.0	N/A – feature not supported by Device	N/A – feature not supported by Device
GBCS v2.0 or later Message Code	EIS – 0x00EE ENO – 0x00EF	GIS - 0x00F1
GBCS v2.0 or later Use Case	EIS – ECS25r1 ENO – ECS25r2	GIS - GCS20r
GBCS v2.0 or later Use Case Name	EIS - Read non-critical event and alert behaviours - ESME-Supplier ENO - Read non-critical event and alert behaviours - ESME-Network Operator	GIS - Read non-critical event and alert behaviours - GSME-Supplier
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria (User Role EIS)	Response Code - E57	ECS25r1
DUIS 2 or later: DEFAULT - No specific XML criteria (User Role ENO)	Response Code - E57	ECS25r2
SMETS1 Applicability	No	No
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	GCS20r
SMETS1 Applicability	No	No

Table 37 Read Device Configuration (Event and Alert Behaviours) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.2.10.1 Service Request

6.2.10.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceConfigurationEventAndAlertBehaviours XML element defines this Service Request and doesn't contain any data items.

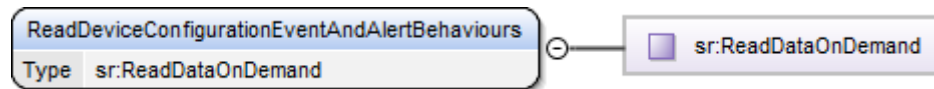


Figure 40 Read Device Configuration (Event and Alert Behaviours) Service Request Structure

6.2.10.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 38 Read Device Configuration (Event and Alert Behaviours) Modes of Operation

6.2.10.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 39 Read Device Configuration (Event and Alert Behaviours) Command Variant Values

6.2.10.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.2.10.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadDeviceConfigurationEventAndAlertBehaviours/>
```

Figure 41 Read Device Configuration (Event and Alert Behaviours) Service Request (Body) Format

6.2.10.2 Responses

The response messages for a “Read Device Configuration (Event and Alert Behaviours)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload

- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.2.10.2.1 Parse Output Format

6.2.10.2.1.1 Format - ReadDeviceConfigurationEventAndAlertBehavioursRsp

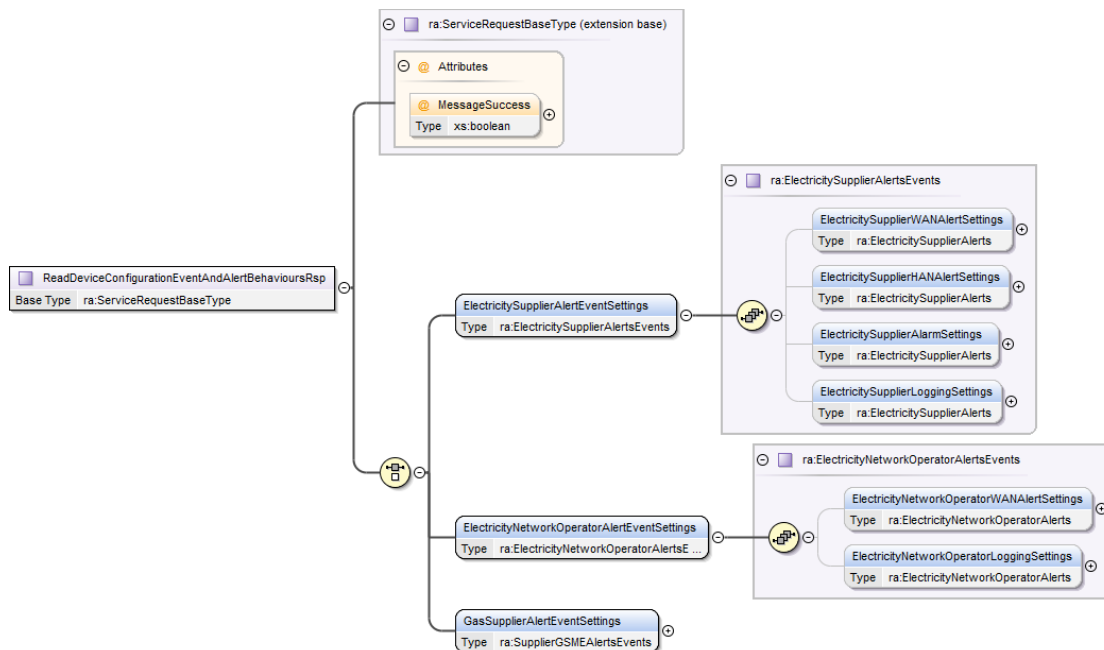


Figure 42 - Read Device Configuration (Event and Alert Behaviours) Parse Response Structure

6.2.10.2.1.2 Specific Header Data Items

GBCS v2.0 or later:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	EIS – 0x00EE ENO – 0x00EF	0x00F1
GBCS Use Case Number (for information only - not in header)	EIS – ECS25r1 ENO – ECS25r2	GCS20r
GBCS Use Case Name (for information only - not in header)	EIS - Read non-critical event and alert behaviours - ESME- Supplier ENO - Read non-critical event and alert behaviours - ESME- Network Operator	GIS - Read non-critical event and alert behaviours - GSME- Supplier
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

**Table 40 - Read Device Configuration (Event and Alert Behaviours) Parse Response
Header Data Items – GBCS v2.0 or later**

6.2.10.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ElectricitySupplierAlertEventSettings	The currently configured, non critical alert and event behaviours that are relevant to Suppliers on the ESME Includes the WAN Alerts, HAN Alerts, logging of Events recorded in the Event Logs and audible Alarms (associated to WAN Alerts, HAN Alerts and / or events recorded in the Event Log) configured by the EIS on the ESME.	ra:ElectricitySupplierAlertsEvents (see section 6.2.10.2.1.4)	None	N/A	Non-Sensitive
ElectricityNetworkOperatorAlertEventSettings	The currently configured, non critical alert and event behaviours that are relevant to Network Operators on the ESME Includes the WAN Alerts and logging of Events recorded in the Power Event Log configured by the ENO on the ESME.	ra:ElectricityNetworkOperatorAlertsEvents (see section 6.2.10.2.1.5)	None	N/A	Non-Sensitive
GasSupplierAlertEventSettings	The currently configured, non critical alert and event behaviours that are relevant to Suppliers on the GSME Includes the WAN Alerts, HAN Alerts, logging of Events recorded in the Event Log and audible Alarms (associated to WAN Alerts, HAN Alerts and / or events recorded in the Event Log) configured by the GIS on the GSME.	ra:SupplierGSMEAlertsEvents (see the similar sr:SupplierGSMEAlertsEvents in section 6.22.1.6)	None	N/A	Non-Sensitive

6.2.10.2.1.4 ElectricitySupplierAlertsEvents Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ElectricitySupplierWANAlertSettings	The current configuration of the settings for WAN Alerting configured on the ESME.	ra:ElectricitySupplierAlerts (see the similar sr:ElectricitySupplierAlerts in section 6.22.1.3)	None	N/A	Non-Sensitive
ElectricitySupplierHANAlertSettings	The current configuration of the settings for HAN Alerting configured on the ESME.	ra:ElectricitySupplierAlerts (see the similar sr:ElectricitySupplierAlerts in section 6.22.1.3)	None	N/A	Non-Sensitive
ElectricitySupplierAlarmSettings	The current configuration of the audible Alarm settings (associated to WAN Alerts, HAN Alerts and / or events recorded in the Event Log) configured on the ESME.	ra:ElectricitySupplierAlerts (see the similar sr:ElectricitySupplierAlerts in section 6.22.1.3)	None	N/A	Non-Sensitive
ElectricitySupplierLoggingSettings	The current configuration of the settings for logging Events in the Event Logs configured on the ESME.	ra:ElectricitySupplierAlerts (see the similar sr:ElectricitySupplierAlerts in section 6.22.1.3)	None	N/A	Non-Sensitive

6.2.10.2.1.5 ElectricityNetworkOperatorAlertsEvents Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ElectricityNetworkOperatorWANAlertSettings	The current configuration of the settings for WAN Alerting configured on the ESME.	ra:ElectricityNetworkOperatorAlerts (see the similar sr:ElectricityNetworkOperatorAlerts in section 6.22.1.4)	None	N/A	Non-Sensitive
ElectricityNetworkOperatorLoggingSettings	The current configuration of the settings for logging Events in the Power Event Log configured on the ESME.	ra:ElectricityNetworkOperatorAlerts (see the similar sr:ElectricityNetworkOperatorAlerts in section 6.22.1.4)	None	N/A	Non-Sensitive

6.2.10.2.1.6 Sample Response

Successful responses will include the settings of all the Alerts / Events the DCC Service User is responsible for configuring. For illustration purposes, the following samples include only a sub-set:

```
<ra:ReadDeviceConfigurationEventAndAlertBehavioursRsp MessageSuccess="true">
  <ra:ElectricitySupplierAlertEventSettings>
    <ra:ElectricitySupplierWANAlertSettings>
      <ra:SupplierESMECommon>
        <ra:x810D>Enable</ra:x810D>
        <ra:x810E>Disable</ra:x810E>
      </ra:SupplierESMECommon>
    </ra:ElectricitySupplierWANAlertSettings>
    <ra:ElectricitySupplierHANAlertSettings>
      <ra:SupplierESMECommon>
        <ra:x810D>Enable</ra:x810D>
        <ra:x8119>Disable</ra:x8119>
      </ra:SupplierESMECommon>
    </ra:ElectricitySupplierHANAlertSettings>
    <ra:ElectricitySupplierAlarmSettings>
      <ra:SupplierESMECommon>
        <ra:x8145>Disable</ra:x8145>
        <ra:x8154>Disable</ra:x8154>
        <ra:x81C6>Disable</ra:x81C6>
      </ra:SupplierESMECommon>
    </ra:ElectricitySupplierAlarmSettings>
    <ra:ElectricitySupplierLoggingSettings>
      <ra:SupplierESMECommon>
        <ra:x8145>Enable</ra:x8145>
        <ra:x8154>Enable</ra:x8154>
        <ra:x81C6>Enable</ra:x81C6>
      </ra:SupplierESMECommon>
    </ra:ElectricitySupplierLoggingSettings>
  </ra:ElectricitySupplierAlertEventSettings>
</ra:ReadDeviceConfigurationEventAndAlertBehavioursRsp>
```

Figure 43 - Read Device Configuration (Event and Alert Behaviours) Parse Response Example (Electricity - Supplier)

```
<ra:ReadDeviceConfigurationEventAndAlertBehavioursRsp MessageSuccess="true">
  <ra:ElectricityNetworkOperatorAlertEventSettings>
    <ra:ElectricityNetworkOperatorWANAlertSettings>
      <ra:NetworkOperatorESMECommon>
        <ra:x8014>Enable</ra:x8014>
        <ra:x8015>Disable</ra:x8015>
      </ra:NetworkOperatorESMECommon>
    </ra:ElectricityNetworkOperatorWANAlertSettings>
  <ra:ElectricityNetworkOperatorLoggingSettings>
    <ra:NetworkOperatorESMECommon>
      <ra:x8014>Enable</ra:x8014>
      <ra:x8015>Disable</ra:x8015>
    </ra:NetworkOperatorESMECommon>
  </ra:ElectricityNetworkOperatorLoggingSettings>
</ra:ElectricityNetworkOperatorAlertEventSettings>
</ra:ReadDeviceConfigurationEventAndAlertBehavioursRsp>
```

**Figure 44 - Read Device Configuration (Event and Alert Behaviours) Parse Response
Example (Electricity – Network Operator)**

```
<ra:ReadDeviceConfigurationEventAndAlertBehavioursRsp MessageSuccess="true">
  <ra:GasSupplierAlertEventSettings>
    <ra:x810D>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Disable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x810D>
    <ra:x810E>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Disable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x810E>
    <ra:x8145>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Disable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x8145>
    <ra:x8168>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Disable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x8168>
    <ra:x8183>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Disable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x8183>
    <ra:x81AA>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Enable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x81AA>
    <ra:x81C6>
      <ra:WANAAlert>Enable</ra:WANAAlert>
      <ra:HANAAlert>Disable</ra:HANAAlert>
      <ra:EventLog>Enable</ra:EventLog>
      <ra:Alarm>Disable</ra:Alarm>
    </ra:x81C6>
  </ra:GasSupplierAlertEventSettings>
</ra:ReadDeviceConfigurationEventAndAlertBehavioursRsp>
```

**Figure 45 - Read Device Configuration (Event and Alert Behaviours) Parse Response
Example (Gas)**

6.3 Section 6.3

This section has been intentionally left blank as there is no Service Reference 6.3.

6.4 Update Device Configuration (Load Limiting) (6.4)

SMETS2 or later

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 6.4 Service Request has been broken into two parts: 6.4.1 (General Settings) and 6.4.2 (Counter Reset).

SMETS1

This Service Request maps to Service Reference Variant 6.4.1 (General Settings) and 6.4.2 (Counter Reset)

6.4.1 Update Device Configuration (Load Limiting General Settings) (6.4.1)

Service Request Name	UpdateDeviceConfiguration(LoadLimiting)	
Service Reference	6.4	
Service Request Variant Name	UpdateDeviceConfiguration(LoadLimitingGeneralSettings)	
Service Reference Variant	6.4.1	
Service Request Objective	To enable an authorised DCC Service User to update the load limiting general settings on a specified Device as defined by SMETS.	
Business Context Statement	The DCC Service User requires that an update is made to the current load limiting configuration parameters stored within a specified Device, e.g. upon initial device installation or following a Change of Supplier event.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.C	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> Where a Network Operator wishes to initiate Load Limiting due to network constraints the request should be routed -via the Supplier as they have the contractual relationship with the consumer. The Device Configuration (LoadLimiting) values can be read by a DCC Service User using Service Request 4.15 – Read Load Limit Counter. See Annex section 4.15. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0043	N/A
GBCS Use Case	ECS28a	N/A
GBCS Use Case Name	Set Load Limit Configurations - General Settings	N/A

SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. In accordance with the SMETS1 Supporting Requirements Document, the S1SP shall not set either the LoadLimitPeriod or LoadLimitRestorationPeriod fields on SMETS1 ESME Devices as they do not support it. This shall not result in an error in the SMETS1 Response. 	

Table 41 Update Device Configuration (Load Limiting General Settings) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.4.1.1 Service Request

6.4.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationLoadLimitingGeneralSettings XML element defines this Service Request and contains the Load Limiting General Settings and, for Future Dated Requests, the Execution Date and Time.

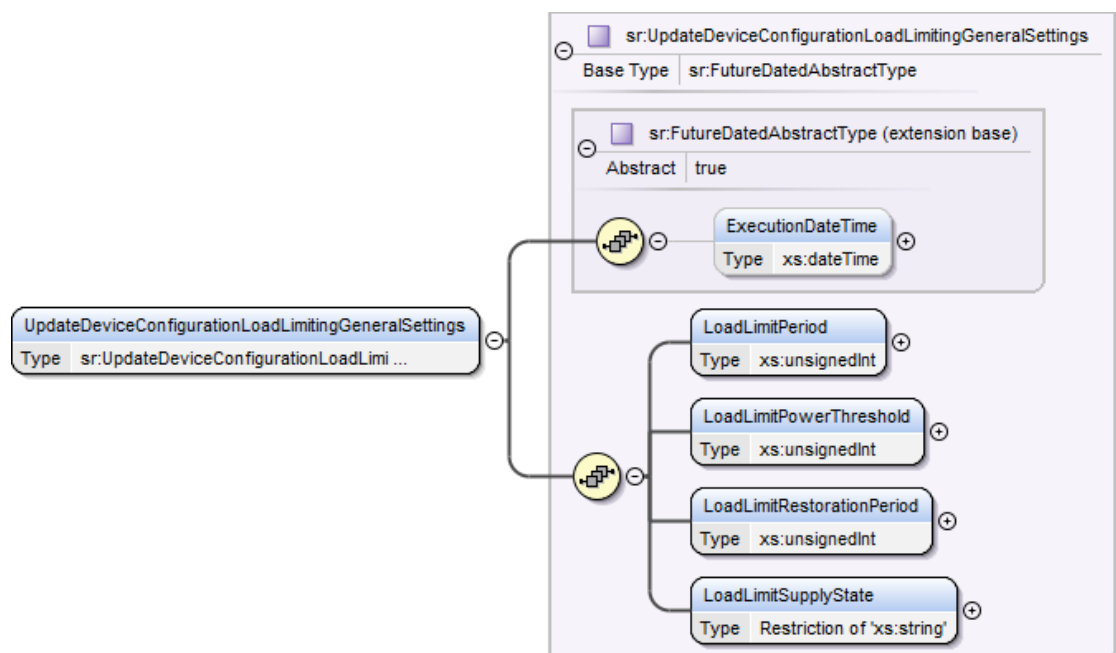


Figure 46 Update Device Configuration (Load Limiting General Settings) Service Request Structure

6.4.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
LoadLimitPeriod	The length of time which the Active Power Import needs to continuously exceed the Load Limit Power Threshold before a load limiting event is deemed to have occurred SMETS1: this value shall not be set on a SMETS1 ESME; however since the parameter is mandatory a value must be supplied.	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive
LoadLimitPowerThreshold	The Active Power threshold above which the measurement of a Load Limit Period is commenced	xs:unsignedInt	Yes	None	W	Non-Sensitive
LoadLimitRestorationPeriod	The length of time after the Supply has been Armed following a Load Limiting Event before the Supply is Enabled by the Electricity Smart Meter SMETS1: this value shall not be set on a SMETS1 ESME; however since the parameter is mandatory a value must be supplied.	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive
LoadLimitSupplyState	A setting to control the state of the Supply in the case of a load limiting occurring, being: <ul style="list-style-type: none"> Disable Unchanged 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 42 Update Device Configuration (Load Limiting General Settings) Service Request Data Items

6.4.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No
SMETS1	No	Yes	No	DSP	No

Table 43 Update Device Configuration (Load Limiting General Settings) Modes of Operation

6.4.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 44 Update Device Configuration (Load Limiting General Settings) Command Variant Values

6.4.1.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.4.1.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationLoadLimitingGeneralSettings>
<LoadLimitPeriod>300</LoadLimitPeriod>
<LoadLimitPowerThreshold>10</LoadLimitPowerThreshold>
<LoadLimitRestorationPeriod>600</LoadLimitRestorationPeriod>
<LoadLimitSupplyState>Unchanged</LoadLimitSupplyState>
</UpdateDeviceConfigurationLoadLimitingGeneralSettings>
```

Figure 47 Update Device Configuration (Load Limiting General Settings) Transform Service Request (Body) Format

6.4.1.2 Responses

The response messages for an "Update Device Configuration (Load Limiting General Settings)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.4.1.2.1 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request's Command contains a fixed number of instructions ('n' = 8) and activation date-time instructions ('m' = 4). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome) . These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

6.4.1.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationLoadLimitingGeneralSettingsRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

See section 6.4.1.2.1 for description of the responses to future dated execution requests.

6.4.1.2.2.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0043
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS28a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Load Limit Configurations - General Settings</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present

Data Item	Electricity Response
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

**Table 45 – Update Device Configuration (Load Limiting General Settings)
Parse/SMETS1 Response Header Data Items**

6.4.2 Update Device Configuration (Load Limiting Counter Reset) (6.4.2)

Service Request Name	UpdateDeviceConfiguration(LoadLimiting)	
Service Reference	6.4	
Service Request Variant Name	UpdateDeviceConfiguration(LoadLimitingCounterReset)	
Service Reference Variant	6.4.2	
Service Request Objective	To enable an authorised DCC Service User to reset the load limiting counter on a specified Device as defined by SMETS.	
Business Context Statement	The DCC Service User requires that the Load Limit Counter on a specified Device is reset to Zero.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The <i>Load limit Counter</i>, as defined by SMETS, records the number of times the <i>Active Power Import</i> has exceeded, for the <i>Load Limit Period</i>, the <i>Load Limit Power Threshold</i> since last cleared. The Device Configuration (LoadLimiting) values can be read by a DCC Service User using Service Request 4.15 – Read Load Limit Counter. See Annex section 4.15. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0044	N/A
GBCS Use Case	ECS28b	N/A
GBCS Use Case Name	Set Load Limit Configuration Counter Reset	N/A
SMETS1 Applicability	Yes	N/A

**Service Request Narrative
(SMETS1)**

The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.

Table 46 Update Device Configuration (Load Limiting Counter Reset) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.4.2.1 Service Request

6.4.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationLoadLimitingCounterReset XML element defines this Service Request and, for Future Dated Requests, it contains the Execution Date and Time.

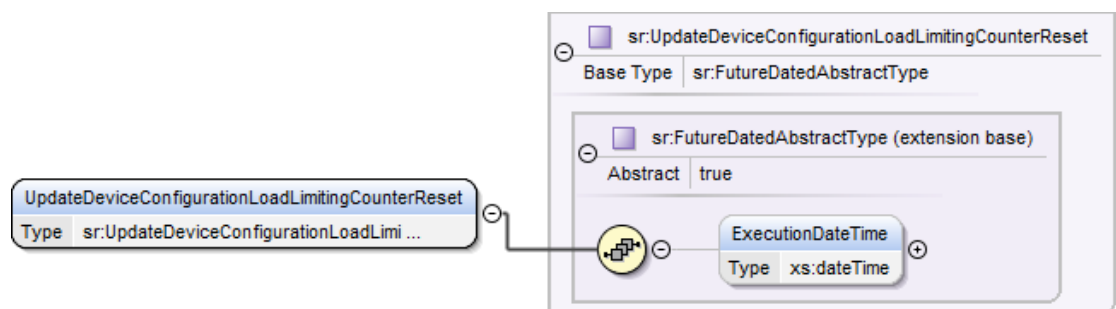


Figure 48 Update Device Configuration (Load Limiting Counter Reset) Service Request Structure

6.4.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC User requires the command to be executed on the Device ID.</p> <p>Valid set:</p> <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 47 Update Device Configuration (Load Limiting Counter Reset) Service Request Data Items

6.4.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS1	No	Yes	No	DSP	No

Table 48 Update Device Configuration (Load Limiting Counter Reset) Modes of Operation

6.4.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 49 Update Device Configuration (Load Limiting Counter Reset) Command Variant Values

6.4.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.4.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationLoadLimitingCounterReset/>
```

Figure 49 Update Device Configuration (Load Limiting Counter Reset) Service Request (Body) Format

6.4.2.2 Responses

The response messages for an "Update Device Configuration (Load Limiting Counter Reset)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.4.2.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationLoadLimitingCounterResetResp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.4.2.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0044
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS28b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Load Limit Configurations - Counter Reset</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 50 – Update Device Configuration (Load Limiting Counter Reset) Parse/SMETS1 Response Header Data Items

6.5 Update Device Configuration (Voltage) (6.5)

Service Request Name	UpdateDeviceConfiguration(Voltage)
Service Reference	6.5
Service Request Variant Name	UpdateDeviceConfiguration(Voltage)
Service Reference Variant	6.5
Service Request Objective	To enable an authorised DCC Service User to set the power quality monitoring configuration parameters for a specified meter. The meter shall execute the commands and then confirm that the operation has completed or otherwise fail the request and return the reason for its failure.
Business Context Statement	The DCC Service User requires that an update is made to the current power quality monitoring configuration parameters stored within a specified device, e.g. to amend a threshold value, or set a measurement period.
User Role Access	<ul style="list-style-type: none"> Electricity Network Operator (ENO)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The data items to be included in the Service Request depend on whether the Electricity Smart Meter Equipment is Single Phase (Single Element or Twin Element) or Poly Phase as defined by SMETS. This is

	<p>determined by the ESME Variant recorded in the Smart Metering Inventory.</p> <ol style="list-style-type: none"> The Device Configuration (Voltage) values can be read by a DCC Service User using Service Request – 6.2.1 – Read Device Configuration (Voltage). See section 6.2.1. For ESME Firmware certified to GBCS v2.0 or later this Service Request configures Voltage thresholds and measurement periods and it can optionally reset or not reset the Average RMS Over and Under Voltage Counters. These counters can also be reset via Service Request 6.27 Update Device Configuration (RMS Voltage Counter Reset). See section 6.27 for details. For ESME Firmware certified to GBCS v1.0 this Service Request configures Voltage thresholds and measurement periods and it automatically resets the Average RMS Over and Under Voltage Counters. 				
GBCS Cross Reference	Electricity (Single Phase)		Electricity (Poly Phase)		Gas
GBCS v1.0 Message Code	0x0045		0x00AE		N/A
GBCS v1.0 Use Case	ECS29a		ECS29b		N/A
GBCS v1.0 Use Case Name	Set Voltage Configurations on ESME		Set Voltage Configurations on ESME - 3ph		N/A
GBCS v2.0 Message Code	0x0045	0x00D1	0x00AE	0x00D2	N/A
GBCS v2.0 Use Case	ECS29a	ECS29c	ECS29b	ECS29d	N/A
GBCS v2.0 Use Case Name	Set Voltage Configurations on ESME with counter resets	Set Voltage Configurations on ESME without counter reset	Set Voltage Configurations on ESME - 3ph with counter resets	Set Voltage Configurations on polyphase ESME without counter reset	N/A
SMETS1 Applicability	Yes	Yes	N/A	N/A	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Polyphase meters are not supported by SMETS1, The behaviour with regard to the RMSVoltageCountersNotReset XML tag is consistent with GBCS 2.0. Where the target SMETS1 ESME does not support setting to a resolution of seconds, the S1SP shall round up to the nearest integer number of minutes. 				

GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	ESME (Single Phase)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DEFAULT - No specific XML criteria	N/A	N/A
DUIS 2 or later: XML Criteria - XML data item RMSVoltageCountersNotReset included	Response Code – E060502	ECS29c
DUIS 1 or later: XML Criteria - XML data item RMSVoltageCountersNotReset not included	ECS29a	ECS29a
Device Type	ESME (Poly Phase)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DEFAULT - No specific XML criteria	N/A	N/A
DUIS 2 or later: XML Criteria - XML data item RMSVoltageCountersNotReset included	Response Code – E060502	ECS29d
DUIS 1 or later: XML Criteria - XML data item RMSVoltageCountersNotReset not included	ECS29b	ECS29b

Table 51 Update Device Configuration (Voltage) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.5.1 Service Request

6.5.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationVoltage XML element defines this Service Request and contains the Voltage settings to be configured on the Device and, for Future Dated Requests, the Execution Date and Time.

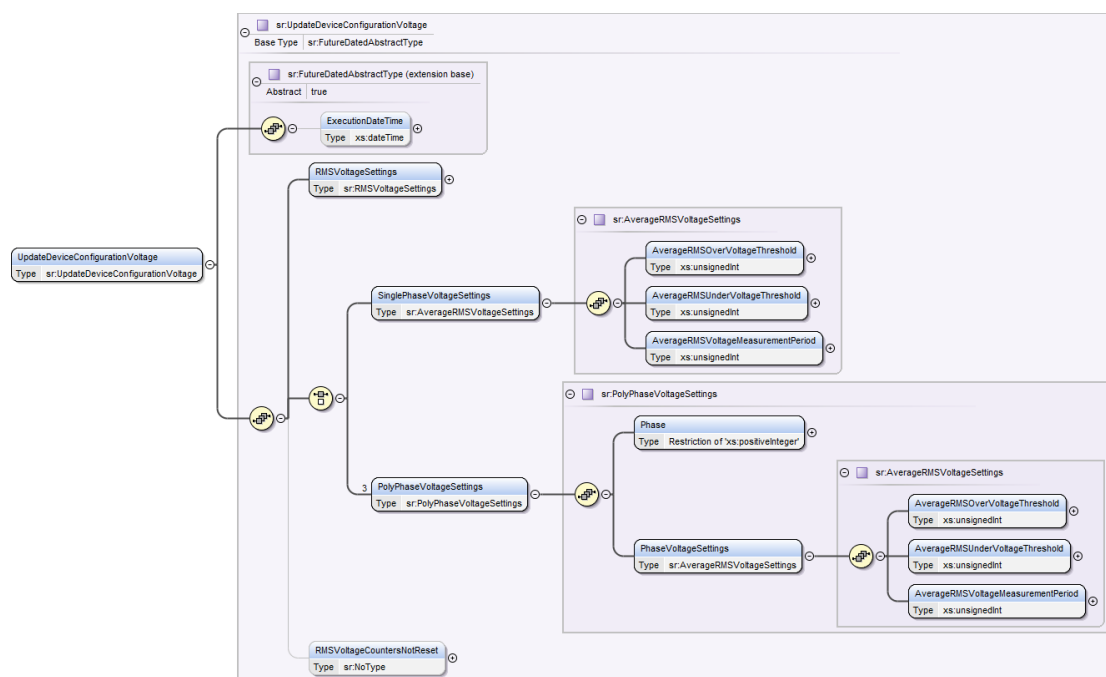


Figure 50 Update Device Configuration (Voltage) Service Request Structure

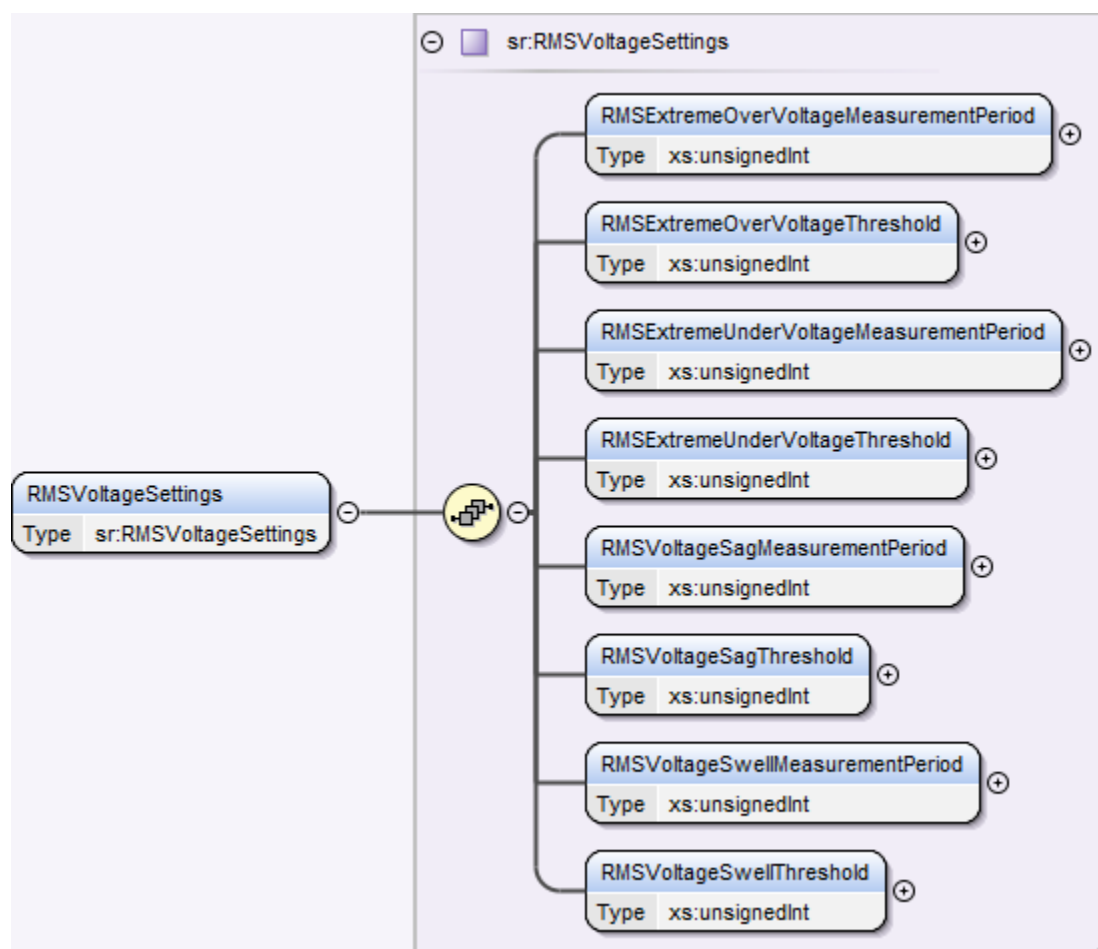


Figure 51 Update Device Configuration (Voltage) Service Request – RMS Voltage Settings Structure

6.5.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
RMSVoltageSettings	The non-average RMS Voltage settings applicable to a Single Phase (Single or Twin Element) Electricity Smart Meter or to a Polyphase Electricity Smart Meter phase.	sr:RMSVoltageSettings (see section 6.5.1.5)	Yes	None	N/A	Non-Sensitive
SinglePhaseVoltageSettings	The Average Voltage settings applicable to a Single Phase (Single or Twin Element) Electricity Smart Meter.	sr:AverageRMSVoltageSettings (see section 6.5.1.4)	Single / Twin Element Electricity Smart Meter: Yes Polyphase Electricity Smart Meter: N/A	None	N/A	Non-Sensitive
PolyPhaseVoltageSettings	The Average Voltage settings applicable to a PolyPhase Electricity Smart Meter.	sr:PolyPhaseVoltageSettings (see section 6.5.1.3)	Single / Twin Element Electricity Smart Meter: N/A Polyphase Electricity Smart Meter: Yes	None	N/A	Non-Sensitive
RMSVoltageCountersNotReset	Flag to indicate that the RMS Voltage Counters are not to be reset SMETS2 or later: RMSVoltageCountersNotReset is only supported in DUIS 2 or later on Devices with a Firmware version certified to GBCS v2.0 or later. Its inclusion is used by the DCC Data Systems to map the Service Request to GBCS Use Cases ECS29c (single phase) / ECS29d (poly phase) and its absence to ECS29a (single phase) / ECS29b (poly phase) SMETS1: RMSVoltageCountersNotReset is also supported on SMETS1 Devices (for single phase Meters).	sr:NoType	No	None	N/A	Non-Sensitive

Table 52 Update Device Configuration (Voltage) Service Request Data Items

The Request must contain one of SinglePhaseVoltageSettings or PolyPhaseVoltageSettings.

6.5.1.3 PolyPhaseVoltageSettings Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Phase	The number (n: 1, 2, 3) of the phase to which the Phase Voltage Settings apply	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 3)	Yes	None	N/A	Non-Sensitive
PhaseVoltageSettings	The Average Voltage Settings applicable to each of the phases. See section 6.5.1.4	sr:AverageRMSVoltageSettings (see section 6.5.1.4)	Yes	None	N/A	Non-Sensitive

Table 53 Update Device Configuration (Voltage) Service Request – Poly Phase Voltage Settings Data Items

6.5.1.4 AverageRMSVoltageSettings Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AverageRMSOverVoltageThreshold	The average RMS voltage above which an over voltage condition is reported	xs:unsignedInt	Yes	None	10 th Volt	Non-Sensitive
AverageRMSUnderVoltageThreshold	The average RMS voltage below which an over voltage condition is reported	xs:unsignedInt	Yes	None	10 th Volt	Non-Sensitive
AverageRMSVoltageMeasurementPeriod	The length of time in seconds over which the RMS voltage is averaged	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive

Table 54 Update Device Configuration (Voltage) Service Request – Average RMS Voltage Settings Data Items

6.5.1.5 RMSVoltageSettings Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RMSExtremeOverVoltageMeasurementPeriod	The duration in seconds used to measure an extreme over voltage condition	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive
RMSExtremeOverVoltageThreshold	The RMS voltage above which an extreme over voltage condition is reported. The threshold shall be configurable within the specified operating range of Electricity Smart Meter	xs:unsignedInt	Yes	None	10 th Volt	Non-Sensitive
RMSExtremeUnderVoltageMeasurementPeriod	The duration in seconds used to measure an extreme under voltage condition	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive
RMSExtremeUnderVoltageThreshold	The RMS voltage below which an extreme over voltage condition is reported. The threshold shall be configurable within the specified operating range of Electricity Smart Meter	xs:unsignedInt	Yes	None	10 th Volt	Non-Sensitive
RMSVoltageSagMeasurementPeriod	The duration in seconds used to measure a voltage sag condition	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RMSVoltageSagThreshold	The RMS voltage below which a sag condition is reported. The threshold shall be configurable within the specified operating range of Electricity Smart Meter	xs:unsignedInt	Yes	None	10 th Volt	Non-Sensitive
RMSVoltageSwellMeasurementPeriod	The duration in seconds used to measure a voltage swell condition	xs:unsignedInt	Yes	None	Seconds	Non-Sensitive
RMSVoltageSwellThreshold	The RMS voltage above which a swell condition is reported. The threshold shall be configurable within the specified operating range of Electricity Smart Meter	xs:unsignedInt	Yes	None	10 th Volt	Non-Sensitive

Table 55 Update Device Configuration (Voltage) Service Request – RMS Voltage Settings Data Items

6.5.1.6 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 56 Update Device Configuration (Voltage) Modes of Operation

6.5.1.7 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 57 Update Device Configuration (Voltage) Command Variant Values

6.5.1.8 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Are the Voltage Settings valid?	Check that the Voltage Settings are applicable to the Electricity Smart Meter variant by checking ESME Variant value in the Smart Metering Inventory for the specified Device ID	E060501

Validation Check	Process	Response Code
Does the GBCS/SMETS version for the Firmware on the Device support the features chosen in the Service Request?	Check that: If the Service Request includes the XML tag RMSVoltageCountersNotReset, the Device Firmware version is certified to GBCS v2.0 or later or the Device is a SMETS1 Device according to the Smart Metering Inventory records	E060502

Table 58 Update Device Configuration (Voltage) Service Request Validation

6.5.1.9 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationVoltage>
  <RMSVoltageSettings>
    <RMSExtremeOverVoltageMeasurementPeriod>120</RMSExtremeOverVoltageMeasurementPeriod>
    <RMSExtremeOverVoltageThreshold>100</RMSExtremeOverVoltageThreshold>
    <RMSExtremeUnderVoltageMeasurementPeriod>120</RMSExtremeUnderVoltageMeasurementPeriod>
    <RMSExtremeUnderVoltageThreshold>5</RMSExtremeUnderVoltageThreshold>
    <RMSVoltageSagMeasurementPeriod>120</RMSVoltageSagMeasurementPeriod>
    <RMSVoltageSagThreshold>5</RMSVoltageSagThreshold>
    <RMSVoltageSwellMeasurementPeriod>120</RMSVoltageSwellMeasurementPeriod>
    <RMSVoltageSwellThreshold>50</RMSVoltageSwellThreshold>
  </RMSVoltageSettings>
  <SinglePhaseVoltageSettings>
    <AverageRMSOverVoltageThreshold>0</AverageRMSOverVoltageThreshold>
    <AverageRMSUnderVoltageThreshold>0</AverageRMSUnderVoltageThreshold>
    <AverageRMSVoltageMeasurementPeriod>120</AverageRMSVoltageMeasurementPeriod>
  </SinglePhaseVoltageSettings>
</UpdateDeviceConfigurationVoltage>
```

Figure 52 Update Device Configuration (Voltage) Service Request (Body) Format – RMS Voltage Counters automatically Reset

```
<UpdateDeviceConfigurationVoltage>
  <RMSVoltageSettings>
    <RMSExtremeOverVoltageMeasurementPeriod>120</RMSExtremeOverVoltageMeasurementPeriod>
    <RMSExtremeOverVoltageThreshold>100</RMSExtremeOverVoltageThreshold>
    <RMSExtremeUnderVoltageMeasurementPeriod>120</RMSExtremeUnderVoltageMeasurementPeriod>
    <RMSExtremeUnderVoltageThreshold>5</RMSExtremeUnderVoltageThreshold>
    <RMSVoltageSagMeasurementPeriod>120</RMSVoltageSagMeasurementPeriod>
    <RMSVoltageSagThreshold>5</RMSVoltageSagThreshold>
    <RMSVoltageSwellMeasurementPeriod>120</RMSVoltageSwellMeasurementPeriod>
    <RMSVoltageSwellThreshold>50</RMSVoltageSwellThreshold>
  </RMSVoltageSettings>
  <SinglePhaseVoltageSettings>
    <AverageRMSOverVoltageThreshold>0</AverageRMSOverVoltageThreshold>
    <AverageRMSUnderVoltageThreshold>0</AverageRMSUnderVoltageThreshold>
    <AverageRMSVoltageMeasurementPeriod>120</AverageRMSVoltageMeasurementPeriod>
  </SinglePhaseVoltageSettings>
  <RMSVoltageCountersNotReset/>
</UpdateDeviceConfigurationVoltage>
```

Figure 53 Update Device Configuration (Voltage) Service Request (Body) Format – RMS Voltage Counters Not Reset

6.5.2 Responses

The response messages for an “Update Device Configuration (Voltage)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.5.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E060501	Failed Validation – Invalid Voltage Settings	Error	The Voltage Settings aren't applicable to the Electricity Smart Meter variant as defined in the Smart Metering Inventory
E060502	Failed Validation – Features not supported by GBCS/SMETS version	Error	The SMI GBCS/SMETS version of the Firmware running on the Device does not support the chosen features of this Service Request

Table 59 Failed Update Device Configuration (Voltage) Service Request Response Codes

6.5.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationVoltageRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.5.2.2.1.1 Specific Header Data Items

GBCS v1.0:

Data Item	Electricity Response (Single Phase)	Electricity Response (Poly Phase)
GBCSHexadecimalMessageCode	0045	00AE
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS29a</i>	<i>ECS29b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Voltage Configurations on ESME</i>	<i>Set Voltage Configurations on ESME - 3ph</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 60 – Update Device Configuration (Voltage) Parse Response Header Data Items – GBCS v1.0

GBCS v2.0 & SMETS1:

Data Item	Electricity Response (Single Phase)		Electricity Response (Poly Phase) (N/A to SMETS1)	
GBCSHexadecimalMessageCode	0045	00D1	00AE	00D2
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS29a</i>	<i>ECS29c</i>	<i>ECS29b</i>	<i>ECS29d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Voltage Configurations on ESME with counter resets</i>	<i>Set Voltage Configurations on ESME without counter reset</i>	<i>Set Voltage Configurations on ESME - 3ph with counter resets</i>	<i>Set Voltage Configurations on polyphase ESME without counter reset</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present	Not Present

Table 61 – Update Device Configuration (Voltage) Parse Response Header Data Items – GBCS v2.0 & SMETS1

6.6 Update Device Configuration (Gas Conversion) (6.6)

Service Request Name	UpdateDeviceConfiguration(GasConversion)
Service Reference	6.6
Service Request Variant Name	UpdateDeviceConfiguration(GasConversion)
Service Reference Variant	6.6
Service Request Objective	To enable an authorised DCC Service User to update the gas conversion values on a specified GSME.
Business Context Statement	The DCC Service User requires that an update is made to the current gas conversion configuration parameters stored within a specified Device, e.g. the Calorific Value and Conversion Factor as defined in SMETS used to convert gas metered volume into kWh energy usage.
User Role Access	<ul style="list-style-type: none"> Gas Import Supplier (GIS)

Security Classification	Critical and non-sensitive SMETS2 or later: <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative (SMETS2 or later)	1. The Device Configuration (GasConversion) values can be read by a DCC Service User using Service Request 6.2.8 – Read Device Configuration (Gas). See section 6.2.8.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	0x007C
GBCS Use Case	N/A	GCS23
GBCS Use Case Name	N/A	Set CV and Conversion Factor Value(s) on the GSME
SMETS1 Applicability	N/A	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 62 Update Device Configuration (Gas Conversion) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.6.1 Service Request

6.6.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationGasConversion XML element defines this Service Request and contains the Calorific Value and the Conversion Factor.

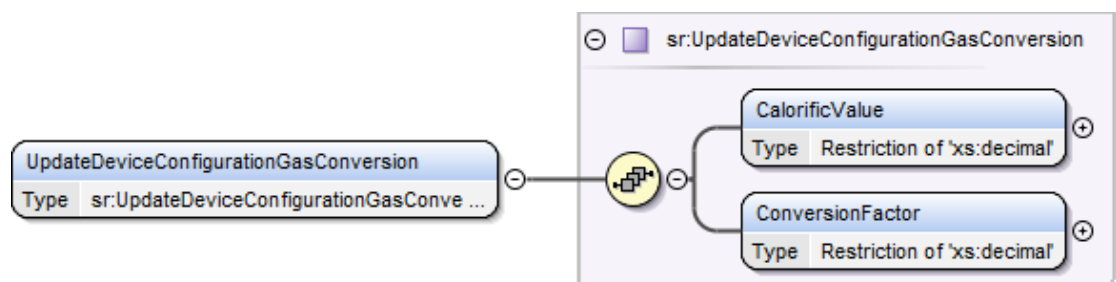


Figure 54 Update Device Configuration (Gas Conversion) Service Request Structure

6.6.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CalorificValue	The value used in the conversion of gas volume to kWh usage, based on the energy stored in one cubic metre of gas released when burnt at a standard temperature and pressure. The value can have a maximum of 1 digit to the right of the decimal, e.g. 12.3	xs:decimal (fractionDigits = 1, minInclusive = 0, maxInclusive = 429496729.5)	Yes	None	MJ/m ³	Non-Sensitive
ConversionFactor	The value used in the conversion of gas volume to kWh usage, based on the pressure, temperature and compressibility of the gas. The value can have a maximum of 5 digits to the right of the decimal, e.g. 1.23456	xs:decimal (fractionDigits = 5, minInclusive = 0, maxInclusive = 42949.67295)	Yes	None	N/A	Non-Sensitive

Table 63 Update Device Configuration (Gas Conversion) Service Request Data Items

6.6.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 64 Update Device Configuration (Gas Conversion) Modes of Operation

6.6.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 65 Update Device Configuration (Gas Conversion) Command Variant Values

6.6.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.6.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationGasConversion>  
  <CalorificValue>40.1</CalorificValue>  
  <ConversionFactor>1.23456</ConversionFactor>  
</UpdateDeviceConfigurationGasConversion>
```

Figure 55 Update Device Configuration (Gas Conversion) Transform Service Request (Body) Format

6.6.2 Responses

The response messages for an "Update Device Configuration (Gas Conversion)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.6.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationGasConversionRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.6.2.1.1 Specific Header Data Items

Data Item	Gas Response
GBCSHexadecimalMessageCode	007C
<i>GBCS Use Case Number (for information only - not in header)</i>	GCS23
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set CV and Conversion Factor Value(s) on the GSME</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 66 - Update Device Configuration (Gas Conversion) Parse/SMETS1 Response Header Data Items

6.7 Update Device Configuration (Gas Flow) (6.7)

Service Request Name	UpdateDeviceConfiguration(GasFlow)
Service Reference	6.7
Service Request Variant Name	UpdateDeviceConfiguration(GasFlow)
Service Reference Variant	6.7
Service Request Objective	To enable an authorised DCC Service User to configure the behaviour of the flow of gas through a specified GSME in various scenarios.
Business Context Statement	<p>The DCC Service User requires an update to be made to the current gas flow configuration parameters stored within a specified GSME for the following scenarios;</p> <ul style="list-style-type: none"> - to control the detection of uncontrolled flow of gas on Enablement of Supply - to control the state of the Supply in the case of loss of power to the Gas Smart Meter - to control the state of the Supply in the case of a Tamper Event being detected
User Role Access	<ul style="list-style-type: none"> • Gas Import Supplier (GIS)
Security Classification	<p>Critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.C</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. The Device Configuration (GasFlow) values for <i>UncontrolledGasFlowRate</i> can be read by a DCC Service User using Service Request – 6.2.8 – Read Device Configuration (Gas). See section 6.2.8 2. The Device Configuration (GasFlow) values for <i>SupplyDepletionState</i> and <i>SupplyTamperState</i> can be read by a DCC Service User using Service Request – 6.2.4 Read Device Configuration (Identity Exc MPxN). See section 6.2.4 3. This Service Request is only applicable to Gas Smart Meters that include a valve 4. For Devices with firmware certified to GBCS v3.2 or later, GBCS Use Case GCS24a enables specification of the uncontrolled gas flow rate with decimal places, which provides greater granularity of control than the original integer-based GCS24. Where this Service Request is targeted at a Device that supports decimal granularity, validation in DCC Data Systems ensures that the decimal parameter is used, or a response code will be returned.

	The original integer parameter will continue to be available for use with Devices with firmware prior to GBCS v3.2.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to GBCS v3.2	N/A	0x007D
GBCS Use Case prior to GBCS v3.2	N/A	GCS24
GBCS Message Code v3.2 or later	N/A	0x00FC
GBCS Use Case v3.2 or later	N/A	GCS24a
GBCS Use Case Name	N/A	Set Uncontrolled Gas Flow Rate and Supply Tamper State on the GSME
SMETS1 Applicability	N/A	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none">Where a SMETS1 GSME supports the setting of values equivalent to the StabilisationPeriod or MeasurementPeriod values, the S1SP shall instruct the Device to set such values. Where the Device does not support setting of such values, the S1SP cannot send such instructions to the Device and therefore shall not do so.The decimal parameter UncontrolledGasFlowRateDecimal does not apply to SMETS1 Devices. Use of this parameter when targeted at a SMETS1 Device would be rejected with Response Code E060701	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v3.2	GBCS v3.2 or later
DUIS 1.0: XML Criteria - UncontrolledGasFlowRate (this is the only option supported in this DUIS version)	GCS24	Response Code - E11
DUIS 2.0 to 3.0: XML Criteria - UncontrolledGasFlowRate (this is the only option supported in these DUIS versions)	GCS24	Response Code - E57

DUIS 3.1: XML Criteria – UncontrolledGasFlowRate	GCS24	Response Code - E060701
DUIS 3.1: XML Criteria - UncontrolledGasFlowRateDecimal	Response Code - E060701	GCS24a

Table 67 Update Device Configuration (Gas Flow) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.7.1 Service Request

6.7.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationGasFlow XML element defines this Service Request and contains the Uncontrolled Gas Flow Rate, the Supply Depletion State, the Supply Tamper State, the Stabilisation Period and the Measurement Period.

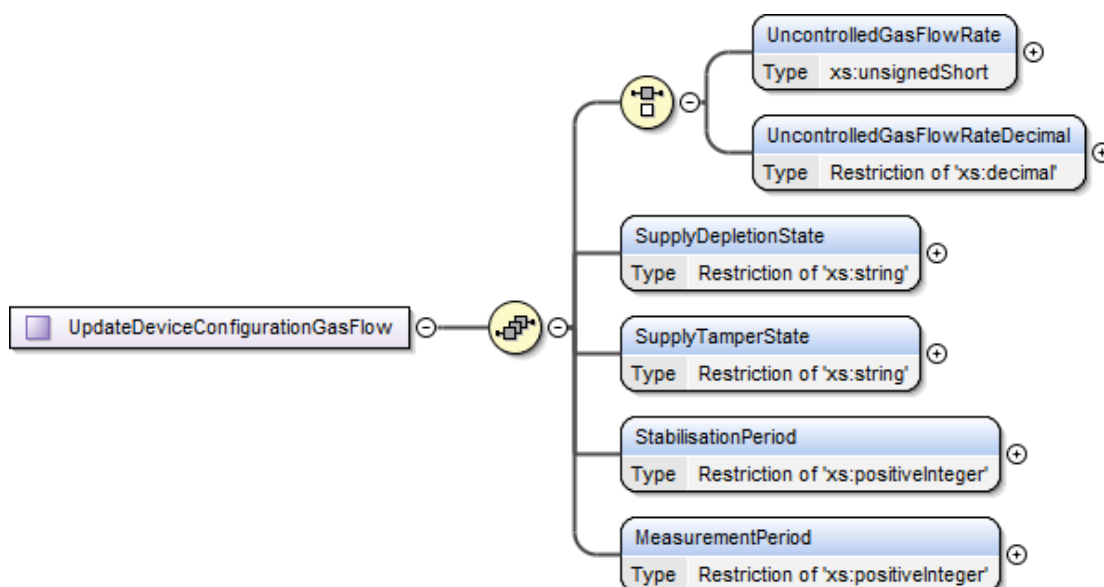


Figure 56 Update Device Configuration (Gas Flow) Service Request Structure

6.7.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UncontrolledGasFlowRate	The flow rate in units of volume per unit time used in the detection of uncontrolled flow of gas on Enablement of Supply This parameter is only supported on Devices with Firmware versions prior to GBCS v3.2 and on SMETS1 Devices	xs:unsignedShort	GBCS Version prior to v3.2 or SMETS1: Yes Otherwise: N/A	None	m ³ / hour	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UncontrolledGasFlowRateDecimal	The flow rate in units of volume per unit time used in the detection of uncontrolled flow of gas on Enablement of Supply. Accepts decimal places. This parameter is only supported on Devices with a Firmware version certified to GBCS v3.2 or later SMETS1: This parameter is not applicable to SMETS1 Devices	Restriction of xs:decimal (minInclusive = 0, maxInclusive = 6.5535, fractionDigits=4)	GBCS Version v3.2 or later: Yes Otherwise: N/A	None	m ³ / hour	Non-Sensitive
SupplyDepletionState	A setting to control the state of the Supply in the case of loss of power to the Gas Smart Meter Valid set: <ul style="list-style-type: none"> Unchanged Locked 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
SupplyTamperState	A setting to control the state of the Supply in the case of a Tamper Event being detected Valid set: <ul style="list-style-type: none"> Unchanged Locked 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
StabilisationPeriod	Value indicating the time given to allow the flow to stabilize. It is defined in units of tenths of a second SMETS1: the DCC shall not send this value to SMETS1 Devices which do not support it; however since the parameter is mandatory a value must be supplied.	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 255)	Yes	None	10 th second	Non-Sensitive
MeasurementPeriod	Value indicating the period over which the flow is measured and compared against the Uncontrolled Flow Threshold value. It is defined in units of 1 second SMETS1: the DCC shall not send this value to SMETS1 Devices which do not support it; however since the parameter is mandatory a value must be supplied.	Restriction of xs:positiveInteger (minInclusive = 1, maxInclusive = 65535)	Yes	None	Seconds	Non-Sensitive

Table 68 Update Device Configuration (Gas Flow) Service Request Data Items

6.7.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 69 Update Device Configuration (Gas Flow) Modes of Operation

6.7.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 70 Update Device Configuration (Gas Flow) Command Variant Values

6.7.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Is the uncontrolled gas flow rate parameter compatible with the GBCS version of the Device? This validation check is introduced in DUIS v3.1	Check that if the uncontrolled gas flow rate parameter is: <ul style="list-style-type: none"> decimal then the target Device's GBCS version is v3.2 or later integer then the SRV is targeted at a device with GBCS version prior to v3.2 or is SMETS1 	E060701

Table 70.1 Update Device Configuration (Gas Flow) Service Request Validation

6.7.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationGasFlow>
<UncontrolledGasFlowRate>3</UncontrolledGasFlowRate>
<SupplyDepletionState>Unchanged</SupplyDepletionState>
<SupplyTamperState>Locked</SupplyTamperState>
<StabilisationPeriod>60</StabilisationPeriod>
<MeasurementPeriod>300</MeasurementPeriod>
</UpdateDeviceConfigurationGasFlow>
```

Figure 57 Update Device Configuration (Gas Flow) Transform Service Request (Body)
Format With Integer Parameter

```
<UpdateDeviceConfigurationGasFlow>
<UncontrolledGasFlowRateDecimal>0.1234</UncontrolledGasFlowRateDecimal>
<SupplyDepletionState>Unchanged</SupplyDepletionState>
<SupplyTamperState>Locked</SupplyTamperState>
<StabilisationPeriod>60</StabilisationPeriod>
<MeasurementPeriod>300</MeasurementPeriod>
</UpdateDeviceConfigurationGasFlow>
```

Figure 58 Update Device Configuration (Gas Flow) Transform Service Request (Body)
Format With Decimal Parameter

6.7.2 Responses

The response messages for an "Update Device Configuration (Gas Flow)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.7.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E060701	Failed Validation – Invalid uncontrolled gas flow parameter	Error	The uncontrolled gas flow parameter selected does not correspond to the GBCS version of the target Device, or was inappropriate for a SMETS1 Device.

Table 70.2 Failed Update Device Configuration (Gas Flow) Service Request Response Codes

6.7.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationGasFlowRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.7.2.2.1 Specific Header Data Items

GBCS prior to v3.2:

Data Item	Gas Response
GBCSHexadecimalMessageCode	007D
<i>GBCS Use Case Number (for information only - not in header)</i>	GCS24
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Uncontrolled Gas Flow Rate and Supply Tamper State on the GSME</i>

Data Item	Gas Response
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 71 - Update Device Configuration (Gas Flow) Parse/SMETS1 Response Header Data Items - GBCS prior to v3.2

GBCS v3.2 or later:

Data Item	Gas Response
GBCSHexadecimalMessageCode	00FC
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>GCS24a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Uncontrolled Gas Flow Rate and Supply Tamper State on the GSME</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 71.1 - Update Device Configuration (Gas Flow) Parse Response Header Data Items - GBCS v3.2 or later

6.8 Update Device Configuration (Billing Calendar) (6.8)

Service Request Name	UpdateDeviceConfiguration(BillingCalendar)
Service Reference	6.8
Service Request Variant Name	UpdateDeviceConfiguration(BillingCalendar)
Service Reference Variant	6.8
Service Request Objective	<p>SMETS2 or later: To enable a DCC Service User to configure the billing calendar on a specified ESME or GSME in order that Billing Data Alerts are triggered to be sent by the ESME or GSME at the time specified by the calendar back to the Device's Registered Supplier.</p> <p>SMETS1: To enable a DCC Service User to configure the billing calendar on a specified ESME or GSME for recording of Billing Data. Note that no Billing Data Alerts are sent for SMETS1 Devices.</p>

Business Context Statement	The DCC Service User requires that an update is made to the current configuration parameters stored within a specified device that relate to the Billing Calendar, e.g. following installation and commissioning or a Change of Supplier event.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.C</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> Once the Billing Calendar has been set within the Device by this Service Request, the Meter will initiate the sending of billing data as a specific Billing Data Log Device Alert at the stated date/time as per the Billing Calendar schedule. The Device Configuration (Billing Calendar) values can be read by a DCC Service User using Service Request – 6.2.3 – Read Device Configuration (Billing Calendar). See section 6.2.3. The billing calendars for Electricity and Gas meters each have their own structure, the following explains how the calendar is defined in each case; <ul style="list-style-type: none"> Electricity – The “Billing Time” indicates at what time during the day the billing snapshot is taken. The billing log is captured either daily, weekly (a numbered day of the week), monthly (a numbered day of the month), quarterly (applicable months plus a numbered day of the month), six monthly (applicable months plus a numbered day of the month) or yearly (applicable month plus a numbered day of the month). For example a billing time of 13:00 and: <ul style="list-style-type: none"> a weekly recurrence on day 4, would result in a snapshot taken every Thursday at 13:00. a monthly recurrence on day of the month 5 would result in a snapshot taken on the 5th day of each month at 13:00 a quarterly recurrence on Jan, Apr, Jul and Oct and day of the month 5 would result in a snapshot taken on the 5th day of January, April, July and October at 13:00, etc. Gas – The “Billing Period Start” indicates the date and time at which the billing snapshot is taken. This can be repeated daily, weekly, monthly, quarterly, six monthly or yearly depending on the periodicity set for the command. For example a Billing Period Start of 26/01/2015 15:00 and a periodicity of monthly would result in a snapshot taken on the 26/01/2015 at 15:00, then again on 26/02/2015 at 15:00, and so on every month. For note - Potential Interoperability issue - In order for the Gas Billing Calendar functionality to work successfully E2E across the HAN for all billing periods, both the GSME and the GPF devices operating within the HAN MUST be operating in accordance with GBCS v2.0 or later specifications (<i>or later</i> applies to other

	<p>occurrences below as well). If the GPF is not operating in line with GBCS 2.0 (and operating still to GBCS v1.0 whilst the GSME is operating to GBCS v2.0), then the GPF will not by definition support TOM Commands for Use Case GCS25a correctly and interoperability issues may arise as the Gas meter will support more billing periods than the GPF does and the two devices will not support the same functionality. If a GSME operating to GBCS v2.0 is installed within a HAN then the DCC Service User should ensure that the associated GPF is also operating to GBCS v2.0 to avoid any potential interoperability issues.</p> <p>Note, however, that a GPF operating to GBCS v2.0 is able to support TOM commands for a GSME operating to GBCS v1.0 so there are no interoperability issues with GSME devices operating to GBCS v1.0.</p> <p>5. Quarterly, Six Monthly and Yearly billing periodicities are only supported by Devices with a Firmware version certified to GBCS v2.0 or later.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS v1.0 Message Code	0x0046	0x007E
GBCS v1.0 Use Case	ECS30	GCS25
GBCS v1.0 Use Case Name	Set Billing Calendar on the ESME	Set Billing Calendar on the GSME
GBCS v2.0 Message Code	0x00D7	0x00D8
GBCS v2.0 Use Case	ECS30a	GCS25a
GBCS v2.0 Use Case Name	Set Billing Calendar on the ESME - all periodicities	Set Billing Calendar on the GSME - all periodicities
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none">1. Billing data is not sent by Device Alert.2. Quarterly, Six Monthly and Yearly billing periodicities are supported by SMETS1 Devices, which is aligned to GBCS v2.0 behaviour.	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		

Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1 or later: XML Criteria - XML data item Daily, Weekly or Monthly populated (note that these are the only options supported in DUIS 1)	ECS30	ECS30a
DUIS 2 or later: XML Criteria - XML data item Quarterly, SixMonthly or Yearly populated	Response Code – E060803	ECS30a
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1 or later: XML Criteria - "Periodicity" data item set to Daily, Weekly or Monthly value (note that these are the only options supported in DUIS 1)	GCS25	GCS25a
DUIS 2 or later: XML Criteria - "Periodicity" data item set to Quarterly, SixMonthly or Yearly value	Response Code – E060803	GCS25a

Table 72 Update Device Configuration (Billing Calendar) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.8.1 Service Request

6.8.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationBillingCalendar XML element defines this Service Request and contains the Billing Calendar to be configured on the Device.

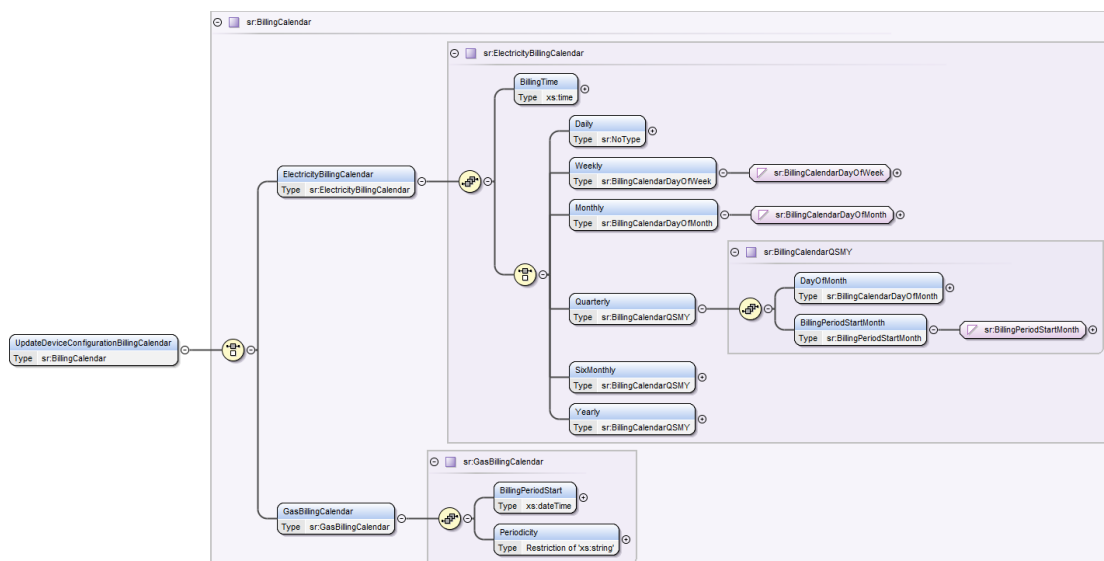


Figure 59 Update Device Configuration (Billing Calendar) Service Request Structure

6.8.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ElectricityBillingCalendar	Indicates that the Billing Calendar to be configured is that of an ESME	sr:ElectricityBillingCalendar (see section 6.8.1.3)	Target Device Type = ESME: Yes Otherwise: N/A	None	N/A	Non-Sensitive
GasBillingCalendar	Indicates that the Billing Calendar to be configured is that of an GSME	Sr:GasBillingCalendar (see section 6.8.1.4)	Target Device Type = GSME Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 73 Update Device Configuration (Billing Calendar) Service Request Data Items

Each Request must contain one of either ElectricityBillingCalendar or GasBillingCalendar

6.8.1.3 ElectricityBillingCalendar Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BillingTime	The time from which the billing period starts	xs:time	Yes	None	N/A	Non-Sensitive
Daily	Indicates that the billing data is to be captured on a daily basis and it is a fixed value	sr:NoType (see Annex 17)	Daily: Yes Otherwise: N/A	Daily	N/A	Non-Sensitive
Weekly	Indicates that the billing data is to be captured on a weekly basis, the numeric value defines the day of the week Valid set: • 1 (Monday) to 7 (Sunday)	sr:BillingCalendarDayOfWeek (xs:positiveInteger (between 1 and 7))	Weekly: Yes Otherwise: N/A	None	N/A	Non-Sensitive
Monthly	Indicates that the billing data is to be captured on a monthly basis, the numeric value defines the day of the month Valid set: • 1 to 28	sr:BillingCalendarDayOfMonth (xs:positiveInteger (between 1 and 28))	Monthly: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Quarterly	<p>Indicates that the billing data is to be captured on a quarterly basis, i.e. every 3 months, and defines the day of the month and the start month of the billing period.</p> <p>Valid set:</p> <ul style="list-style-type: none"> 1 (January) to 12 (December). For example, if the start month is 1, the billing calendar schedule will be 01 (January), 4 (April), 7 (July) and 10 (October). If the start month is 7, the billing calendar schedule will be 7 (July), 10 (October), 1 (January) and 4 (April), <p>Quarterly is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later and on SMETS1 Devices</p>	sr:BillingCalendarQ SMY (see section 6.8.1.5))	Quarterly: Yes Otherwise: N/A	None	N/A	Non-Sensitive
SixMonthly	<p>Indicates that the billing data is to be captured on a six monthly basis and defines the day of the month and the start month of the billing period.</p> <p>Valid set:</p> <ul style="list-style-type: none"> 1 (January) to 12 (December). For example, if the start month is 1, the billing calendar schedule will be 1 (January) and 7 (July). If the start month is 7, the billing calendar schedule will be 7 (July) and 1 (January), <p>SixMonthly is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later and on SMETS1 Devices</p>	sr:BillingCalendarQ SMY (see section 6.8.1.5))	SixMonthly: Yes Otherwise: N/A	None	N/A	Non-Sensitive
Yearly	<p>Indicates that the billing data is to be captured on a yearly basis and defines the day of the month and the start month of the billing period.</p> <p>Valid set:</p> <ul style="list-style-type: none"> 1 (January) to 12 (December). For example, if the start month is 7, the billing calendar schedule will be 7 (July) of every year, <p>Yearly is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later and on SMETS1 Devices</p>	sr:BillingCalendarQ SMY (see section 6.8.1.5))	Yearly: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 74 Update Device Configuration (Billing Calendar) Service Request – ElectricityBillingCalendar Data Items

6.8.1.4 GasBillingCalendar Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
BillingPeriodStart	The date and time from which the billing period starts Valid set: <ul style="list-style-type: none"> Valid date-time except if day of the month is 29, 30 or 31 	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
Periodicity	Indicates that the billing data is to be captured on a reoccurring basis, from the BillingPeriodStart date time. Valid set: <ul style="list-style-type: none"> Daily Weekly Monthly Quarterly (only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later and on SMETS1 Devices) SixMonthly (only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later and on SMETS1 Devices) Yearly (only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later and on SMETS1 Devices) 	Restriction of xs:string (Enumeration)	Yes	Daily	N/A	Non-Sensitive

Table 75 Update Device Configuration (Billing Calendar) Service Request – GasBillingCalendar Data Items

6.8.1.5 BillingCalendarQSMY Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayOfMonth	It defines the day of the month Valid set: <ul style="list-style-type: none"> 1 to 28 	sr:BillingCalendarDayOfMonth (xs:positiveInteger (between 1 and 28))	Yes	None	N/A	Non-Sensitive
BillingPeriodStartMonth	Indicates that the billing period starting month for billing calendar periodicities of quarterly, six monthly or yearly Valid set: <ul style="list-style-type: none"> 1 to 12 	sr:BillingPeriodStartMonth (xs:positiveInteger between 1 and 12)	Yes	None	N/A	Non-Sensitive

Table 76 Update Device Configuration (Billing Calendar) Service Request – Electricity BillingCalendarQSMY Data Items

6.8.1.6 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 77 Update Device Configuration (Billing Calendar) Modes of Operation

6.8.1.7 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 78 Update Device Configuration (Billing Calendar) Command Variant Values

6.8.1.8 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the Service Request valid?	Check that if the Business Target ID Device Type is: <ul style="list-style-type: none"> ESME. The Service Request includes the ElectricityBillingCalendar data item GSME. The Service Request includes the GasBillingCalendar data item 	E060801
Is the Gas Billing Period Start Date valid?	Check that for Gas the Billing Period Start Date day of the month is not 29, 30 or 31	E060802
Does the GBCS / SMETS version for the Firmware on the Device support the features chosen in the Service Request?	Check that if the Service Request includes one of following, the Device Firmware version is certified to GBCS v2.0 or later or to SMETS1 according to the Smart Metering Inventory records: <ul style="list-style-type: none"> For ESME <ul style="list-style-type: none"> XML tag - Quarterly XML tag - SixMonthly XML tag - Yearly For GSME <ul style="list-style-type: none"> Periodicity value Quarterly Periodicity value SixMonthly Periodicity value Yearly 	E060803

Table 79 Update Device Configuration (Billing Calendar) Service Request Validation

6.8.1.9 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationBillingCalendar>
  <ElectricityBillingCalendar>
    <BillingTime>00:05:00.00Z</BillingTime>
    <Daily/>
  </ElectricityBillingCalendar>
</UpdateDeviceConfigurationBillingCalendar>
```

Figure 60 Update Device Configuration (Billing Calendar) Transform Service Request (Body) Format – Electricity (Daily)

```
<UpdateDeviceConfigurationBillingCalendar>
  <ElectricityBillingCalendar>
    <BillingTime>00:05:00.00Z</BillingTime>
    <Quarterly>
      <DayOfMonth>3</DayOfMonth>
      <BillingPeriodStartMonth>8</BillingPeriodStartMonth>
    </Quarterly>
  </ElectricityBillingCalendar>
</UpdateDeviceConfigurationBillingCalendar>
```

Figure 61 Update Device Configuration (Billing Calendar) Transform Service Request (Body) Format – Electricity (Quarterly)

```
<UpdateDeviceConfigurationBillingCalendar>
  <GasBillingCalendar>
    <BillingPeriodStart>2015-01-01T00:05:00.00Z</BillingPeriodStart>
    <Periodicity>Daily</Periodicity>
  </GasBillingCalendar>
</UpdateDeviceConfigurationBillingCalendar>
```

Figure 62 Update Device Configuration (Billing Calendar) Transform Service Request (Body) Format - Gas (Daily)

```
<UpdateDeviceConfigurationBillingCalendar>
  <GasBillingCalendar>
    <BillingPeriodStart>2017-01-01T00:05:00.00Z</BillingPeriodStart>
    <Periodicity>Quarterly</Periodicity>
  </GasBillingCalendar>
</UpdateDeviceConfigurationBillingCalendar>
```

Figure 63 Update Device Configuration (Billing Calendar) Transform Service Request (Body) Format – Gas (Quarterly)

6.8.2 Responses

The response messages for an “Update Device Configuration (Billing Calendar)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command

- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.8.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E060801	Failed Validation – Invalid Service Request for Device Type	Error	The Service Request is not valid for the Device Type where the Billing Calendar is to be configured
E060802	Failed Validation – Invalid Billing Period Start Date	Error	The Service Request Gas Billing Period Start Date day of the month is 29, 30 or 31
E060803	Failed Validation – Features not supported by GBCS / SMETS version	Error	The SMI GBCS / SMETS version of the Firmware running on the Device doesn't support the requested Billing Calendar periodicity

Table 80 Failed Update Device Configuration (Billing Calendar) Service Request Response Codes

6.8.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationBillingCalendarRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.8.2.2.1 Specific Header Data Items

GBCS v1.0:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0046	007E
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS30</i>	<i>GCS25</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Billing Calendar on the ESME</i>	<i>Set Billing Calendar on the GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 81 – Update Device Configuration (Billing Calendar) Parse Response Header
Data Items- GBCS v1.0

GBCS v2.0/SMETS1:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00D7	00D8
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS30a</i>	<i>GCS25a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Billing Calendar on the ESME- all periodicities</i>	<i>Set Billing Calendar on the GSME- all periodicities</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 82 – Update Device Configuration (Billing Calendar) Parse Response Header
Data Items – GBCS v2.0 & SMETS1

6.9 Section 6.9

This section has been intentionally left blank as there is no Service Reference 6.9.

6.10 Section 6.10

This section has been intentionally left blank as there is no Service Reference 6.10.

6.11 Synchronise Clock (6.11)

Service Request Name	SynchroniseClock
Service Reference	6.11
Service Request Variant Name	SynchroniseClock
Service Reference Variant	6.11
Service Request Objective	To allow a DCC Service User to request synchronisation of a device's clock to the trusted DCC time source.
Business Context Statement	The Supplier is required to maintain time on devices within a tolerance of UTC and so from time to time may wish to synchronise clocks on devices to discharge this obligation.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)

	<ul style="list-style-type: none"> Gas Import Supplier (GIS) 	
Security Classification	<p>Critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.C</p>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request includes the Supplier's current date-time and a tolerance in seconds. The setting of these data items has to take into account: <ol style="list-style-type: none"> The fact that, because it is Critical, this Service Request requires the Service User to sign the Pre-command The Target Response Time for the Service Request For GSME, the fact that the Gas Smart Meter is 'Sleepy', i.e. its HAN radio will not be active most of the time and therefore the tolerance provided by the Supplier needs to reflect the extended latency. Note – this could be up to 1,799 seconds before the next wake up. When the Device receives the Command, it will attempt to get the current date-time from the Communications Hub (DCC trusted time source for the HAN, which in turn is set from the CSP network time). If this date-time is within tolerance of the Supplier's date-time, the Device aligns itself to the Communication Hub's clock and treats its date-time as reliable. Otherwise the Device treats its date-time as unreliable. See GBCS documentation for details. If the Command is executed on the Device, the response includes the Device's date-time and its status. See GBCS documentation for details. For Gas a Command response indicates successful execution of the Command. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0062	0x007F
GBCS Use Case	ECS70	GCS28
GBCS Use Case Name	Set Clock on ESME	Set Clock on GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> References to GBCS shall not apply. The SMETS1 Supporting Requirements Document provides alternative definitions for SMETS1 Devices. 	

Table 83 Synchronise Clock Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.11.1 Service Request

6.11.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its SynchroniseClock XML element defines this Service Request and it contains the Supplier Current Date Time and the Tolerance Period.

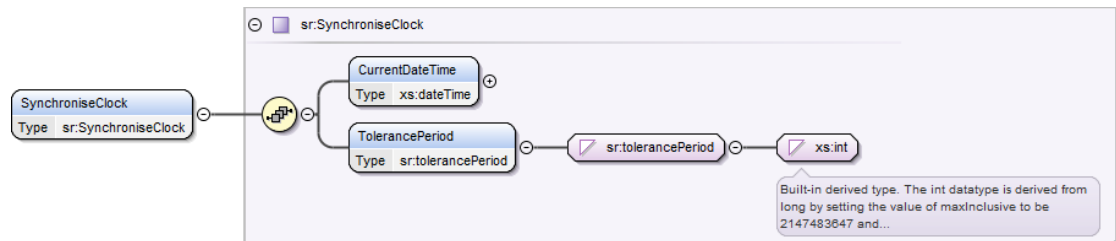


Figure 64 Synchronise Clock Service Request Structure

6.11.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CurrentDateTime	The Supplier's current date-time, that define the "validity interval start" Valid set: • Valid date-time	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
TolerancePeriod	The maximum number of seconds that, added to the CurrentDateTime, define the "validity interval end" Valid set: • ≥ 0 and ≤ 86400 (Note that for the GSME this may need to be at least 1800)	sr:tolerancePeriod (Restriction of xs:int minInclusive = 0, maxInclusive = 86400)	Yes	None	Seconds	Non-Sensitive

Table 84 Synchronise Clock Service Request Data Items

6.11.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 85 Synchronise Clock Modes of Operation

6.11.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 86 Synchronise Clock Command Variant Values

6.11.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.11.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SynchroniseClock>
  <CurrentDateTime>2014-06-03T07:09:12.00Z</CurrentDateTime>
  <TolerancePeriod>50</TolerancePeriod>
</SynchroniseClock>
```

Figure 65 Synchronise Clock Transform Service Request (Body) Format

6.11.2 Responses

The response messages for a "Synchronise Clock" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.11.2.1 Parse Output / SMETS1 Response Format

6.11.2.1.1 Format - SynchroniseClockRsp

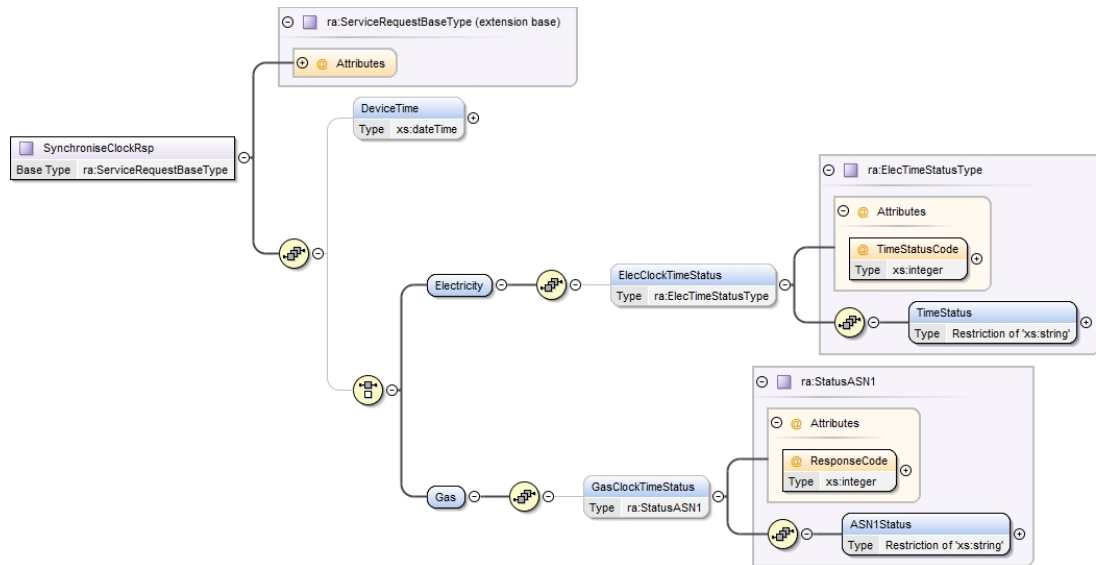


Figure 66 - Synchronise Clock Parse Response / SMETS1 Response Structure

6.11.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0062	007F
GBCS Use Case Number (for information only - not in header)	ECS70	GCS28
GBCS Use Case Name (for information only - not in header)	Set Clock on ESME	Set Clock on GSME
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 87 – Synchronise Clock Parse/SMETS1 Response Header Data Items

6.11.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceTime	The resulting time on the metering device.	xs:dateTime	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ElecClockTimeStatus	The resulting time status, one of: <ul style="list-style-type: none"> "reliable" (TimeStatusCode 0) "invalid" (TimeStatusCode 1) "unreliable" (TimeStatusCode 2) 	ra:TimeStatusType, which wraps an xs:string (maxLength = 8) with TimeStatusCode as an attribute	None	N/A	Non-Sensitive
GasClockTimeStatus	The resulting time status, one of: <ul style="list-style-type: none"> "reliable" (ASN1Status0) "invalid" (ASN1Status1) "unreliable" (ASN1Status2) (Please see ASN1 Response Code definitions in Annex section 18.6.4.1)	ra:StatusASN1	None	N/A	Non-Sensitive

6.11.2.1.4 Sample Response

```
<ra:SynchroniseClockRsp MessageSuccess="true">
  <ra:DeviceTime>2006-05-04T18:13:51.00</ra:DeviceTime>
  <ra:Electricity>
    <ra:ElecClockTimeStatus TimeStatusCode = "0">
      <ra:TimeStatus>reliable</ra:TimeStatus>
    </ra:ElecClockTimeStatus>
  </ra:Electricity>
</ra:SynchroniseClockRsp>
```

Figure 67 - Synchronise Clock Parse Response Example

6.12 Update Device Configuration (Instantaneous Power Threshold) (6.12)

Service Request Name	UpdateDeviceConfiguration(InstantaneousPowerThreshold)
Service Reference	6.12
Service Request Variant Name	UpdateDeviceConfiguration(InstantaneousPowerThreshold)
Service Reference Variant	6.12
Service Request Objective	To allow a DCC Service User to configure InstantaneousPowerThreshold values on an ESME.
Business Context Statement	On installation the power thresholds may be default values that are not appropriate for every consumer. The customer may subsequently request that the Supplier reset the values to be more meaningful to their domestic energy consumption or the Supplier may wish to change them independently over time.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)

Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> These settings determine the ambient signals (green/amber/red) or other indicators present on the IHD as consumer energy usage changes throughout the day. The Device Configuration (Instantaneous Power Threshold) values can be read by a DCC Service User using Service Request – 6.2.5 – Read Device Configuration (Instantaneous Power Threshold). See section 6.2.5. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0047	N/A
GBCS Use Case	ECS34	N/A
GBCS Use Case Name	Set Instantaneous Power Threshold Configuration	N/A
SMETS1 Applicability	Yes	N/A
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 88 Update Device Configuration (Instantaneous Power Threshold) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.12.1 Service Request

6.12.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationInstantaneousPowerThreshold XML element defines this Service Request and contains the Power Thresholds to be configured on the Device and, for Future Dated Requests, the Execution Date and Time.

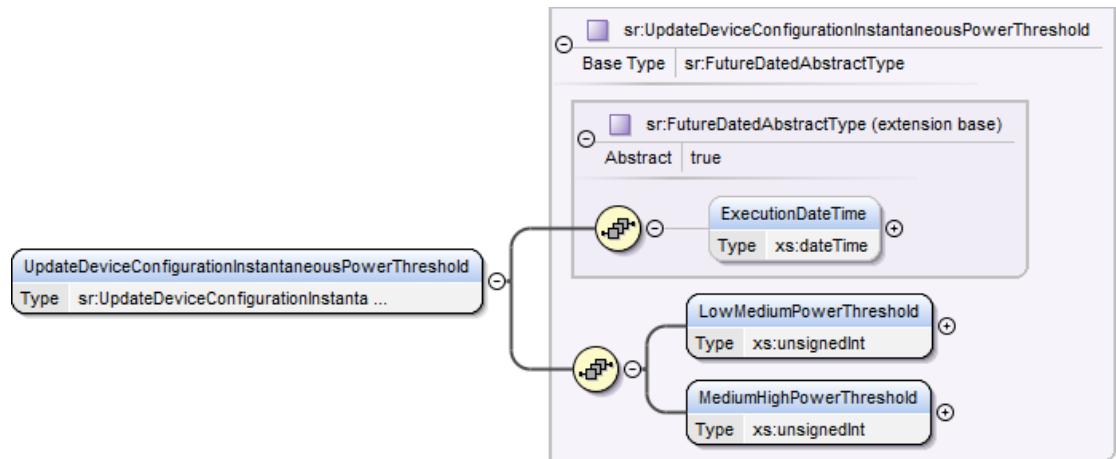


Figure 68 Update Device Configuration (Instantaneous Power Threshold) Service Request Structure

6.12.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
LowMediumPowerThreshold	A value in W defining the threshold between an indicative low and medium Active Power Import level	xs:unsignedInt	Yes	None	W	Non-Sensitive
MediumHighPowerThreshold	A value in W defining the threshold between an indicative medium and high Active Power Import level	xs:unsignedInt	Yes	None	W	Non-Sensitive

Table 89 Update Device Configuration (Instantaneous Power Threshold) Service Request Data Items

6.12.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 90 Update Device Configuration (Instantaneous Power Threshold) Modes of Operation

6.12.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 91 Update Device Configuration (Instantaneous Power Threshold) Command Variant Values

6.12.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.12.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationInstantaneousPowerThreshold>
  <LowMediumPowerThreshold>3</LowMediumPowerThreshold>
  <MediumHighPowerThreshold>10</MediumHighPowerThreshold>
</UpdateDeviceConfigurationInstantaneousPowerThreshold>
```

Figure 69 Update Device Configuration (Instantaneous Power Threshold) Service Request (Body) Format

6.12.2 Responses

The response messages for an "Update Device Configuration (Instantaneous Power Threshold)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.12.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationInstantaneousPowerThresholdResp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.12.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0047
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS34</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Instantaneous Power Threshold Configuration</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 92 - Update Device Configuration (Instantaneous Power Threshold) Parse/SMETS1 Response Header Data Items

6.13 Read Event Or Security Log (6.13)

Service Request Name	ReadEventOrSecurityLog
Service Reference	6.13
Service Request Variant Name	ReadEventOrSecurityLog
Service Reference Variant	6.13
Service Request Objective	To enable a DCC Service User to obtain information from a Device regarding its current status and/or past events for a specified Device ID via interrogating the Event or Security Log on that Device as specified by SMETS.
Business Context Statement	<p>The DCC Service User requires that a set of information is extracted from either the Event Log or Security Logs (as defined by SMETS) for a specified Device, e.g. following the receipt of a Device Alert to support diagnostics.</p> <p>The Event Log and Security Log will contain a range of data items. The Service Request will need to specify the target Device ID and a date range of content to return. The User will then receive all content from the requested log for the specified period, limited to 100 rows of data.</p> <p>Responses to requests for a periodic report from a device event log may return no data where no events have been recorded.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO)

	<ul style="list-style-type: none"> Supplier Nominated Agent (SNA)
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS <i>XREF: SME.C.NC</i></p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The Service Request sender needs to be registered to the Device (as per Registration Data) for the entire date-time period for which the Event or Security Log is requested. If the sender is not authorised to read data for the entire period requested, an error will be returned. <ol style="list-style-type: none"> For User Roles EIS and GIS this could be the 'current' or the 'old' Registered Import Supplier, except for the ALCS and HCALCS Event Log, which is only available to the 'current' registered EIS. If the Device Type is "Communications Hub Function" the registration check applies to the Electricity or Gas Smart Meter associated in the HAN (Communications Hub Whitelist). The Electricity Smart Meter holds the following Event Logs as defined in SMETS: <ol style="list-style-type: none"> Event Log (ESME specific). Read via this Service Request. ALCS and HCALCS Event Log. Read via this Service Request. Only available to the 'current' registered EIS and, for Devices with a Firmware version certified to GBCS v3.2 or later, to the Registered ENO. From GBCS v4.0 this log is known in GBCS as Auxiliary Controller Event Log. As the structure of the GBCS command and response did not change, the term ALCS Event Log continues to be used in DUIS, e.g. in XML element names, but may refer to data from a GBCS v4.0 Device, which may include data relating to APCs. Power Event Log. Read via this Service Request Boost Function Event Log. Read via Service Request 7.11. See Annex Section 7.11 The GPF holds the following Event and Security Logs as defined in SMETS and CHTS. For reading the Event or Security log values from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. <ol style="list-style-type: none"> GPF Event Log. Read via this Service Request GPF Security Log. Read via this Service Request GSME Proxy Log copy of GSME Event Log. Read via this Service Request GSME Proxy Log copy of GSME Security Log. Read via this Service Request

	<p>4. DCC Service Users with User Role ENO can read the ALCS Event Log of ESME with a Firmware version certified to GBCS v3.2 or later.</p> <p>Event Log – A log capable of storing one hundred UTC date and time stamped entries of non-security related information for diagnosis and auditing arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten.</p> <p>Auxiliary Load Control Switch Event Log (known as Auxiliary Controller Event Log from GBCS v4.0) – A log capable of storing one hundred UTC date and time stamped entries of events related to Auxiliary Load Control Switch(es) or HAN Connected Auxiliary Load Control Switch(es), or Auxiliary Proportional Controller(s) from GBCS v4.0, arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten.</p> <p>Power Event Log – A log capable of storing one hundred UTC date and time stamped entries of non-security related information for diagnosis and auditing arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten</p> <p>Boost Function Event Log – A single log capable of storing entries for the most recent 25 Boost Periods including the UTC date and time of the beginning and end of the Boost Period.</p> <p>Security Log – A log capable of storing one hundred UTC date and time stamped entries of security related information for diagnosis and auditing arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten.</p>		
GBCS Cross Reference	Electricity	Gas	Communications Hub Function
GBCS Message Code (GBCS prior to v3.2)	0x0048 (ESME Event Log) 0x0049 (ESME Security Log) 0x00B9 (ESME Power Event Log) 0x00BA (ESME ALCS Event Log)	0x0014 (ZigBee Device Event Log) 0x00A1 (ZigBee Device Security Log)	0x0093 (CHF Event Log) 0x0094 (CHF Security Log)
GBCS Message Code (GBCS v3.2 or later)	0x0048 (ESME Event Log) 0x0049 (ESME Security Log) 0x00B9 (ESME Power Event Log) 0x00FD (ESME ALCS/ Auxiliary Controller Event Log)	0x0014 (ZigBee Device Event Log) 0x00A1 (ZigBee Device Security Log)	0x0093 (CHF Event Log) 0x0094 (CHF Security Log)

GBCS Use Case (GBCS prior to v3.2)	ECS35a (ESME Event Log) ECS35b (ESME Security Log) ECS35e (ESME Power Event Log) ECS35f (ESME ALCS Event Log)	CS10a (ZigBee Device Event Log) CS10b (ZigBee Device Security Log)	ECS35c (CHF Event Log) ECS35d (CHF Security Log)
GBCS Use Case(GBCS v3.2 or later)	ECS35a (ESME Event Log) ECS35b (ESME Security Log) ECS35e (ESME Power Event Log) ECS35g (ESME ALCS/ Auxiliary Controller Event Log)	CS10a (ZigBee Device Event Log) CS10b (ZigBee Device Security Log)	ECS35c (CHF Event Log) ECS35d (CHF Security Log)
GBCS Use Case Name	Read ESME Event Log Read ESME Security Log Read ESME Power Event Log Read ESME ALCS Event Log (Read Auxiliary Controller Event Log from GBCS v4.0)	Read ZigBee Device Event Log Read ZigBee Device Security Log	Read CHF Event Log Read CHF Security Log
SMETS1 Applicability	Yes, except ALCS and Power Event Log	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. The response data shall be populated in accordance with the SMETS1 Supporting Requirements Document. 2. ALCS and Power Event Logs are not supported on SMETS1 Devices. 		

Table 93 Read Event Or Security Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.13.1 Service Request

6.13.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its

ReadEventOrSecurityLog XML element defines this Service Request and contains the Log to read and the date-time range for which the log is to be read on the Device.

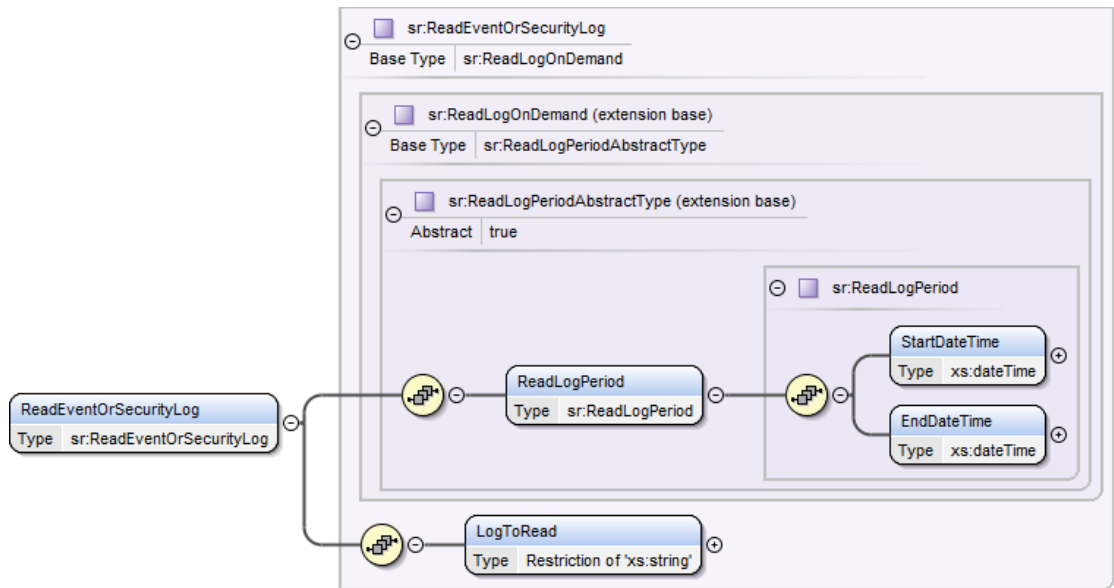


Figure 70 Read Event Or Security Log Service Request Structure

6.13.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ReadLogPeriod	The Start and / or End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive
LogToRead	An enumerated value indicating the Log to be read. Valid values: <ul style="list-style-type: none"> Event. Device's Event Log ALCSEvent^{1, 2}. Only applicable to Electricity Smart Meter Equipment PowerEvent¹. Only applicable to Electricity Smart Meter Equipment Security. Device's Security Log GSMEEvent. Only applicable to GSME Event Log read on the GPF GSMESecurity. Only applicable to GSME Security Log read on the GPF 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 94 Read Event Log Or Security Service Request Data Items

¹ N/A to SMETS1

² For GBCS v4.0 or later Devices this log may contain data relating to APCs

6.13.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 95 Read Event Or Security Log Modes of Operation

6.13.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 96 Read Event Or Security Log Command Variant Values

6.13.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Read Log Period (Event or Security Log Period) validation):

Validation Check	Process	Response Code
Is the Log To Read type valid?	Check that if the Log To Read is: 1. ALCSEvent or PowerEvent the Device Type is Electricity Smart Metering Equipment 2. GSMEEvent or GSMESecurity the Device Type is Gas Proxy Function	E061301
Is the Service User Role valid?	Check that if the LogToRead is ALCSEvent 1. The DCC Service User Role is EIS ¹ or 2. The DCC Service User Role is ENO ¹ and the ESME Firmware version is certified to GBCS v3.2 or later	E061304
Is the Log To Read type valid for a SMETS1 Device?	Check that if the LogToRead is ALCSEvent or PowerEvent then the target Device is not a SMETS1 Device	E061305

Table 97 Read Event Or Security Log Service Request Validation

¹ Only the registered EIS or ENO will be able to read this log

6.13.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadEventOrSecurityLog>
  <ReadLogPeriod>
    <StartDateTime>2014-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2014-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
  <LogToRead>Event</LogToRead>
</ReadEventOrSecurityLog>
```

Figure 71 Sample Read Event Or Security Log Service Request (Body) Format

6.13.2 Responses

The response messages for a "Read Event Or Security Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.13.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E061301	Failed Validation – Log To Read / Device Type mismatch	Error	The Log to Read is not applicable to the Device Type
E061304	Failed Validation – Invalid Service User Role	Error	Invalid Service User Role. The ALCS Event Log is not available to the requesting Service User Role. Only the Registered EIS User Role is eligible to read this log , or Registered ENO for Devices with GBCS v3.2 or later.
E061305	Failed Validation – Log To Read type invalid for a SMETS1 Device	Error	The request log type is not available for a SMETS1 Device

Table 98 Failed Read Event Or Security Log Service Request Response Codes

6.13.2.2 Parse Output / SMETS1 Response Format

6.13.2.2.1 Format - ReadEventOrSecurityLogRsp

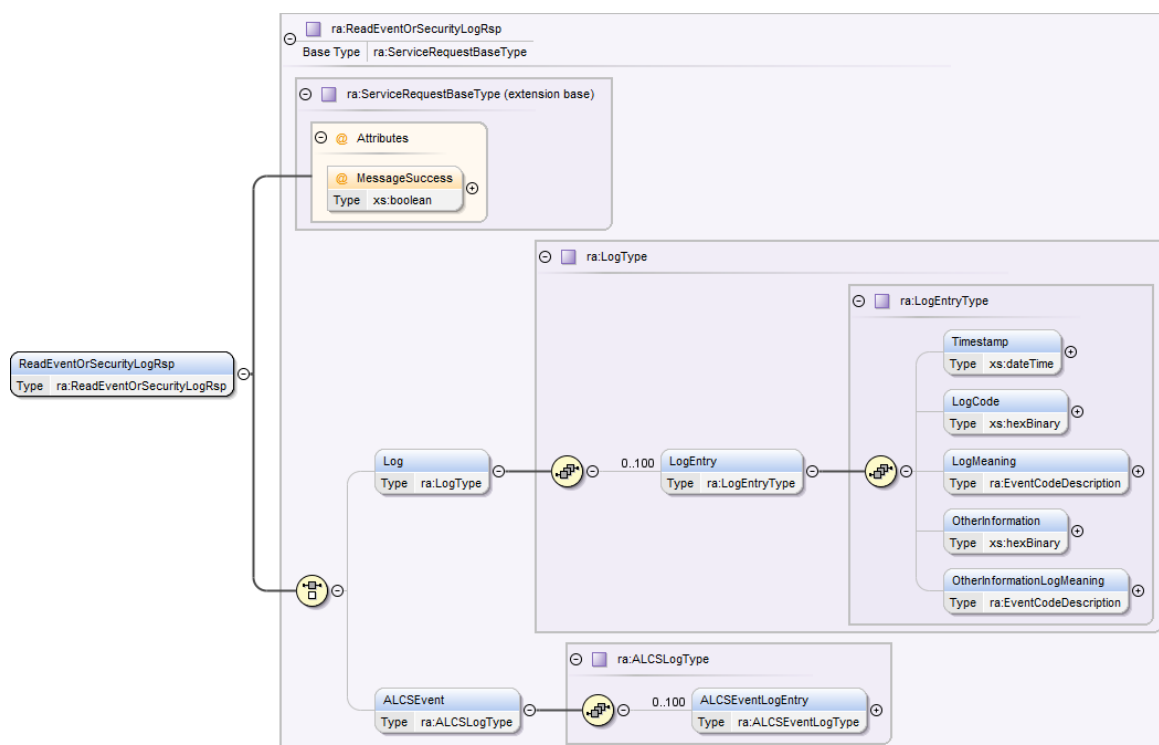


Figure 72 - Read Event or Security Log Parse Response / SMETS1 Response Structure

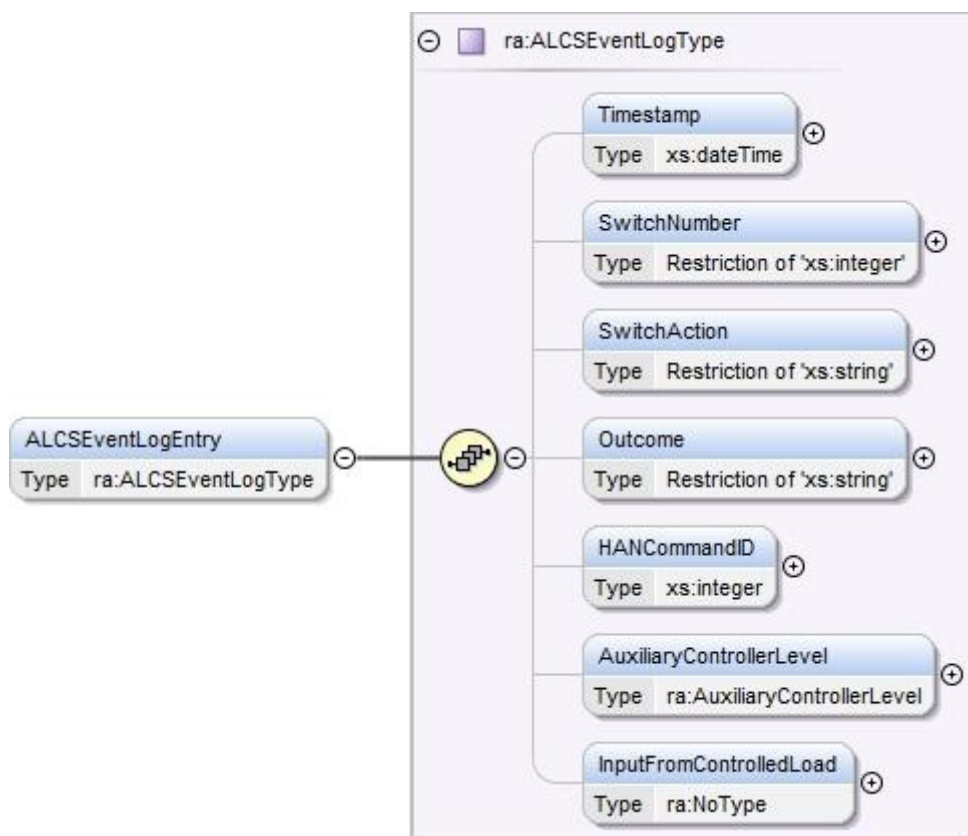


Figure 72.2 - Read Event or Security Log Parse Response - ALCS Event Log

6.13.2.2.2 Specific Header Data Items

The header items vary depending on the log being read.

6.13.2.2.2.1 Device Event Log

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0048	0014
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35a</i>	<i>CS10a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Event Log</i>	<i>Read ZigBee Device Event Log</i>
SupplementaryRemotePartyID	Present if the originator is a URP	Present if the originator is a URP
SupplementaryRemotePartyCounter	Present if the originator is a URP	Present if the originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 99 - Read Event or Security Log (Device Event Log) Parse/SMETS1 Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.13.2.2.2.2 Device Security Log

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0049	00A1
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35b</i>	<i>CS10b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Security Log</i>	<i>Read ZigBee Device Security Log</i>
SupplementaryRemotePartyID	Not present if the originator is <ul style="list-style-type: none"> • The current EIS • An ENO Present if the originator is <ul style="list-style-type: none"> • The old EIS • An SNA 	Not present if the originator is <ul style="list-style-type: none"> • The current GIS • A GNO for a GPF Present if the originator is <ul style="list-style-type: none"> • The old GIS • A GNO for a GSME • An SNA

Data Item	Electricity Response	Gas Response
SupplementaryRemotePartyCounter	Not present if the originator is <ul style="list-style-type: none"> The current EIS An ENO Present if the originator is <ul style="list-style-type: none"> The old EIS An SNA 	Not present if the originator is <ul style="list-style-type: none"> The current GIS A GNO for a GPF Present if the originator is <ul style="list-style-type: none"> The old GIS A GNO for a GSME An SNA
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 100 - Read Event or Security Log (Device Security Log) Parse Response Header Data Items

6.13.2.2.2.3 CHF Event Log

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0093	0093
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35c</i>	<i>ECS35c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read CHF Event Log</i>	<i>Read CHF Event Log</i>
SupplementaryRemotePartyID	Present	Present
SupplementaryRemotePartyCounter	Present	Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 101 - Read Event or Security Log (CHF Event Log) Parse Response Header Data Items

6.13.2.2.2.4 CHF Security Log

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0094	0094
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35d</i>	<i>ECS35d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read CHF Security Log</i>	<i>Read CHF Security Log</i>
SupplementaryRemotePartyID	Present	Present

Data Item	Electricity Response	Gas Response
SupplementaryRemotePartyCounter	Present	Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 102 - Read Event or Security Log (CHF Security Log) Parse Response Header Data Items

6.13.2.2.2.5 Power Event Log

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00B9	N/A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35e</i>	<i>N/A</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ESME Power Event Log</i>	<i>N/A</i>
SupplementaryRemotePartyID	Not present if the originator is <ul style="list-style-type: none"> The current EIS An ENO Present if the originator is <ul style="list-style-type: none"> The Old EIS An SNA 	N/A
SupplementaryRemotePartyCounter	Not present if the originator is <ul style="list-style-type: none"> The current EIS An ENO Present if the originator is <ul style="list-style-type: none"> The Old EIS An SNA 	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 103 - Read Event or Security Log (Power Event Log) Parse Response Header Data Items

6.13.2.2.2.6 ALCS Event Log (Auxiliary Controller Event Log)

GBCS prior to v3.2:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00BA	N/A

Data Item	Electricity Response	Gas Response
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35f</i>	<i>N/A</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ALCS Event Log</i>	<i>N/A</i>
SupplementaryRemotePartyID	Not Present	N/A
SupplementaryRemotePartyCounter	Not Present	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 104.1 - Read Event or Security Log (ALCS Event Log) Parse Response Header Data Items

GBCS v3.2 or later:

GBCS Use Case ECS35g was introduced in GBCS v3.2, and in GBCS v4.0 it was renamed to use the Auxiliary Controller terminology introduced in GBCS v4.0. As the message code and command definition did not change, it was not necessary to change the implementation of ECS35g. The change of GBCS Use Case Name is noted below.

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	00FD	N/A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS35g</i>	<i>N/A</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read ALCS Event Log (prior to GBCS v4.0) Read Auxiliary Controller Event Log (GBCS v4.0 or later)</i>	<i>N/A</i>
SupplementaryRemotePartyID	Not Present	N/A
SupplementaryRemotePartyCounter	Not Present	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 104.2 - Read Event or Security Log (ALCS (Auxiliary Controller) Event Log) Parse Response Header Data Items

6.13.2.2.3 Specific Body Data Items

The log is designed to store one hundred UTC date and time stamped entries of information for diagnosis and auditing arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten.

A common structure is used for most of the log types read under this service request, across all device types (Log Type of "Log" in the response), with the exception of Auxiliary Controller (ALCS/HCALCS or APC) for which there is an alternative format (Log Type of "ALCSEvent") similar to the data returned by Service Request 7.7 (applicable to

GBCS prior to v4.0) or Service Requests 7.14 and 7.15 (applicable to GBCS v4.0 or later).

See GBCS section 16.2 for a definition of event codes.

Log type	Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Log	Timestamp	The UTC date- time stamp of this entry	xs:dateTime	None	N/A	Non-Sensitive
Log	LogCode	The Event/Alert Code corresponding to this event (as defined in GBCS section 16.2)	xs:hexBinary	None	N/A	Non-Sensitive
Log	LogMeaning	Descriptive explanation of the event represented by the LogCode (as defined in GBCS section 16.2) Optional	Restriction of xs:string (maxLength = 200)	None	N/A	Non-Sensitive
Log	OtherInformation	SMETS2 or later: Where required according to the Event/Alert Code: other information relating to this event. See Event/Alert Codes section 16.4 of GBCS which details when this is required. Examples include: <ul style="list-style-type: none"> For Event Codes 0x8161 and 0x8162 this field will contain a User Interface Command Code; for Event Codes 0x8154 and 0x8155 this field will contain a Network Interface Command Code. Optional SMETS1: This shall not be present	xs:hexBinary	None	N/A	Non-Sensitive
Log	OtherInformationLogMeaning	SMETS2 or later: Where feasible, descriptive explanation of the occurrence represented by the code in the OtherInformation attribute relating to this event. For Event Codes 0x8161 and 0x8162 this will contain the text explaining the purpose of the User Interface Command Code, as defined in GBCS section 16.4. Optional SMETS1: This shall not be present	Restriction of xs:string (maxLength = 200)	None	N/A	Non-Sensitive
ALCSEvent ^{1,2}	Timestamp	The date-time stamp of the switching event	xs:datetime	None	N/A	Non-Sensitive
ALCSEvent ^{1,2}	SwitchNumber	The number of the ALCS / HC ALCS/ APC	Restriction of xs:integer MinInclusive = 1 MaxInclusive = 5	None	N/A	Non-sensitive

Log type	Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ALCSEvent ^{1,2}	SwitchAction	<p>See Table 104.4 "Relevance of GBCS and MMC versions to ALCS Event Log data" for context regarding the impact of MMC and GBCS versions on the use of this field.</p> <p><i>GBCS version prior to v4.0, irrespective of MMC version:</i></p> <p>The type of switch action recorded, so one of these values:</p> <ol style="list-style-type: none"> (1) "On" (2) "Off" (3) "Revert to calendar control" (4) "Entry relates to a Message from an HC ALCS" <p>Note that although originally not defined in GBCS, the device may return values 0x01 or 0x02, indicating on or off switch actions due to the ALCS calendar. Only switch actions as a result of a command to the ESME will be presented as "On" or "Off", and values 0x01 or 0x02 will cause a failure in Parse software.</p> <p><i>GBCS version v4.0 or later and MMC version v4.0 or later:</i></p> <p>N/A</p> <p><i>GBCS version v4.0 or later and MMC version prior to v4.0:</i></p> <p>It is not possible to render all of the information from a GBCS v4.0 Device using an MMC version prior to v4.0, and in these cases the SwitchAction field will be used as follows:</p> <ol style="list-style-type: none"> (1) "On", where the Device has returned an output state of 100 (2) "Off" where the Device has returned an output state of 0 (3) The field will remain unpopulated where the Device has returned an output state between 1 and 99 inclusive, or an input state of any value 	xs:string	None	N/A	Non-Sensitive
ALCSEvent ^{1,2}	Outcome	<p>The result of the switch action, being one of:</p> <ol style="list-style-type: none"> (1) "Outcome not known" (2) "Success" (3) "Failure" <p>'Outcome not known' shall only be used where this entry relates to a Command being sent to an HC ALCS (and so the ESME cannot know the outcome)</p>	xs:string	None	N/A	Non-Sensitive
ALCSEvent ^{1,2}	HANCommandID	0x00000000, if this entry relates to an ALCS, APC or non-HAN command to an HCALCS. For HAN command entries related to an HC ALCS, an identifier, allocated by the ESME, for the Command / Response between the ESME and HC ALCS	xs:integer	None	N/A	Non-Sensitive

Log type	Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ALCSEvent ^{1,2}	AuxiliaryControllerLevel	<p>See Table 104.4 "Relevance of GBCS and MMC versions to ALCS Event Log data" for context regarding the impact of MMC and GBCS versions on the use of this field.</p> <p><i>MMC version prior to v4.0:</i> N/A</p> <p><i>GBCS version prior to v4.0:</i> N/A</p> <p><i>MMC version v4.0 or later and:</i> <i>GBCS v4.0 or later:</i></p> <p>An integer indicating the commanded level of an Auxiliary Controller.</p> <p>Where the Auxiliary Controller is an APC, the number reflects the percentage to which its commanded state is to be set.</p> <p>Where the Auxiliary Controller is an ALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow).</p> <p>Valid set: Integer in the range 0 to 100</p>	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	None	N/A	Non-Sensitive
ALCSEvent ^{1,2}	InputFromControlledLoad	<p>See Table 104.4 "Relevance of GBCS and MMC versions to ALCS Event Log data" for context regarding the impact of MMC and GBCS versions on the use of this field.</p> <p><i>MMC version prior to v4.0:</i> N/A</p> <p><i>GBCS version prior to v4.0:</i> N/A</p> <p><i>MMC version v4.0 or later and:</i> <i>GBCS v4.0 or later:</i></p> <p>This element is only relevant to an APC, and will not be present where the Auxiliary Controller is not an APC.</p> <p>If present, this element indicates that the direction of energy flow in the commanded state of an APC is to input energy from the controlled load Device.</p> <p>If the InputFromControlledLoad element is not present for an APC, this indicates that the direction of energy flow in the commanded state of an APC is to output energy to the controlled load Device</p>	ra:NoType (see Annex 17)	No	None	N/A

Table 104.3 - Read Event or Security Log (ALCS (Auxiliary Controller) Event Log) Parse Response Header Data Items

¹ N/A to SMETS1

² For GBCS v4.0 or later Devices this log may contain data relating to APCs

MMC / GBCS version relevance	MMC prior to v4.0	MMC v4.0 or later
GBCS Prior to v4.0	SwitchAction applies. AuxiliaryControllerLevel and InputFromControlledLoad are N/A.	SwitchAction applies. AuxiliaryControllerLevel and InputFromControlledLoad are N/A.
GBCS v4.0 or later	AuxiliaryControllerLevel and InputFromControlledLoad cannot be populated as versions of MMC prior to v4.0 do not support them. Where feasible SwitchAction will be populated, but some information cannot be rendered and will be omitted; see the SwitchAction Description field for details.	AuxiliaryControllerLevel and InputFromControlledLoad apply SwitchAction is N/A

Table 104.4 – Relevance of GBCS and MMC versions to ALCS Event Log data

6.13.2.2.4 Sample Response

```
<ra:ReadEventOrSecurityLogRsp MessageSuccess="true">
  <ra:ALCSEvent>
    <ra:ALCSEventLogEntry>
      <ra:Timestamp>2006-05-04T09:00:00.00</ra:Timestamp>
      <ra:SwitchNumber>1</ra:SwitchNumber>
      <ra:SwitchAction>On</ra:SwitchAction>
      <ra:Outcome>Success</ra:Outcome>
    </ra:ALCSEventLogEntry>
    <ra:ALCSEventLogEntry>
      <ra:Timestamp>2006-05-20T19:21:45.00</ra:Timestamp>
      <ra:SwitchNumber>2</ra:SwitchNumber>
      <ra:SwitchAction>Off</ra:SwitchAction>
      <ra:Outcome>Success</ra:Outcome>
      <ra:HANCommandID>0</ra:HANCommandID>
    </ra:ALCSEventLogEntry>
  </ra:ALCSEvent>
</ra:ReadEventOrSecurityLogRsp>
```

Figure 73 - Read Event or Security Log Parse Response Sample (ALCS Event Log GBCS version prior to v4.0 or earlier)

```
<ra:ReadEventOrSecurityLogRsp MessageSuccess="true">
  <ra:ALCSEvent>
    <ra:ALCSEventLogEntry>
      <ra:Timestamp>2006-05-20T19:21:45.00</ra:Timestamp>
      <ra:SwitchNumber>1</ra:SwitchNumber>
      <ra:Outcome>Success</ra:Outcome>
      <ra:HANCommandID>0</ra:HANCommandID>
      <ra:AuxiliaryControllerLevel>100</ra:AuxiliaryControllerLevel>
    </ra:ALCSEventLogEntry>
    <ra:ALCSEventLogEntry>
      <ra:Timestamp>2006-05-20T20:00:01.56</ra:Timestamp>
      <ra:SwitchNumber>2</ra:SwitchNumber>
      <ra:Outcome>Success</ra:Outcome>
      <ra:HANCommandID>0</ra:HANCommandID>
      <ra:AuxiliaryControllerLevel>50</ra:AuxiliaryControllerLevel>
    </ra:ALCSEventLogEntry>
    <ra:ALCSEventLogEntry>
      <ra:Timestamp>2006-05-21T06:03:04.89</ra:Timestamp>
      <ra:SwitchNumber>3</ra:SwitchNumber>
      <ra:Outcome>Success</ra:Outcome>
      <ra:HANCommandID>0</ra:HANCommandID>
      <ra:AuxiliaryControllerLevel>0</ra:AuxiliaryControllerLevel>
    </ra:ALCSEventLogEntry>
  </ra:ALCSEvent>
</ra:ReadEventOrSecurityLogRsp>
```

Figure 73.2 - Read Event or Security Log Parse Response Sample (ALCS Event Log GBCS v4.0 or later)

6.14 Update Device Configuration (Auxiliary Load Control) (6.14)

This Service Request maps to three GBCS Use Cases and each Use Case requires its own Request ID.

The 6.14 Service Request has been broken into several parts: 6.14.1 (Set Auxiliary Controller Descriptions) which is valid for all GBCS versions, 6.14.2 (ALCS / HCALCS Scheduler) for ESME Devices prior to GBCS v4.0, and 6.14.3 (Set Auxiliary Controller Calendar) which is valid for GBCS v4.0 or later ESME (including SAPC) Devices and is used for setting schedules of APC, ALCS and HCALCS Auxiliary Controllers.

6.14.1 Update Device Configuration (Auxiliary Load Control Description) (6.14.1)

Service Request Name	UpdateDeviceConfiguration(AuxiliaryLoadControl)
Service Reference	6.14
Service Request Variant Name	UpdateDeviceConfiguration(AuxiliaryLoadControlDescriptions)
Service Reference Variant	6.14.1
Service Request Objective	To enable a DCC Service User to configure the Auxiliary Load Control behaviour of a Device ESME.
Business Context Statement	The DCC Service User requires that an update is made to the current configurations for Auxiliary Controller descriptions held within a specified ESME.

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	<p>Critical and non-sensitive: <i>GBCS XREF: SME.C.C</i></p>	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request is applicable to an ESME connected to one or more Auxiliary Controllers including ALCS and / or HCALCS and / or APCs. The Business Target ID = ESME Device ID An ESME can be connected to a maximum of 5 Auxiliary Controllers, each of which can be ALCS or HCALCS (prior to GBCS v4.0) or APC, ALCS or HCALCS (GBCS v4.0 or later) The Service Request only includes the Auxiliary Controller switch Ids (values 1 to 5) and their descriptions (labels) for those switches connected to the ESME. For Devices prior to GBCS v4.0 the switch type (ALC or HCALC) and, for HCALC, its Device ID are defined via Service Request 6.14.2 (see section 6.14.2); for Devices with GBCS v4.0 or later the switch types (APC, ALCS or HCALCS) are defined via Service Request 6.14.3 (see section 6.14.3). The User only may update the load control descriptions of between 1 and 5 Auxiliary Controllers at their discretion with this Service Request. This Service Request is treated by the DCC Data Systems with the same priority as a Service Request with a Target Response Time of 30 seconds When the DCC Data Systems receive a Success Response from the Device, the DSP shall send a DCC Alert N58 to the ESME's Registered ENO to notify them of the Auxiliary Controller configuration change. The Registered ENO must be a user of DUIS version 3.1 or later in order to be able to receive DCC Alert N58. This Service Request has XML element names using the original load control terminology prior to GBCS v4.0, referring to ALCS and HCALCS, but it applies also to Devices with GBCS v4.0 or later, since, although the terminology has changed, the GBCS Use Case definition and message code for setting descriptions have not changed. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0053	N/A
GBCS Use Case	ECS46a	N/A
GBCS Use Case Name	<p>Set HC ALCS or ALCS Labels in ESME (prior to GBCS v4.0)</p> <p>Set Auxiliary Controller Descriptions (GBCS v4.0 or later)</p>	N/A

SMETS1 Applicability	No	No
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Table 105 Update Device Configuration (Auxiliary Load Control Description) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.14.1.1 Service Request

6.14.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationALCDescriptions XML element defines this Service Request and contains the Id (index) and Description for each of the Auxiliary Controllers (ALC / HCALC Switches or APCs) connected to the ESME.

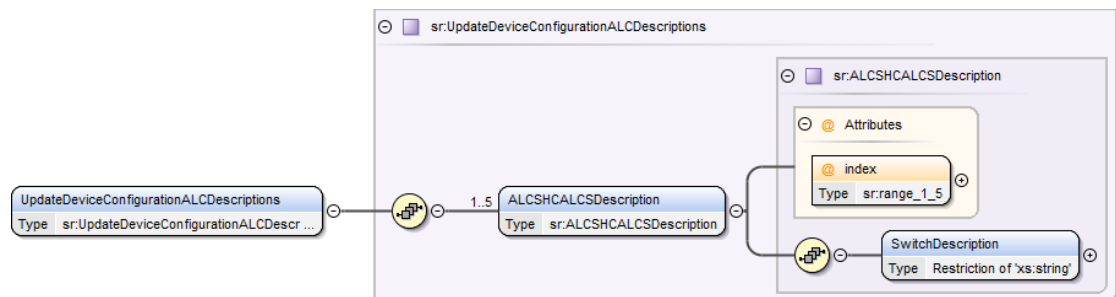


Figure 74 Update Device Configuration (Auxiliary Load Control Description) Service Request Structure

6.14.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ALCSHCALCSDescription	The Ids (indices) and descriptions of the ALC / HCALC Switches, or APCs.	sr:ALCSHCALCSDescription (see section 6.14.1.1.3)	Yes ¹	None	N/A	Non-Sensitive
Index (Attribute of ALCSHCALCSDescription)	The value of the index is the Auxiliary Controller Identifier	sr:range_1_5 (xs:positiveInteger from 1 to 5)	Yes	None	N/A	Non-Sensitive

Table 106 Update Device Configuration (Auxiliary Load Control Description) Service Request Data Items

¹ Minimum 1 and maximum 5

6.14.1.1.3 ALCSHCALCSDescription Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchDescription	The description of the ALCS or HCALCS Switch, or APC Valid set: <ul style="list-style-type: none">All printable characters, i.e. characters with ASCII values of 32 (space) to 126 (tilde) inclusive	Restriction of xs:string (maxLength = 22, pattern = "[-~]+")	Yes	None	N/A	Non-Sensitive

Table 107 Update Device Configuration (Auxiliary Load Control Description) Service Request - ALCSOrHCALCSDescription Data Items

6.14.1.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 108 Update Device Configuration (Auxiliary Load Control Description) Modes of Operation

6.14.1.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 109 Update Device Configuration (Auxiliary Load Control Description) Command Variant Values

6.14.1.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.14.1.1.7 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationALCDescriptions>
  <ALCSHCALCSDescription index="1">
    <SwitchDescription>Switch 1 Description</SwitchDescription>
  </ALCSHCALCSDescription>
</UpdateDeviceConfigurationALCDescriptions>
```

Figure 75 Update Device Configuration (Auxiliary Load Control Description) Transform Service Request (Body) Format

6.14.1.2 Responses

The response messages for an "Update Device Configuration (Auxiliary Load Control Description)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.14.1.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationALCDescriptionsRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.14.1.2.1.1 Specific Header Data Items

Data Item	ALCS Response
GBCSHexadecimalMessageCode	0053
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS46a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set HC ALCS or ALCS Labels in ESME (prior to GBCS v4.0) Set Auxiliary Controller Descriptions (GBCS v4.0 or later)</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 110 - Update Device Configuration (Auxiliary Load Control Description) Parse Response Header Data Items

6.14.2 Update Device Configuration (Auxiliary Load Control Scheduler) (6.14.2)

Service Request Name	UpdateDeviceConfiguration(AuxiliaryLoadControl)
Service Reference	6.14
Service Request Variant Name	UpdateDeviceConfiguration(AuxiliaryLoadControlScheduler)
Service Reference Variant	6.14.2

Service Request Objective	To enable a DCC Service User to configure the Auxiliary Load Control behaviour of an ESME with GBCS version prior to GBCS v4.0. For Devices conforming to GBCS v4.0 or later see section 6.14.3.	
Business Context Statement	The DCC Service User requires that an update is made to the current configurations for auxiliary load control (ALC scheduler) held within a specified ESME.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive: <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request updates the SMETS item <i>Auxiliary Load Control Switch Calendar</i> (in SMETS2 versions prior to SMETS2 v5.0). This is a Switching Table containing a set of rules for setting the commanded state of up to five Auxiliary Load Control Switches or HAN Connected Auxiliary Load Control Switches as open and closed. For each of the Switches connected to the ESME, this Service Request defines the Type (ALCS or HCALCS) and, for HCALCS, the Device ID. The corresponding Switch Labels are defined via Service Request 6.14.1 (see section 6.14.1). <ul style="list-style-type: none"> This Service Request is applicable to an ESME connected to ALCS and / or HCALCS. The Business Target ID = ESME Device ID An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS. The Auxiliary Load Control Scheduler (Calendar) is the same for ALCS and HCALCS Note that the SwitchTypeAndId data item is not future dateable on the device, If the command is future dated, then this item shall be applied immediately. This Service Request is treated by the DCC Data Systems with the same priority as a Service Request with a Target Response Time of 30 seconds When the DCC Data Systems receive a Success Response or successful future dated completion from the Device, the DSP shall send a DCC Alert N58 to the ESME's Registered ENO to notify them of the ALCS / HCALCS configuration change. The Registered ENO must be a user of DUIS version 3.1 or later in order to be able to receive DCC Alert N58. For Devices with GBCS version 4.0 or later this Service Request Variant is not applicable and Users should instead use the later equivalent 6.14.3 Update Device Configuration (Auxiliary Controller Scheduler). 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to v4.0	0x0054	N/A

GBCS Use Case prior to v4.0	ECS46c	N/A
GBCS Use Case Name prior to v4.0	Set HC ALCS and ALCS configuration in ESME (excluding labels)	N/A
GBCS v4.0 or later	N/A – feature not supported by Device	N/A
SMETS1 Applicability	No	No
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	ECS46c	Response Code - E57

Table 111 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.14.2.1 Service Request

6.14.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationALCScheduler XML element defines this Service Request and contains the Calendar (Scheduler), The Special Days Calendar and, optionally, the Switch Type and Id for each of the switches connected to ESME and, for Future Dated Requests, the Execution Date and Time.

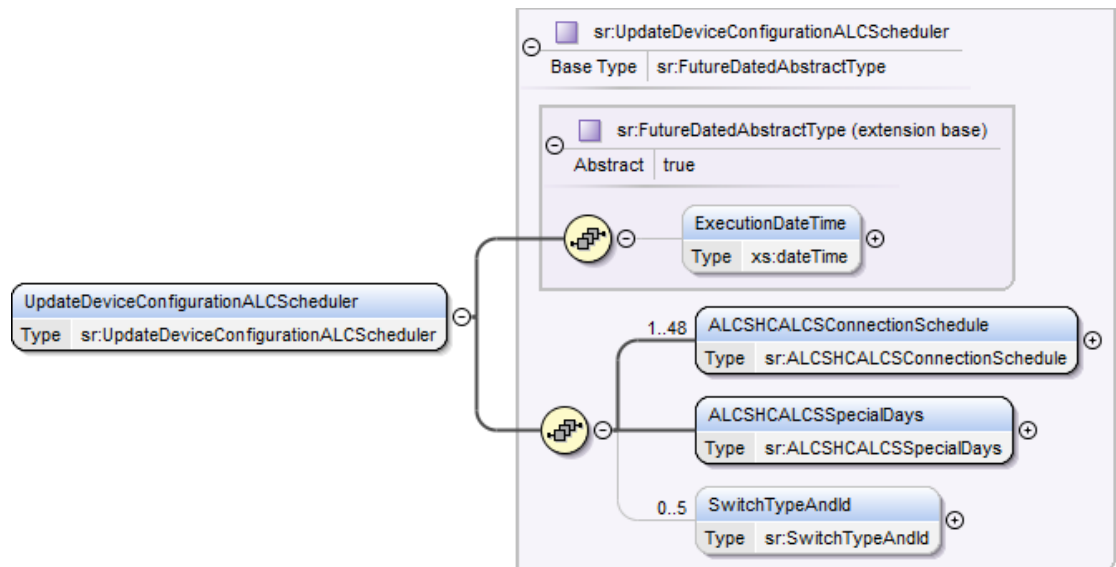


Figure 76 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request Structure

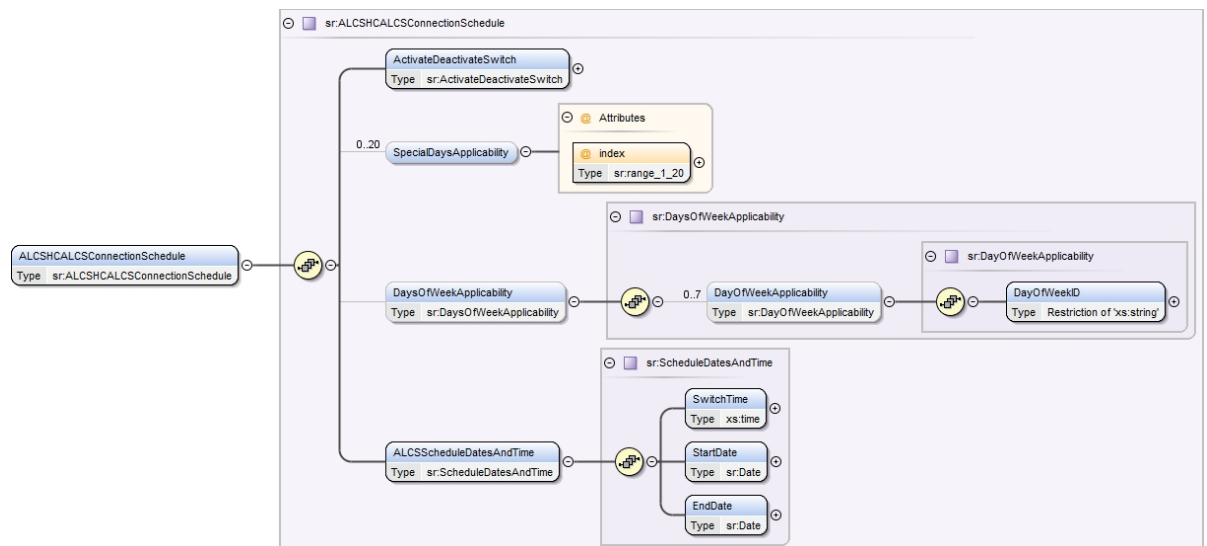


Figure 77 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request - ALCSHCALCSCConnectionSchedule Structure

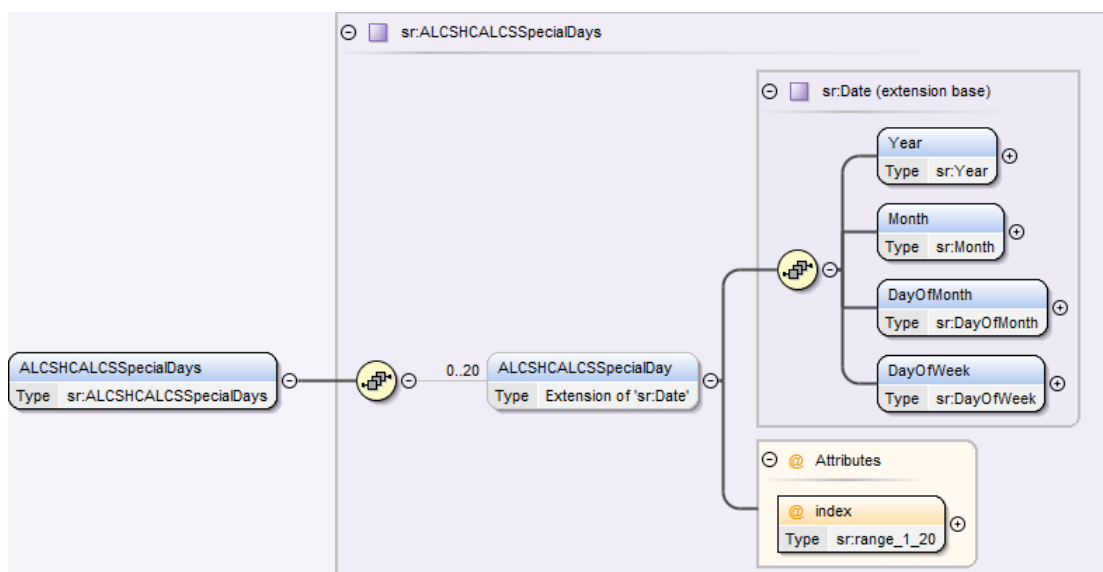


Figure 78 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request - ALCSHCALCSpecialDays Structure

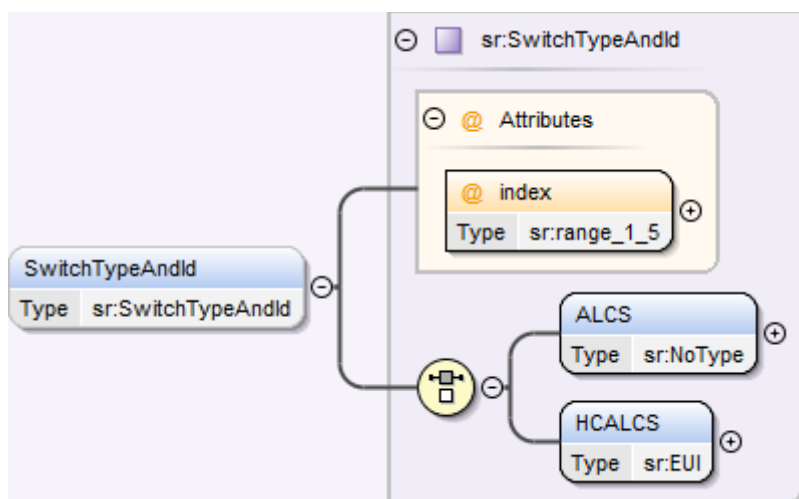


Figure 79 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request – SwitchTypeAndId Structure

6.14.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ALCSHCALCSConnectionSchedule	Structure that defines the schedule when individual switches are to be connected or disconnected	sr:ALCSHCALCSConnectionSchedule (see section 6.14.2.1.3)	Yes ¹	None	N/A	Non-Sensitive
ALCSHCALCSSpecialDays	A calendar defining special days for the activation or deactivation of ALC / HCALCS Switches	sr:ALCSHCALCSSpecialDays (see section 6.14.2.1.4)	Yes ³	None	N/A	Non-Sensitive
SwitchTypeAndId	The Switch Type (ALCS or HCALCS) and, for HCALCS, the Device ID The index is the Switch Identifier	sr:SwitchTypeAndId (see section 6.14.2.1.5)	No ²	None	N/A	Non-Sensitive

Table 112 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request Data Items

¹ Minimum of 1 and maximum of 48 schedules

² Optional. If included, minimum of 1 and maximum of 5

³ If there are no ALCS HCALCS Special Days, this XML element will be present, but empty, i.e. it will contain 0 ALCS HCALCS Special Day elements

6.14.2.1.3 ALCSHCALCSConnectionSchedule Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ActivateDeactivateSwitch	Identifier of the Switch to be Activated or Deactivated. The index is the Switch Identifier Valid set: <ul style="list-style-type: none"> ActivateSwitch. To close the Switch identified by the index DeactivateSwitch. To open the Switch identified by the index 	sr:ActivateDeactivateSwitch (choice of: ActivateSwitch sr:NoType DeactivateSwitch sr:NoType) (see Annex 17 for sr:NoType)	Yes	None	N/A	Non-Sensitive
SpecialDaysApplicability	Identifier, via the Index, of those Special Days to which the Schedule applies	N/A	No ²	None	N/A	Non-Sensitive
Index (Attribute of SpecialDaysApplicability)	The value of the index indicates which Special Day(s) are applicable to the Schedule	sr:range_1_20 (xs:positiveInteger from 1 to 20)	No ²	None	N/A	Non-Sensitive
DaysOfWeekApplicability	The days of the week to which the schedule applies defined as an array of up to 7 DayOfTheWeekApplicability elements	sr:DayOfWeekApplicability (see section 6.14.2.1.6)	No	None	N/A	Non-Sensitive
ALCSScheduledDatesAndTime	The switch time and date range (with wildcards) when the script is to be run	sr:ScheduleDatesAndTime (see Annex Section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 113 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request – ALCSHCALCSConnectionSchedule Data Items

² Optional. If included, a minimum of 1 and a maximum of 20

6.14.2.1.4 ALCSHCALCSSpecialDays Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ALCSHCALCSSpecialDay	Special Day Dates to which the Schedule applies	sr:Date (with wildcards) (see Annex section 17)	No ¹	None	N/A	Non-Sensitive
Index (Attribute of ALCSHCALCSSpecialDay)	The value of the index provides an identifier for each ALCSHCALCSSpecialDay	sr:range_1_20 (xs:positiveInteger from 1 to 20)	No ¹	None	N/A	Non-Sensitive

Table 114 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request – ALCSHCALCSSpecialDays Data Items

¹ Optional. If included, a minimum of 1 and a maximum of 20

6.14.2.1.5 SwitchTypeAndId Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ALCS	Identifies Switch Type as ALCS	sr:NoType (see Annex 17)	ALCS: Yes Otherwise: N/A	None	N/A	Non-Sensitive
HCALCS	Identifies Switch Type as HCALCS and it defines its Device ID	sr:EUI	HCALCS: Yes Otherwise: N/A	None	N/A	Non-Sensitive
Index (Attribute of SwitchTypeAndId)	The value of the index provides an identifier for each SwitchTypeAndId	sr:range_1_5 (xs:positiveInteger from 1 to 5)	Yes	None	N/A	Non-Sensitive

Table 115 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request – SwitchTypeAndId Data Items

6.14.2.1.6 DaysOfWeekApplicability Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayOfWeekApplicability	The days of the week to which the schedule applies defined as an array of 7 Day IDs Valid set: <ul style="list-style-type: none"> Monday Tuesday Wednesday Thursday Friday Saturday Sunday 	sr:DayOfWeekID (Restriction of xs:string (Enumeration))	Yes ¹	None	N/A	Non-Sensitive

Table 116 Update Device Configuration (Auxiliary Load Control Scheduler) Service Request – DaysOfWeekApplicability Data Items

¹ Array of 0 to 7 ID values

6.14.2.1.7 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	Device	No

Table 117 Update Device Configuration (Auxiliary Load Control Scheduler) Modes of Operation

6.14.2.1.8 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 118 Update Device Configuration (Auxiliary Load Control Scheduler) Command Variant Values

6.14.2.1.9 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.14.2.1.10 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```

<UpdateDeviceConfigurationALCScheduler>
  <ExecutionDateTime>2014-10-24T04:03:05.00Z</ExecutionDateTime>
  <ALCSHCALCSConnectionSchedule>
    <ActivateDeactivateSwitch index="1">
      <ActivateSwitch/>
    </ActivateDeactivateSwitch>
    <SpecialDaysApplicability index="1" />
    <DaysOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Monday</DayOfWeekID>
      </DayOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Tuesday</DayOfWeekID>
      </DayOfWeekApplicability>
    </DaysOfWeekApplicability>
    <ALCSScheduleDatesAndTime>
      <SwitchTime>06:00:00.00Z</SwitchTime>
      <StartDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>01</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>01</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/> </DayOfWeek>
      </StartDate>
      <EndDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>03</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>31</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/></DayOfWeek>
      </EndDate>
    </ALCSScheduleDatesAndTime>
  </ALCSHCALCSConnectionSchedule>
  <ALCSHCALCSConnectionSchedule>
    <ActivateDeactivateSwitch index="1">
      <DeactivateSwitch/>
    </ActivateDeactivateSwitch>
    <SpecialDaysApplicability index="1" />
    <DaysOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Monday</DayOfWeekID>
      </DayOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Tuesday</DayOfWeekID>
      </DayOfWeekApplicability>
    </DaysOfWeekApplicability>
    <ALCSScheduleDatesAndTime>
      <SwitchTime>22:00:00.00Z</SwitchTime>
      <StartDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>01</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>01</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/> </DayOfWeek>
      </StartDate>
      <EndDate>
        <Year><NonSpecifiedYear/> </Year>
        <Month><SpecifiedMonth>03</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>31</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/></DayOfWeek>
      </EndDate>
    </ALCSScheduleDatesAndTime>
  </ALCSHCALCSConnectionSchedule>
  <ALCSHCALCSSpecialDays>
    <ALCSHCALCSSpecialDay index="1">
      <Year><NonSpecifiedYear/></Year>
      <Month><SpecifiedMonth>12</SpecifiedMonth></Month>
      <DayOfMonth><SpecifiedDayOfMonth>25</SpecifiedDayOfMonth></DayOfMonth>
      <DayOfWeek><NonSpecifiedDayOfWeek/></DayOfWeek>
    </ALCSHCALCSSpecialDay>
  </ALCSHCALCSSpecialDays>
  <SwitchTypeAndId index="1"><ALCS/></SwitchTypeAndId>
  <SwitchTypeAndId index="2">
    <HCALCS>12-52-73-24-95-66-77-88</HCALCS>
  </SwitchTypeAndId>
</UpdateDeviceConfigurationALCScheduler>

```

Figure 80 Update Device Configuration (Auxiliary Load Control Scheduler) Transform Service Request (Body) Format

In this example:

- Only 2 out of the 48 possible schedules have been included
- The first schedule connects ALC switch 1 every Monday and Tuesday, at 06:00:00 from the 1st of January to the 31st of March and also on Christmas Day of every year
- The second schedule disconnects ALC switch 1 every Monday and Tuesday at 22:00:00 from the 1st of January to the 31st of March and also on Christmas Day of every year
- The Special Days Calendar only includes Christmas Day of every year
- Only Switch 1 (ALCS) and 2 (HCALCS) have been included

6.14.2.2 Responses

The response messages for an "Update Device Configuration (Auxiliary Load Control Scheduler)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.14.2.2.1 Device Responses and Future Dating

This Service Request's Command contains a variable number of instructions ($4 \leq 'n' \leq 9$) and a fixed number of activation date-time instructions ($'m' = 2$). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome) . These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1

6.14.2.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationALCSchedulerRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

See section 6.14.2.2.1 for description of the responses to future dated execution requests.

6.14.2.2.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0054
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS46c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set HC ALCS and ALCS configuration in ESME (excluding labels)</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 119 - Update Device Configuration (Auxiliary Load Control Scheduler) Parse Response Header Data Items

6.14.3 Update Device Configuration (Auxiliary Controller Scheduler) (6.14.3)

Service Request Name	UpdateDeviceConfiguration(AuxiliaryControllerScheduler)
Service Reference	6.14
Service Request Variant Name	UpdateDeviceConfiguration(AuxiliaryControllerScheduler)
Service Reference Variant	6.14.3
Service Request Objective	To enable a DCC Service User to configure the Auxiliary Load Control behaviour of an ESME with GBCS version GBCS v4.0 or later. For Devices with a GBCS version prior to GBCS v4.0 see section 6.14.2.
Business Context Statement	The DCC Service User requires that an update is made to the current schedule configuration for auxiliary load control (Auxiliary Controller Calendar) held within a specified ESME (including SAPC).
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)

Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C	
Service Request Narrative	<ol style="list-style-type: none"> 1. This Service Request is applicable only to ESME Devices with GBCS v4.0 or later. For GBCS versions prior to v4.0 use Service Request 6.14.2. 2. This Service Request updates the SMETS item <i>Auxiliary Controller Calendar</i>. This is a Switching Table containing a set of rules for setting the commanded state of Auxiliary Controllers. The term <i>Auxiliary Controller Calendar</i> was introduced in SMETS v5.0. 3. This Service Request 6.14.3 does not have functionality corresponding to the updating of switch type and HCALCS device ID in Service Request 6.14.2. Note that the HCALCS device ID in the ESME is established during the use of Join Service Request 8.7.1 (see Annex Section 8.7.1 for details) 4. This Service Request is applicable to an ESME (including SAPC) connected to one or more Auxiliary Controllers. The Business Target ID = ESME Device ID. 5. An Electricity Smart Meter can be connected to a maximum of 5 Auxiliary Controllers, each of which can be APC, ALCS or HCALCS. 6. The Service Request consists of: <ol style="list-style-type: none"> a. A special day calendar defining up to 20 special days which may be used in load control schedules, e.g. enabling the definition of different rules on public holidays such as Christmas Day. b. Information defining up to 120 load control changes, each including a schedule defining when the load control change is to be applied, which one of the 5 Auxiliary Controller positions in an ESME is to be commanded, and the new commanded state. 7. Each new commanded state is sent to the Device as a value between 0 and 100 inclusive. Depending on the type of the specified Auxiliary Controller, the value will be interpreted by the Device as a percentage of energy flow (where the Auxiliary Controller is an APC) or an activate or deactivate instruction (where the Auxiliary Controller is an ALCS or HCALCS). 8. The default direction of energy flow is to output energy from the electricity supply to the controlled load. Where an Auxiliary Controller is an APC, it is possible for the commanded state to command that the direction of energy flow shall be to input from the controlled load device. 9. When the DCC Data Systems receive a Success Response or successful future dated completion from the Device, the DSP shall send a DCC Alert N58 to the ESME's Registered ENO to notify them of the Auxiliary Controller configuration change. The Registered ENO must be a user of DUIS version 3.1 or later in order to be able to receive DCC Alert N58. 	
GBCS Cross Reference	Electricity	Gas

GBCS prior to v4.0	N/A – feature not supported by Device	N/A
GBCS v4.0 Message Code	0x011A	N/A
GBCS v4.0 Use Case	ECS46d	N/A
GBCS v4.0 Case Name	Set Auxiliary Controller Calendar	N/A
SMETS1 Applicability	No	No
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	Response Code - E57	ECS46d

Table 119.1 Update Device Configuration (Auxiliary Controller Scheduler) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.14.3.1 Service Request

6.14.3.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationAuxiliaryControllerScheduler XML element defines this Service Request and contains the scheduler and Special Days Calendar to ESME and, for Future Dated Requests, the Execution Date and Time.

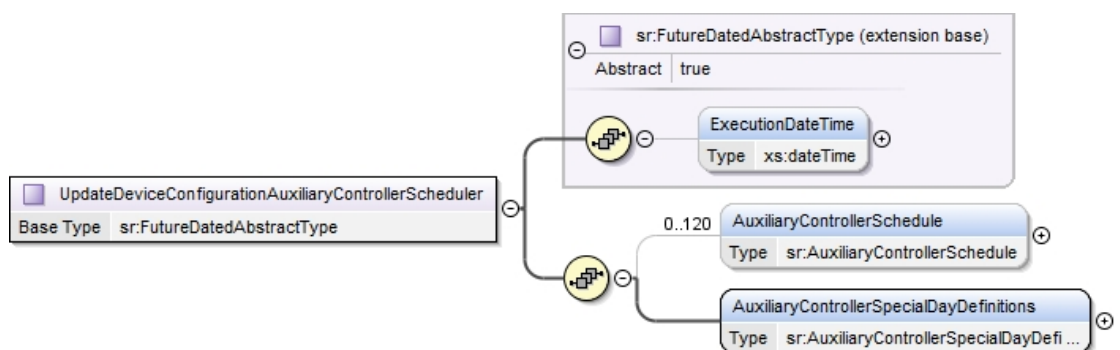


Figure 80.2 Update Device Configuration (Auxiliary Controller Scheduler) Service Request Structure

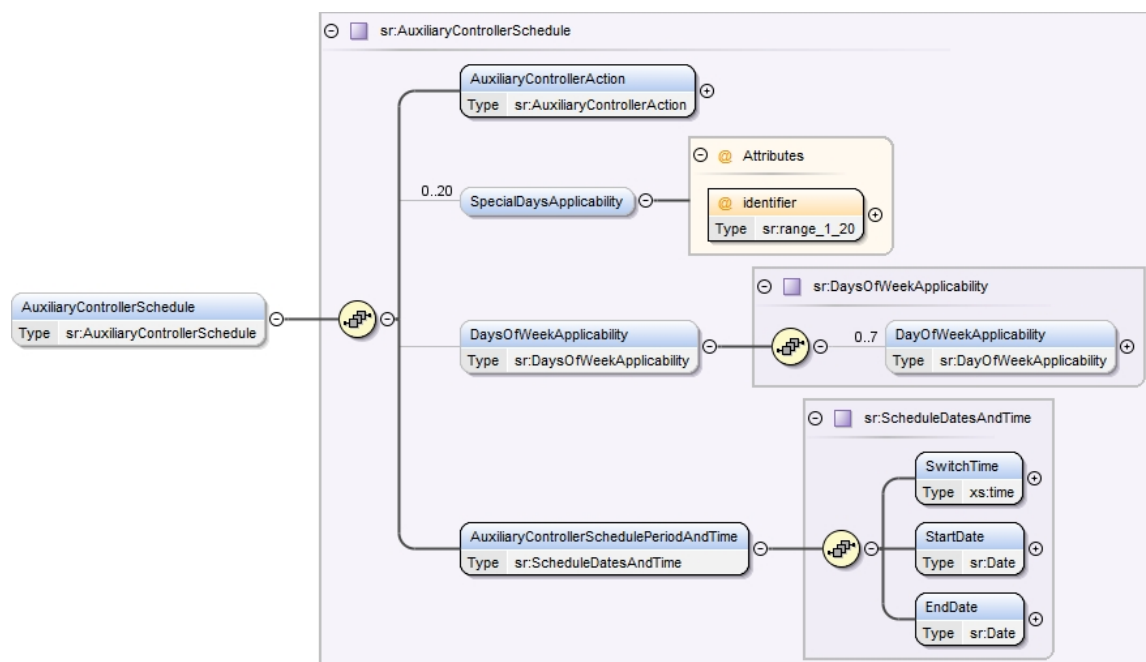


Figure 80.3 Update Device Configuration (Auxiliary Controller Scheduler) Service Request – AuxiliaryControllerSchedule Structure

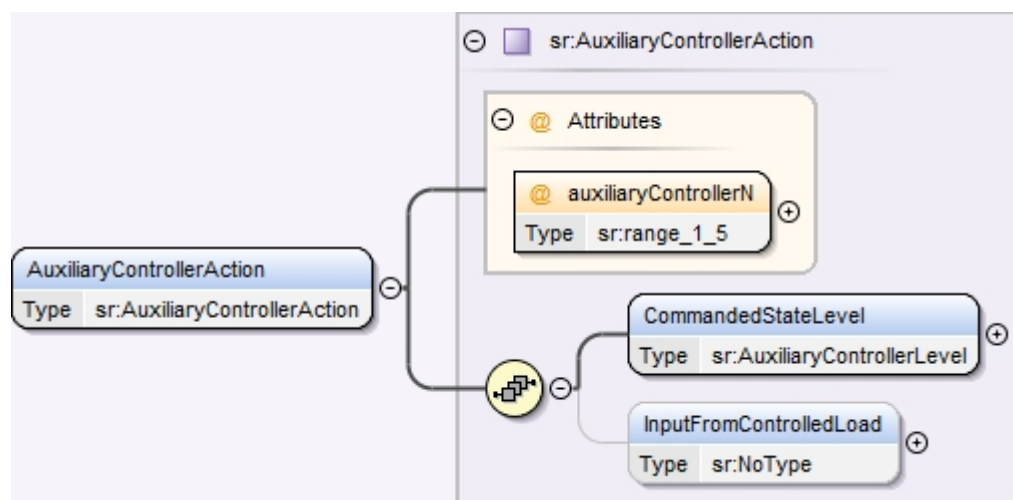


Figure 80.4 Update Device Configuration (Auxiliary Controller Scheduler) Service Request – AuxiliaryControllerAction Structure

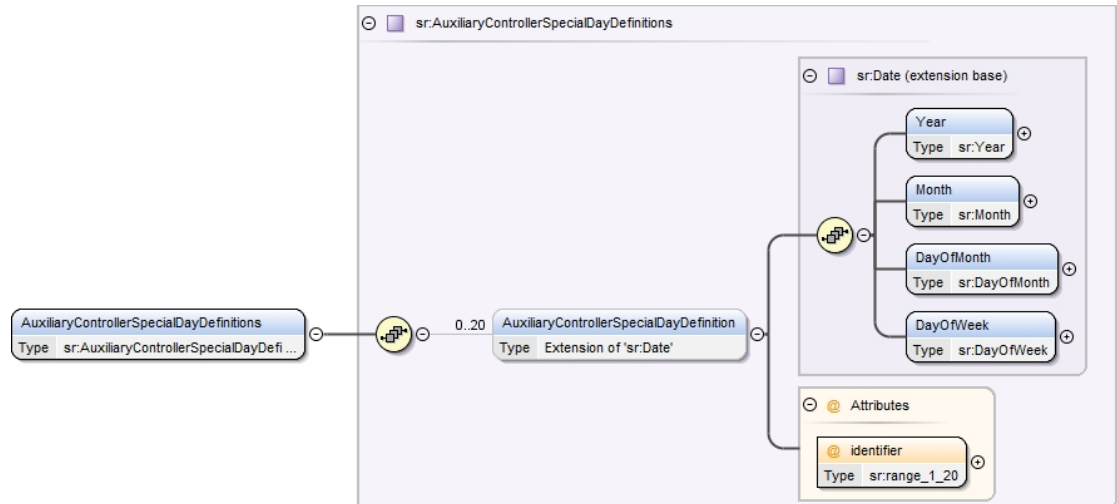


Figure 80.5 Update Device Configuration (Auxiliary Controller Scheduler) Service Request - AuxiliaryControllerSpecialDayDefinitions Structure

6.14.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID. Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
AuxiliaryControllerSpecialDayDefinitions	The definition of up to 20 special days which may be used in load control schedules, e.g. enabling the definition of different rules on public holidays such as Christmas Day.	sr: AuxiliaryControllerSpecialDayDefinitions (see section 6.14.3.1.5)	Yes ¹	None	N/A	Non-Sensitive
AuxiliaryControllerSchedule	Structure that defines the schedule for changing the commanded state of individual Auxiliary Controllers. Up to 120 load control changes may be defined, each consisting of a schedule defining when the load control change is to be applied, which one of the 5 Auxiliary Controller positions in an ESME is to be commanded, and the new commanded state.	sr: AuxiliaryControllerSchedule (see section 6.14.3.1.3)	Yes ²	None	N/A	Non-Sensitive

Table 119.2 Update Device Configuration (Auxiliary Controller Scheduler) Service Request Data Items

¹ If there are no Auxiliary Controller special day definitions, this XML element will be present, but empty, i.e. it will contain 0 special day elements

² Minimum of 0 and maximum of 120 schedules

6.14.3.1.3 AuxiliaryControllerSchedule Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AuxiliaryControllerAction	This specifies the Auxiliary Controller and the instruction to set the commanded state, which may be interpreted by the Device as a percentage load (applicable to an APC) or an activate or deactivate instruction (applicable to an ALCS or HCALCS).	sr: AuxiliaryControllerAction (see section 6.14.3.1.4)	Yes	None	N/A	Non-Sensitive
SpecialDaysApplicability	A Special Day to which the Schedule applies	N/A	No ¹	None	N/A	Non-Sensitive
identifier (Attribute of SpecialDaysApplicability)	The value of this attribute specifies the identifier of the Special Day to be applicable to the Schedule	sr:range_1_20 (xs:positiveInteger from 1 to 20)	Yes	None	N/A	Non-Sensitive
DaysOfWeekApplicability	The days of the week to which the schedule applies defined as an array of up to 7 Day IDs Valid set: <ul style="list-style-type: none"> Monday Tuesday Wednesday Thursday Friday Saturday Sunday 	sr:DayOfWeekApplicability (see section 6.14.2.1.6)	No	None	N/A	Non-Sensitive
AuxiliaryControllerSchedulePeriodAndTime	Definition of the date, or set of dates, and time of execution, of a single schedule definition	sr:ScheduleDatesAndTime (see Annex Section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 119.3 Update Device Configuration (Auxiliary Controller Scheduler) Service Request – AuxiliaryControllerSchedule Data Items

¹ Optional. If included, a minimum of 1 and a maximum of 20

6.14.3.1.4 AuxiliaryControllerAction Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
auxiliaryControllerN (attribute of AuxiliaryControllerAction)	The identifier associated with the Auxiliary Controller	sr:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	None	N/A	Non-Sensitive	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommandedStateLevel	Where the Auxiliary Controller is an APC, the commanded state includes the percentage to which its level is to be set, where 0 means no energy flow. Where used for an Auxiliary Controller that is an ALCS or HCALCS, 100 will cause the Device to close (activate) the switch i.e. enable energy to flow, and any number other than 100 will cause the Device to open (deactivate) the switch i.e. prevent energy flow. Valid set: Integer in the range 0 to 100	sr:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	Yes	None	N/A	Non-Sensitive
InputFromControlledLoad	This element is only relevant to an APC, and will be ignored where the Auxiliary Controller is not an APC. If present, this element specifies that the direction of energy flow in the commanded state of the APC shall be to input energy from the controlled load device. If the InputFromControlledLoad element is not present, then the energy flow shall default to output of energy to the controlled load.	sr:NoType (see Annex 17)	No	None	N/A	Non-Sensitive

Table 119.4 Update Device Configuration (Auxiliary Controller Scheduler) Service Request – AuxiliaryControllerAction Data Items

6.14.3.1.5 AuxiliaryControllerSpecialDayDefinitions Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AuxiliaryControllerSpecialDayDefinition	The date (or set of dates if wildcards are used) of a special day definition. This may define a single day or repeating set of days, e.g. 25 th December or the last day of every month	sr:Date (with wildcards) (see Annex section 17)	No ¹	None	N/A	Non-Sensitive
identifier (Attribute of AuxiliaryControllerSpecialDayDefinition)	The identifier associated with one special day definition. This identifier is used in SpecialDaysApplicability of an Auxiliary Controller schedule definition	sr:range_1_20 (xs:positiveInteger from 1 to 20)	No ¹	None	N/A	Non-Sensitive

Table 119.5 Update Device Configuration (Auxiliary Controller Scheduler) Service Request – AuxiliaryControllerSpecialDayDefinitions Data Items

¹ Optional. A maximum of 20 may be included

6.14.3.1.6 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	Device	No

Table 119.6 Update Device Configuration (Auxiliary Load Controller Scheduler) Modes of Operation

6.14.3.1.7 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 119.7 Update Device Configuration (Auxiliary Load Controller Scheduler) Command Variant Values

6.14.3.1.8 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.14.3.1.9 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationAuxiliaryControllerScheduler>
  <ExecutionDateTime>2020-10-24T04:03:05.00Z</ExecutionDateTime>
  <AuxiliaryControllerSchedule>
    <AuxiliaryControllerAction auxiliaryControllerN="1">
      <CommandedStateLevel>50</CommandedStateLevel>
    </AuxiliaryControllerAction>
    <SpecialDaysApplicability identifier="1"/>
    <DaysOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Monday</DayOfWeekID>
      </DayOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Tuesday</DayOfWeekID>
      </DayOfWeekApplicability>
    </DaysOfWeekApplicability>
    <AuxiliaryControllerSchedulePeriodAndTime>
      <SwitchTime>06:00:00.00</SwitchTime>
      <StartDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>01</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>01</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/> </DayOfWeek>
      </StartDate>
      <EndDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>03</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>31</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/></DayOfWeek>
      </EndDate>
    </AuxiliaryControllerSchedulePeriodAndTime>
  </AuxiliaryControllerSchedule>
  <AuxiliaryControllerSchedule>
    <AuxiliaryControllerAction auxiliaryControllerN="1">
      <CommandedStateLevel>100</CommandedStateLevel>
    </AuxiliaryControllerAction>
    <SpecialDaysApplicability identifier="3"/>
    <DaysOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Saturday</DayOfWeekID>
      </DayOfWeekApplicability>
      <DayOfWeekApplicability>
        <DayOfWeekID>Sunday</DayOfWeekID>
      </DayOfWeekApplicability>
    </DaysOfWeekApplicability>
    <AuxiliaryControllerSchedulePeriodAndTime>
      <SwitchTime>06:00:00.00</SwitchTime>
      <StartDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>01</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>01</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/> </DayOfWeek>
      </StartDate>
      <EndDate>
        <Year><NonSpecifiedYear/></Year>
        <Month><SpecifiedMonth>03</SpecifiedMonth></Month>
        <DayOfMonth><SpecifiedDayOfMonth>31</SpecifiedDayOfMonth></DayOfMonth>
        <DayOfWeek><NonSpecifiedDayOfWeek/></DayOfWeek>
      </EndDate>
    </AuxiliaryControllerSchedulePeriodAndTime>
  </AuxiliaryControllerSchedule>
  <AuxiliaryControllerSpecialDayDefinitions>
    <AuxiliaryControllerSpecialDayDefinition identifier="1">
      <Year><NonSpecifiedYear/></Year>
      <Month><SpecifiedMonth>12</SpecifiedMonth></Month>
      <DayOfMonth><SpecifiedDayOfMonth>25</SpecifiedDayOfMonth></DayOfMonth>
      <DayOfWeek><NonSpecifiedDayOfWeek/></DayOfWeek>
    </AuxiliaryControllerSpecialDayDefinition>
  </AuxiliaryControllerSpecialDayDefinitions>
</UpdateDeviceConfigurationAuxiliaryControllerScheduler>
```

Figure 80.6 Update Device Configuration (Auxiliary Controller Scheduler) Transform Service Request (Body) Format

In this example:

- Only 2 out of 120 possible schedules have been included

- The first schedule sets the state of Auxiliary Controller 1 every Monday and Tuesday at 06:00:00 from the 1st of January to the 31st of March and also on Christmas Day of every year. The commanded state level will be set to 50, which would have the effect of limiting the load to 50% of energy flow if Auxiliary Controller 1 is an APC. A commanded state level of 50 would be unusual if it is an ALCS or HCALCS, but if sent would deactivate supply. The absence of an InputFromControlledLoad element indicates that the direction of energy flow is to output energy from the electricity supply to the controlled load.
- The second schedule sets the state of Auxiliary Controller 1 every Monday and Tuesday at 22:00:00 from the 1st of January to the 31st of March and also on Christmas Day of every year. The commanded state level will be set to 100, which would have the effect of enabling 100% of energy flow if Auxiliary Controller 1 is an APC, or would activate supply if it is an ALCS or HCALCS. The absence of an InputFromControlledLoad element indicates that the direction of energy flow is to output energy from the electricity supply to the controlled load.
- The Special Days Calendar only includes Christmas Day of every year

6.14.3.2 Responses

The response messages for an "Update Device Configuration (Auxiliary Controller Scheduler)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.14.3.2.1 Device Responses and Future Dating

This Service Request's Command contains a variable number of instructions ($4 \leq 'n' \leq 9$) and a fixed number of activation date-time instructions ($'m' = 2$). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

3. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
4. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage

- i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the types described in Annex section 15.4.4.3.1

6.14.3.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationALCSchedulerResp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

See section 6.14.2.2.1 for description of the responses to future dated execution requests.

6.14.3.2.2.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	011A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS46d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Auxiliary Controller Calendar</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 119.8 Update Device Configuration (Auxiliary Controller Scheduler) Parse Response Header Data Items

6.15 Update Security Credentials (6.15)

SMETS2 or later

This Service Request maps to two types of GBCS Use Case, relating to SMKI Organisation Certificates and SMKI Device Certificates.

Therefore the 6.15 Service Request has been broken into two parts: 6.15.1 (KRP Credentials) and 6.15.2 (Device Credentials).

SMETS1

This Service Request maps to Service Reference Variant 6.15.1 (KRP Credentials).

6.15.1 Update Security Credentials (KRP) (6.15.1)

Service Request Name	UpdateSecurityCredentials
Service Reference	6.15
Service Request Variant Name	UpdateSecurityCredentials(KRP)

Service Reference Variant	6.15.1
Service Request Objective	<p>SMETS2 or later: To enable a DCC Service User to update/replace the security credentials held on a specified Device to ensure that a DCC Service User is able to interact with the device in line with their designated User Role.</p> <p>SMETS1: To enable a DCC Service User to update/replace the security credentials which the DCC Data Systems holds corresponding to the specified Device, to ensure that a DCC Service User is able to interact with the Device in line with their designated User Role.</p>
Business Context Statement	<p>SMETS2 or later: Periodically a User who is a Known Remote Party to a device may need to replace their security credentials on the Device in line with their security policy. This Service Request is the way that a User would update/replace these security credentials.</p> <p>SMETS1: Periodically a User who is the SMETS1 equivalent of a Known Remote Party to a Device may need to replace their security credentials which the DCC Data Systems holds corresponding to the specified Device, in line with their security policy. This Service Request is the way that a User would update/replace these security credentials.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO)
Security Classification	<p>Critical and non-sensitive:</p> <p>SMETS2 or later: GBCS XREF: SME.C.C</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request is applicable in the following cases: <ul style="list-style-type: none"> EIS. <ol style="list-style-type: none"> To change the Supplier Public Security Credentials on the ESME or the HCALCS. The Remote Party Role has to be set to 'Supplier', if they need changing and are applicable to the Device Type, the Remote Party Floor Seq Number and Remote Party Prepayment Top Up Floor Seq Number have to be set to the Supplier Originator Counter values and the Replacement Certificate(s) have to be those of the Supplier applicable to the Device Type that need changing. To change the Network Operator Public Security Credentials on the ESME, after Meter commissioning and before updating its own Public Security Credentials on the Meter, i.e. when the Network Operator Public Security Credentials on the ESME are those of the EIS. The Remote Party Role has to be set to 'Network Operator' and the Replacement Certificate(s) have to be those of the Network Operator. At least the Network Operator Digital Signature Certificate will have to be changed by the EIS before the ENO will be able to change its Public Security Credentials on the Meter. This Service Request cannot change the Network Operator Originator Counter value.

- c. To change the Load Controller Public Security Credentials on the ESME, after Meter commissioning and subsequently to manage credentials on the meter. The Remote Party Role has to be set to LoadController. The replacement certificates can be either those of the Supplier or they can be certificates with the SMKI Remote Party Role of LoadController from another party.

Note that SMKI Certificates in the SMKI Remote Party Role of Load Controller are not yet available and will be added in a subsequent release.
- ENO.
 - a. To change the Network Operator Public Security Credentials on the ESME. The Remote Party Role has to be set to 'Network Operator', the Remote Party Floor Seq Number, if it needs changing, has to be set to the Network Operator Originator Counter value and the Replacement Certificate(s) have to be those of the Network Operator that need changing.
- GIS.
 - a. To change the Supplier Public Security Credentials on the GSME. The Remote Party Role has to be set to 'Supplier', if they need changing and are applicable to the Device Type, the Remote Party Floor Seq Number and Remote Party Prepayment Top Up Floor Seq Number have to be set to the Supplier Originator Counter values and the Replacement Certificate(s) have to be those of the Supplier applicable to the Device Type that need changing.
 - b. To change the Supplier Public Security Credentials on the Gas Proxy Function.
- GNO.
 - a. To change the Network Operator Public Security Credentials on the Gas Proxy Function. The Remote Party Role has to be set to 'Network Operator' and the Replacement Certificate(s) have to be those of the Network Operator that need changing. This Service Request cannot change the Network Operator Originator Counter value.
- 2. This Service Request can only be Future Dated if the Remote Party Role is 'Supplier' or Load Controller.
- 3. This Service Request includes data item ApplyTimeBasedCPVChecks to instruct the Device to apply (true) or not apply (false) time based checks as part of Certification Path Validation. It should only be set to false in exceptional circumstances (e.g. credentials on the Device have expired without replacement for unforeseen reasons).
- 4. Upon successful processing of this Service Request to replace Security Credentials related to that Remote Party Role, if the Request includes Remote Party Floor Sequence Number(s), the Remote Party Role is Supplier and the Digital Signature Certificate is being changed, the specified target Device will reset the Immediate Execution Counters and Future Dated Counters on the Device to the Remote Party Floor Sequence Number(s) specified within this Service Request.
- 5. When constructing a Service Request, a DCC Service User may populate one or more CertificationPathCertificates as appropriate depending on how that DCC Service User has implemented their Security Credentials
- 6. Where the DSP receives a Success Response from Update Security Credentials command and where the Remote Party whose certificate has been placed on the Device is not the sender of the

	<p>Service Request, the DSP shall send a DCC Alert N42 to the Remote Party whose certificate has been placed on the Device (this action is a post-processing step after the Service Response has been sent to the User).</p> <p>7. Where the DSP receives a Success Response from Update Security Credentials command and where the Device Status is 'Recovered' and all the ACB Credentials on the Supplier and / or Network Operator slots have been replaced with the corresponding DCC Service User ones, the DSP shall update the Device Status to the value it held immediately prior to its recovery (this action is carried out before the Service Response is generated).</p> <p>8. For each certificate specified in a Response or Alert from the Device as being successfully updated by the Update Security Credentials Command, the DCC Data Systems shall update the Smart Metering Inventory with the new certificate identifier as a record of the certificate held in the relevant Trust Anchor Cell on that Device (this action is carried out before the Service Response is generated).</p> <p>9. Guidance note: If a Network Operator has received a DCC Alert N16 to indicate that a Device has been associated with a Meter Point, but has not yet received a DCC Alert N42 for the Device, then the Network Operator will not yet be able to use this Service Request 6.15.1. Network Operators must wait for receipt of a DCC Alert N42, which indicates that the Network Operator's security credentials have been associated with the Device. Network Operators must not trigger SRV 6.15.1 on receipt of the initial DCC Alert N16 only, as the command would not be accepted, and the request would fail silently with no response being received by the Network Operator.</p>	
GBCS Cross Reference	Electricity	Gas
	All Remote Party Roles other than Load Controller	
GBCS Message Code (for each CredentialsReplacementMode)	<p>supplierBySupplier – 0x0102</p> <p>networkOperatorByNetworkOperator – 0x0103</p>	
GBCS Use Case	CS02b	CS02b
GBCS Use Case Name	Update Security Credentials	Update Security Credentials
SMETS1 Applicability	Yes	Yes
	Load Controller Remote Party Role	
	Electricity	Gas
GBCS v4.0 Message Code (for each CredentialsReplacementMode)	loadControllerBySupplier – 0x0126	N/A
GBCS v4.0 Use Case	CS02g	N/A
GBCS v4.0 Use Case Name	Update Load Controller Security Credentials	N/A

SMETS1 Applicability	No	N/A	
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:		
	1. For SMETS1 Devices, references to storage of Certificates and Execution Counters on the Device shall be interpreted as meaning storage of Execution Counters and Security Credentials in DCC Data Systems corresponding to the Device, as defined in the SMETS1 Supporting Requirements Document.		
	2. As defined in the SMETS1 Supporting Requirements Document, it shall not be possible to use this Service Request 6.15.1 for a newly-commissioned Device until Service Request 6.21 has been successfully executed for the same Remote Party Role.		
	3. Device Status ‘Recovered’ is not applicable to SMETS1 Devices.		
	4. Since the Service Request is not to effect a change of control, any value in the RemotePartyFloorSequenceNumber field shall be discarded.		
	5. Key Agreement Top Up Certificates and floor sequence numbers shall not be used.		
	6. Time-based checks shall always be applied.		
	7. Descriptions of behaviour for HCALCS Devices are not applicable to SMETS1.		
	8. Load Controller Security Credentials are not applicable to SMETS1.		
GBCS Commands - Versioning Details			
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations			
Device’s firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later	
Device Type	ESME		
DUIS 1 to DUIS v3.1: DEFAULT - No specific XML criteria	CS02b	CS02b	
DUIS 4.0 or later: XML Criteria - XML data item RemotePartyRole populated with Supplier or NetworkOperator	CS02b	CS02b	
DUIS 4.0 or later: XML Criteria - XML data item RemotePartyRole populated with LoadController	Response Code – E061509	CS02g	
Device Type	Other Device Types		

DUIS 1 to DUIS v3.1: DEFAULT - No specific XML criteria	CS02b	CS02b
DUIS 4.0 or later: XML Criteria - XML data item RemotePartyRole populated with Supplier or NetworkOperator	CS02b	CS02b
DUIS 4.0 or later: XML Criteria - XML data item RemotePartyRole populated with LoadController	Response Code – E061501	Response Code – E061501

Table 120 Update Security Credentials (KRP) Service Request

The following table summarises the possible combinations of User Roles, Remote Party Roles, Device Types and Certificate Types:

User Role	Remote Party Role	Target Device Type	Certificate Type
EIS	Supplier	ESME	Digital Signing
EIS	Supplier	ESME	Key Agreement
EIS	Supplier	ESME	Key Agreement Top Up
EIS	Supplier	HCALCS ¹	Digital Signing
EIS	NetworkOperator ¹	ESME	Digital Signing
EIS	NetworkOperator ¹	ESME	Key Agreement
ENO	NetworkOperator	ESME	Digital Signing
ENO	NetworkOperator	ESME	Key Agreement
GIS	Supplier	GSME	Digital Signing
GIS	Supplier	GSME	Key Agreement
GIS	Supplier	GSME	Key Agreement Top Up
GIS	Supplier	GPF	Digital Signing
GIS	Supplier	GPF	Key Agreement
GNO	NetworkOperator	GPF	Digital Signing
GNO	NetworkOperator	GPF	Key Agreement
EIS	LoadController ^{1,2}	ESME	Digital Signing
EIS	LoadController ^{1,2}	ESME	Key Agreement

Table 121 Update Security Credentials (KRP) Service Request User Roles / Remote Party Roles / Devices / Certificate Types

¹ N/A to SMETS1

² N/A to Devices with GBCS version prior to v4.0

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.15.1.1 Service Request

6.15.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateSecurityCredentialsKRP XML element defines this Service Request and contains the KRP Public Security Credentials to be updated on the Device and, for Future Dated Requests, the Execution Date and Time.

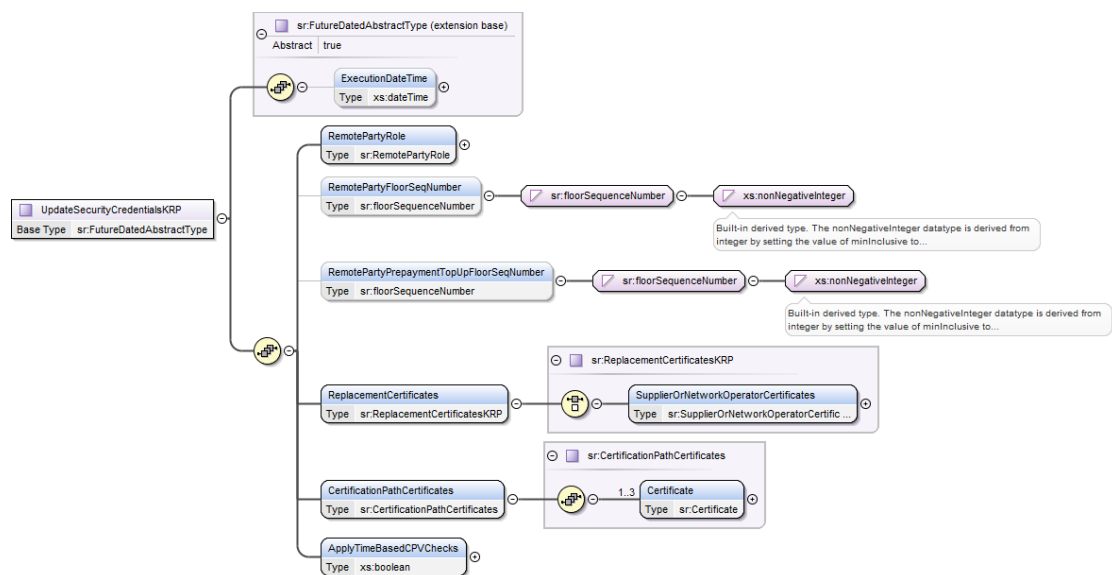


Figure 81 Update Security Credentials (KRP) Service Request Structure

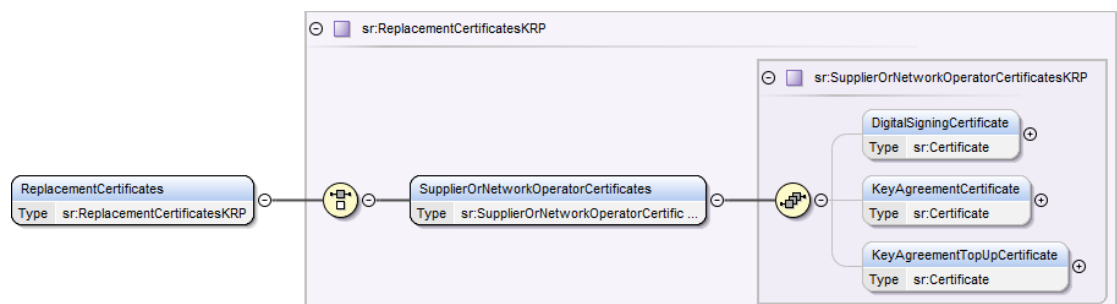


Figure 82 Update Security Credentials (KRP) Service Request – ReplacementCertificates Structure

6.15.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	Remote Party Role – Supplier or LoadController: No Otherwise: N/A	None	UTC Date-Time	Non-Sensitive
RemotePartyRole	Remote Party Role for which the Credentials are being updated Valid Set: <ul style="list-style-type: none"> Supplier NetworkOperator LoadController 	Restriction base xs:token (Enumeration)	Yes	None	N/A	Non-Sensitive
RemotePartyFloorSeqNumber	Not relevant if the RemotePartyRole is NetworkOperator. Otherwise, this value will set a new floor sequence number that will be used by the Device to prevent replay of Update Security Credentials Commands, and other Commands, for the affected Remote Party.	sr:floorSequenceNumber (Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)	If RemoteParty Role is Load Controller: Yes Otherwise: No	None	N/A	Non-Sensitive
RemotePartyPrepaymentTopUpFloorSeqNumber	Only applicable when the Command changes Supplier Credentials and Counters on a Meter and the Counter for its Prepayment Top Ups is different to that used for other Commands. This value will be used to prevent replay of Prepayment Top Up Commands. Where applicable (i.e. the target Device is a Meter and Supplier security credentials are being updated), if not populated then the RemotePartyFloorSeqNumber will be used in prevention of replay of Prepayment Top Up Commands. SMETS1: This value shall not be used.	sr:floorSequenceNumber (Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)	Remote Party Role = Supplier and Device Type = ESME or GSME: No Otherwise: N/A	None	N/A	Non-Sensitive
ReplacementCertificates	This structure provides a list of the replacement Certificates.	sr:ReplacementCertificate sKRP (see section 6.15.1.1.3)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CertificationPathCertificates	This structure provides the Certificates needed to undertake Certification Path Validation of the new end entity Certificate against the root public key held on the Device. The number of these may be less than the number of replacement certificates (e.g. a Supplier may replace all of its certificates but may only need to supply one Certification Authority Certificate to link them all back to root. SMETS1: the Device shall not use these Certificates but they must be supplied as the element is mandatory.	sr:Certificate (xs:base64Binary minOccurs = "1", maxOccurs = "3")	Yes	None	N/A	Non-Sensitive
ApplyTimeBasedCPVChecks	Specify whether the time based Certification Path Validation should be applied SMETS1: time based checks shall always be applied	xs:boolean	Yes	None	N/A	Non-Sensitive

Table 122 Update Security Credentials (KRP) Service Request Data Items

6.15.1.1.3 ReplacementCertificatesKRP Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SupplierOrNetworkOperatorCertificates	Certificates to be included in Requests to update Supplier, Network Operator or Load Controller Credentials	sr: SupplierOrNetworkOperatorCertificatesKRP (see section 6.15.1.1.4)	Yes	None	N/A	Non-Sensitive

Table 123 Update Security Credentials (KRP) Service Request – ReplacementCertificatesKRP Data Items

6.15.1.1.4 SupplierOrNetworkOperatorCertificatesKRP Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
DigitalSigningCertificate	The new Digital Signing Certificate to be placed in the Remote Party Role Key Usage digitalSignature (Cell Usage management) on the Device	sr:Certificate (xs:base64Binary)	No	None	N/A	Non-Sensitive
KeyAgreementCertificate	The new Key Agreement Certificate to be placed in the Remote Party Role Key Usage keyAgreement (Cell Usage management) on the Device	sr:Certificate (xs:base64Binary)	HCALCS ² : N/A Otherwise: No	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
KeyAgreementTopUpCertificate	The new Key Agreement Certificate to be placed in the Supplier Remote Party Role Key Usage keyAgreement (Cell Usage prePaymentTopUp) on the Device for those Suppliers that use different Originator Counters for Prepayment Top Up	sr:Certificate (xs:base64Binary)	Remote Party Role = Supplier and Device Type = ESME or GSME: No Otherwise: N/A	None	N/A	Non-Sensitive

Table 124 Update Security Credentials (KRP) Service Request – SupplierOrNetworkOperatorCertificatesKRP Data Items

¹ At least one of the Certificates applicable to the Remote Party Role and Device Type must be included

² N/A to SMETS1

<Table Removed>

Table 125 Not Used

6.15.1.1.5 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No
SMETS1	No	Yes	No	DSP	No

Table 126 Update Security Credentials (KRP) Modes of Operation

6.15.1.1.6 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 127 Update Security Credentials (KRP) Command Variant Values

6.15.1.1.7 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Public Security Credentials validation):

Validation Check	Process	Response Code
Are the Remote Party Role and Device Type valid?	Check that the combination of DCC Service User Role, Remote Party Role and Device Type is valid, i.e. it is one of the valid combinations in Table 121	E061501

Validation Check	Process	Response Code
Is the Remote Party Prepayment Top Up Floor Seq Number applicable to the Request?	Check that the Remote Party Prepayment Top Up Floor Seq Number is only included if the Supplier (EIS or GIS) is updating the Supplier Security Credentials on the Device and the Device is an ESME or GSME	E061504
Is the Certificate type applicable to the Device type?	Check that if the Certificate Type is: <ul style="list-style-type: none"> Digital Signing. The Device Type is ESME, HCALCS¹, GSME or GPF Key Agreement. The Device Type is ESME, GSME or GPF Key Agreement Top Up. The Device Type is ESME or GSME 	E061505
Is Future Dating applicable to the Remote Party Role?	If the Request is Future Dated, check that the Remote Party Role is Supplier or Load Controller	E061506
Does the Request include valid Certificate Types for the Remote Party Role?	Check that the combination of Remote Party Role and Certificate Types is as follows: <ul style="list-style-type: none"> Supplier. Certificate Types: Digital Signing, Key Agreement and / or Key Agreement Top Up Network Operator. Certificate Types: Digital Signing and / or Key Agreement Load Controller. Certificate Types: Digital Signing and / or Key Agreement 	E061507
Is the Remote Party Role suitable for a SMETS1 Service Request?	If the Device is SMETS1 check that the Role of the User submitting the Service Request and RemotePartyRole align. Specifically if the User's role is EIS or GIS, the RemotePartyRole must be Supplier, and if the User's role is ENO or GNO the RemotePartyRole must be NetworkOperator.	E061508
Is the GBCS version of the target Device appropriate for the requested Remote Party Role?	If the Device is ESME and the requested RemotePartyRole is LoadController then check that the GBCS version of the Device is v4.0 or later	E061509

Table 128 Update Security Credentials (KRP) Service Request Validation

¹ N/A to SMETS1

6.15.1.1.8 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateSecurityCredentialsKRP>
  <RemotePartyRole>Supplier</RemotePartyRole>
  <ReplacementCertificates>
    <SupplierOrNetworkOperatorCertificates>
      <DigitalSigningCertificate>ZGVmYXVsdA==</DigitalSigningCertificate>
      <KeyAgreementCertificate>ZGVmYXVsdA==</KeyAgreementCertificate>
    </SupplierOrNetworkOperatorCertificates>
  </ReplacementCertificates>
  <CertificationPathCertificates>
    <Certificate>ZGVmYXVsdA==</Certificate>
  </CertificationPathCertificates>
  <ApplyTimeBasedCPVChecks>true</ApplyTimeBasedCPVChecks>
</UpdateSecurityCredentialsKRP>
```

Figure 83 Update Security Credentials (KRP) Transform Service Request (Body) Format

6.15.1.2 Responses

The response messages for an “Update Security Credentials (KRP)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.15.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E061501	Failed Validation –DCC Service User Role / Remote Party Role / Device Type mismatch	Error	The combination of DCC Service User Role, Remote Party Role and Device Type is invalid
E061504	Failed Validation – Invalid Remote Party Prepayment Top Up Floor Seq Number	Error	The Remote Party New Prepayment Top Up Floor Seq Number data item is not applicable to the Request
E061505	Failed Validation – Certificate Type / Device Type mismatch	Error	The Certificate type is not applicable to the Device Type
E061506	Failed Validation – Future Dating / Remote Party Role mismatch	Error	The Remote Party Role is not Supplier or Load Controller
E061507	Failed Validation – Remote Party Role / Certificate Type mismatch	Error	The Certificate Type is not applicable to the Remote Party Role
E061508	Failed Validation – SMETS1-specific Remote Party Role check failure	Error	Mismatch between User Role and Remote Party Role where the target is a SMETS1 Device.

Response Code	Response Code Name	Response Code Type	Description
E061509	Failed Validation – Remote Party Role / GBCS version mismatch	Error	Mismatch between Remote Party Role and the GBCS version of the target Device.

Table 129 Failed Update Security Credentials (KRP) Service Request Response Codes

6.15.1.2.2 Device Responses and Future Dating

For SMETS2 or later this Service Request's Command contains a fixed number of instructions ('n' = 1) and activation date-time instructions ('m' = 1). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the type described in Annex section 15.4.4.3.3

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

ii.

6.15.1.2.3 Parse Output / SMETS1 Response Format

6.15.1.2.3.1 Format - UpdateSecurityCredentialsKRPRsp

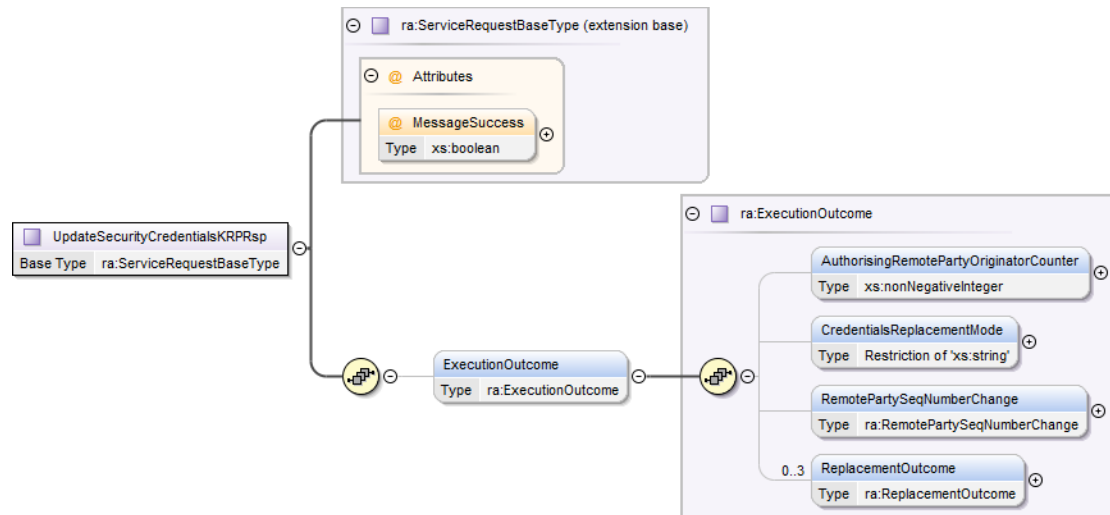


Figure 84 - Update Security Credentials KRP Response Structure

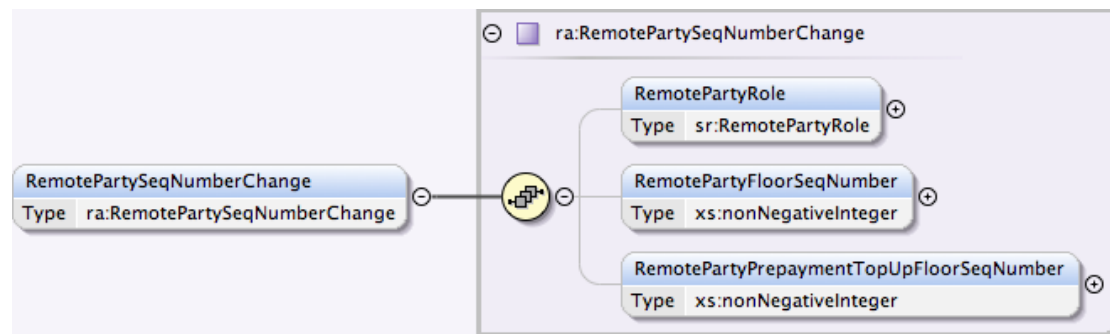


Figure 85 - Update Security Credentials KRP - Remote Party Seq Number Change Structure

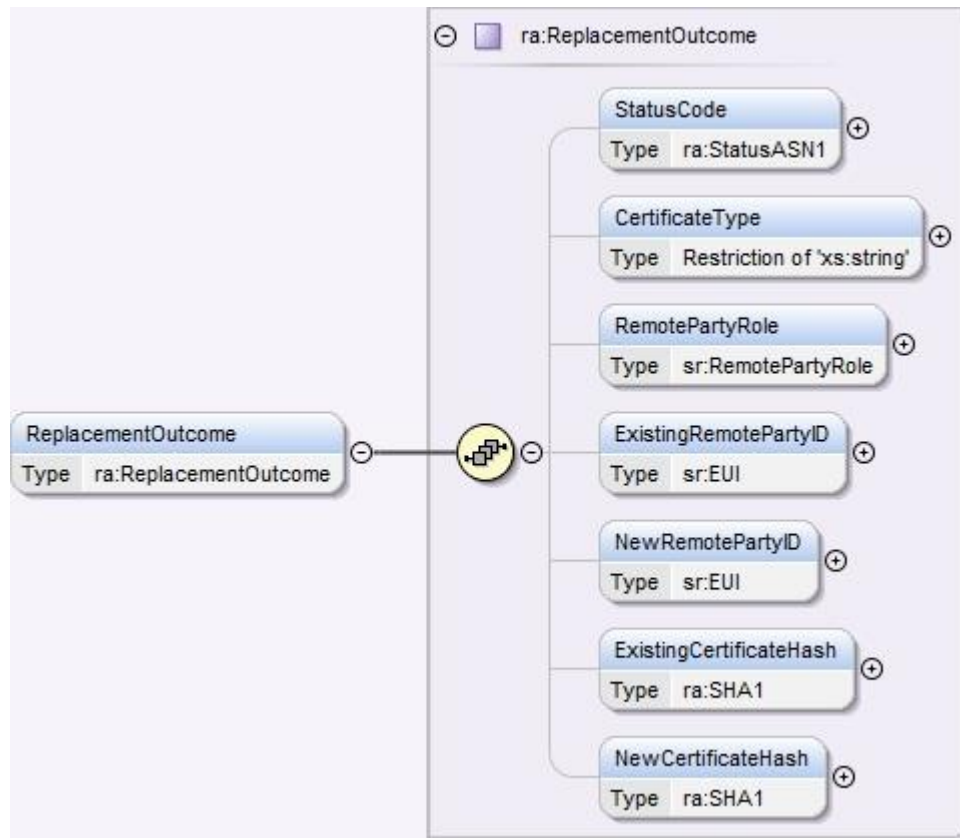


Figure 86 - Update Security Credentials KRP - Replacement Outcome Structure

6.15.1.2.3.2 Specific Header Data Items

All Remote Party Roles other than Load Controller:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	Dependent on credentials replacement mode; see GBCS Table 13.3.5.2 or Table 131 in this document	Dependent on credentials replacement mode; see GBCS Table 13.3.5.2 or Table 131 in this document
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS02b</i>	<i>CS02b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Update Security Credentials</i>	<i>Update Security Credentials</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 130 – Update Security Credentials (KRP) Parse/ SMETS1 Response Header Data Items - All Remote Party Roles other than Load Controller

Load Controller Remote Party Role:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0x0126	N/A
<i>GBCS Use Case Number (for information only - not in header)</i>	CS02g	N/A
<i>GBCS Use Case Name (for information only - not in header)</i>	Update Load Controller Security Credentials	N/A
SupplementaryRemotePartyID	Not Present	N/A
SupplementaryRemotePartyCounter	Not Present	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Present	N/A

Table 130.1 – Update Security Credentials (KRP) Parse - Load Controller Remote Party Role

The Message Code is dependent on the credentials replacement mode, as described in GBCS Table 13.3.5.2 in GBCS section 13.3.5.2 and in section 13.10.5.2, and reproduced here (only Credential Replacement Modes applicable to this Service Request) for convenience.

CredentialsReplacementMode	Message Code
supplierBySupplier	0102
networkOperatorByNetworkOperator	0103
loadControllerBySupplier ¹	0126

Table 131 – Message Codes and Credential Replacement Mode (GBCS Table 13.3.5.2)

¹ Not applicable to Devices with GBCS version prior to v4.0 and not applicable to SMETS1 Devices

6.15.1.2.3.3 Specific Body Data Items

Responses to on demand execution requests will carry the data in the table below.

See section 6.15.1.2.2 for description of the responses to future dated execution requests. A successful immediate response to a request for future dated execution will be returned as a status-only response. Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ExecutionOutcome	The execution outcome is only provided when the command was for immediate execution. Details are provided below. Only present in responses to on demand execution requests or failure responses. Not present in responses to requests for future dated execution.	ra:ExecutionOutcome - see below	None	N/A	Non-Sensitive

6.15.1.2.3.4 ExecutionOutcome Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuthorisingRemotePartyOriginatorCounter	Originating counter passed in the request, allows alerts to be matched to the request	xs:nonNegativeInteger	None	N/A	Non-Sensitive
CredentialsReplacementMode	Define the valid combinations as to which Remote Party Roles can replace which kinds of credentials. Valid Set: <ul style="list-style-type: none"> SupplierBySupplier NetworkOperatorByNetworkOperator LoadControllerBySupplier¹ 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
RemotePartySeqNumberChange	The resulting changes to any replay counters held on the Device	ra:RemotePartySeqNumberChange – see below	None	N/A	Non-Sensitive
ReplacementOutcome	For each replacement in the request, detail the outcome and impacted parties	ra:ReplacementOutcome – see below	None	N/A	Non-Sensitive

¹ Not applicable to Devices with GBCS version prior to v4.0 and not applicable to SMETS1 Devices

6.15.1.2.3.5 RemotePartySeqNumberChange Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RemotePartyRole	Remote Party Role for which the Credentials have been updated Valid Set: <ul style="list-style-type: none"> Supplier NetworkOperator LoadController¹ 	Restriction base xs:token (Enumeration)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RemotePartyFloorSeqNumber	<p>The corresponding counter value.</p> <p>Where the Remote Party Role for which the Certificates are being updated is Supplier or LoadController¹ and the Digital Signature Certificate is being changed, this will be the "RemotePartyFloorSeqNumber" parameter from the Service Request.</p> <p>Where the Remote Party Role is Network Operator, or is Supplier or LoadController¹ and the Digital Signature Certificate is not being changed, this will not be present.</p> <p>Note that the counter in use on the Device will be the originator counter of the Service Request that updated the Certificate.</p>	xs:nonNegativeInteger	None	N/A	Non-Sensitive
RemotePartyTopUpFloorSeqNumber	<p>Only present where Remote Party Role is Supplier and a top up certificate was provided in the request. The prepayment top up counter value.</p> <p>SMETS1: This value shall not be used.</p>	xs:nonNegativeInteger	None	N/A	Non-Sensitive

¹ Not applicable to Devices with GBCS version prior to v4.0 and not applicable to SMETS1 Devices

6.15.1.2.3.6 ReplacementOutcome Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
StatusCode	<p>Outcome of the request for each replacement.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> success badCertificate noTrustAnchor insufficientMemory resourcesBusy other 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
CertificateType	<p>To what use can the public key in this replacement be put</p> <p>Valid Set:</p> <ul style="list-style-type: none"> DigitalSigning KeyAgreement KeyAgreementTopUp 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
ExistingRemotePartyId	Identifies the existing subject unique identifier equating to Entity Identifier (64 bit value)	ra:EUI	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
NewRemotePartyId	Identifies the replacement subject unique identifier equating to Entity Identifier (64 bit value)	ra:EUI	None	N/A	Non-Sensitive
ExistingCertificateHash	Identifies the existing subject key identifier, a SHA-1 hash, i.e. of the certificate Certificate Hash Values are calculated in accordance with the SEC defined term of Certificate Hash.	xs:base64binary (maxLength = 20)	None	N/A	Non-Sensitive
NewCertificateHash	Identifies the replacement subject key identifier, a SHA-1 hash, i.e. of the certificate Certificate Hash Values are calculated in accordance with the SEC defined term of Certificate Hash.	xs:base64binary (maxLength = 20)	None	N/A	Non-Sensitive

6.15.1.2.3.7 Sample Response

```

<ra:UpdateSecurityCredentialsKRPRsp MessageSuccess="true">
  <ra:ExecutionOutcome>
    <ra:AuthorisingRemotePartyOriginatorCounter>123</ra:AuthorisingRemotePartyOriginatorCounter>
    <ra:CredentialsReplacementMode>SupplierBySupplier</ra:CredentialsReplacementMode>
    <ra:RemotePartySeqNumberChange>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:RemotePartyFloorSeqNumber>1234</ra:RemotePartyFloorSeqNumber>
    </ra:RemotePartySeqNumberChange>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>KeyAgreementTopUp</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>KeyAgreement</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>DigitalSigning</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
  </ra:ExecutionOutcome>
</ra:UpdateSecurityCredentialsKRPRsp>

```

Figure 87 - Update Security Credentials KRP Response Sample

6.15.2 Update Security Credentials (Device) (6.15.2)

Service Request Name	UpdateSecurityCredentials
Service Reference	6.15
Service Request Variant Name	UpdateSecurityCredentials(Device)
Service Reference Variant	6.15.2
Service Request Objective	To enable a DCC Service User to activate a new Public / Private Device Credential pair on the specified Device
Business Context Statement	Periodically the Supplier replaces the public security credentials of a specified Device in line with their security policy. Also mandated as part of the Install and Commission process
User Role Access	<ul style="list-style-type: none">Electricity Import Supplier (EIS)Gas Import Supplier (GIS)
Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C

Service Request Narrative	<ol style="list-style-type: none"> 1. This Service Request allows the DCC Service User to replace the current Digital Signature or Key Agreement Device Credentials with the corresponding pair that had been generated by the Device via Service Request 6.17. See section 6.17 2. If the Request is to replace the Digital Signature Certificate <ol style="list-style-type: none"> a. If it is successful, the Device will sign the response with the private key corresponding to the replaced Certificate. b. If it fails, the Device will sign the response with the private key corresponding to the pre-existing Certificate 3. Once the Pending Private Key becomes the Current Private Key, the Device will be using the new Private Key and this will affect all Remote Parties interacting with the Device; specifically they will need to use the new certificate corresponding to the Private Key now in use. This will result in the 'in-use' flag in the Public Key Repository being updated accordingly (this action is a post-processing step after the Service Response has been sent to the User). 4. The associated GBCS use case only allows for a single Device Credential to be requested for change per Service Request. This can either be a Digital Signature or Key Agreement Device Credentials but not both in the same Service Request 5. Following successful execution targeting a GSME, if previously joined to a PPMID, the Service User should re-join the PPMID to the GSME via Service Request 8.7.2 Join Service (Non-Critical) targeting the PPMID (note that unjoining the PPMID with the GSME via SR8.8.2 Unjoin Service (Non-Critical) before re-joining is optional). 6. If no Response is received from the Device then the DCC and the User will both be unsure as to which Device Credentials are now in use on the Device. In these circumstances the User is advised to send Service Request 6.24.2 Retrieve Device Security Credentials (Device) for the Credential Type that was the subject of the original 6.15.2 Service Request. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x000B	0x000B
GBCS Use Case	CS02d	CS02d
GBCS Use Case Name	Update Device Certificates on Device	Update Device Certificates on Device
SMETS1 Applicability	No	No

Table 132 Update Security Credentials (Device) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.15.2.1 Service Request

6.15.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateSecurityCredentialsDevice XML element defines this Service Request and contains the Device Public Security Credentials to be updated on the Device.

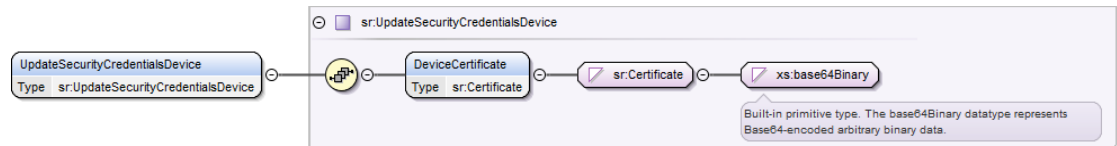


Figure 88 Update Security Credentials (Device) Service Request Structure

6.15.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceCertificate	The Device Digital Signing or Key Agreement Public Security Credentials to replace the existing one.	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive

Table 133 Update Security Credentials (Device) Service Request Data Items

6.15.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 134 Update Security Credentials (Device) Modes of Operation

6.15.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 135 Update Security Credentials (Device) Command Variant Values

6.15.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Public Security Credentials validation.

6.15.2.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateSecurityCredentialsDevice>
  <DeviceCertificate>ZGVmYXVsdA==</DeviceCertificate>
</UpdateSecurityCredentialsDevice>
```

Figure 89 Update Security Credentials (Device) Transform Service Request (Body) Format

6.15.2.2 Responses

The response messages for an "Update Security Credentials (Device)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.15.2.2.1 Parse Output Format

6.15.2.2.1.1 Format - UpdateSecurityCredentialsDeviceRsp

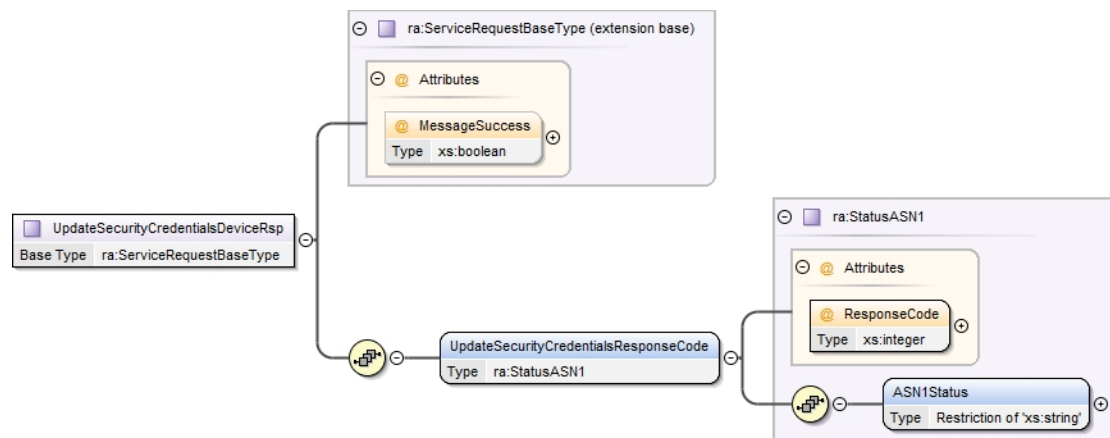


Figure 90 - Update Security Credentials (Device) Response Structure

6.15.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	000B	000B
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS02d</i>	<i>CS02d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Update Device Certificates on Device</i>	<i>Update Device Certificates on Device</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 136 – Update Security Credentials (Device) Parse Response Header Data Items

6.15.2.2.1.3 Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
UpdateSecurityCredentialsResponseCode	<p>Either a success code is returned, or the reason for the failure</p> <p>Valid Set:</p> <ul style="list-style-type: none"> • success • invalidCertificate • wrongDeviceIdentity • invalidKeyUsage • noCorrespondingKeyPairGenerated • wrongPublicKey • certificateStorageFailed • privateKeyChangeFailed 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

6.15.2.2.1.4 Sample Response

```
<ra:UpdateSecurityCredentialsDeviceRsp MessageSuccess="true">
  <ra:UpdateSecurityCredentialsResponseCode ResponseCode="0">
    <ra:ASN1Status>success</ra:ASN1Status>
  </ra:UpdateSecurityCredentialsResponseCode>
</ra:UpdateSecurityCredentialsDeviceRsp>
```

Figure 91 - Update Security Credentials (Device) Response Sample

6.16 Section 6.16

This section has been intentionally left blank as there is no Service Reference 6.16.

6.17 Issue Security Credentials (6.17)

Service Request Name	IssueSecurityCredentials	
Service Reference	6.17	
Service Request Variant Name	IssueSecurityCredentials	
Service Reference Variant	6.17	
Service Request Objective	To enable a DCC Service User to instruct a specified Device to generate a new Key Pair and issue a corresponding Certificate Signing Request.	
Business Context Statement	The security credentials for a Device need to be regenerated due to certificate security policy. The Registered Energy Supplier issues a request for the Device to generate new security credential material and return the certificate signing request.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C	
Service Request Narrative	<p>1. This Service Request allows the DCC Service User to request the Device to generate Digital Signature or Key Agreement Credentials and to return the certificate signing request. Once the certificate has been signed, the Credential replacement request will be sent to the Device via Service Request 6.15.2. See section 6.15.2</p> <p>1. The associated GBCS use case only allows for a single Device Credential to be requested for re-generation per Service Request. This can either be a Digital Signature or Key Agreement Device Credentials but not both in the same Service Request</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x000A	0x000A
GBCS Use Case	CS02c	CS02c
GBCS Use Case Name	Issue Security Credentials	Issue Security Credentials
SMETS1 Applicability	No	No

Table 137 Issue Security Credentials Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.17.1 Service Request

6.17.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its IssueSecurityCredentials XML element defines this Service Request and contains the Device Public Security Credential Type to be issued by the Device.

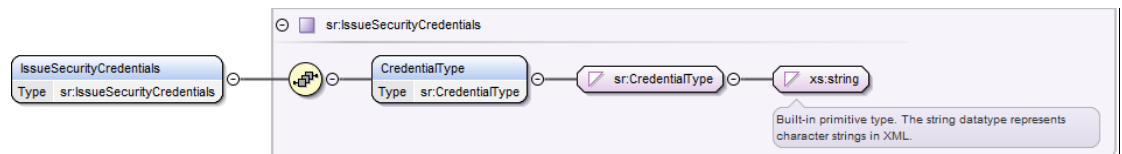


Figure 92 Issue Security Credentials Service Request Structure

6.17.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Credential Type	Type of credential to be issued Valid Set: <ul style="list-style-type: none"> Digital Signature Key Agreement 	sr:CredentialType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive

Table 138 Issue Security Credentials Service Request Data Items

6.17.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 139 Issue Security Credentials Modes of Operation

6.17.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 140 Issue Security Credentials Command Variant Values

6.17.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.17.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request

- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<IssueSecurityCredentials>
  <CredentialType>Digital Signature</CredentialType>
</IssueSecurityCredentials>
```

Figure 93 Issue Security Credentials Transform Service Request (Body) Format

6.17.2 Responses

The response messages for an "Issue Security Credentials" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.17.2.1 Parse Output Format

6.17.2.1.1 Format - IssueSecurityCredentialsRsp

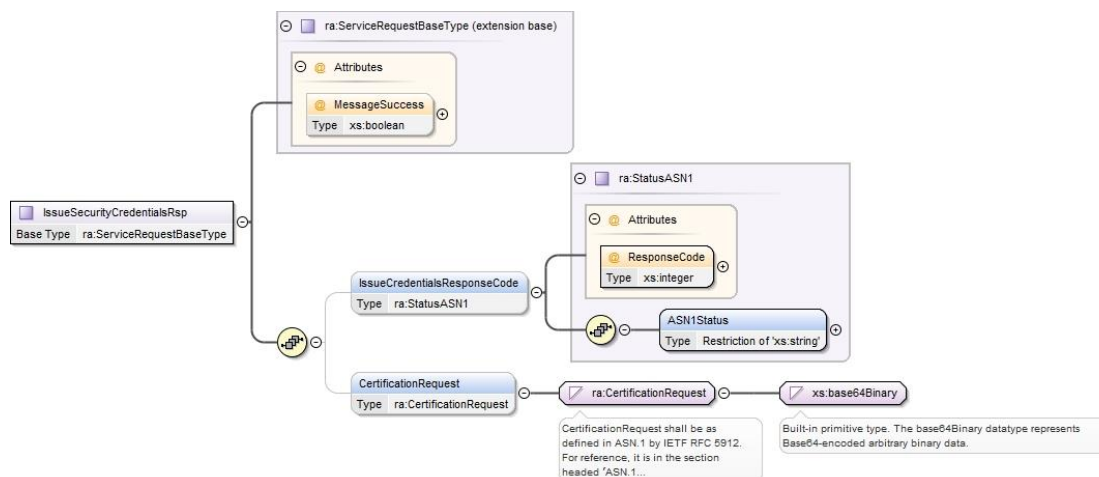


Figure 94 - Issue Security Credentials Parse Response Structure

6.17.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	000A	000A

Data Item	Electricity Response	Gas Response
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS02c</i>	<i>CS02c</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Issue Security Credentials</i>	<i>Issue Security Credentials</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 141 – Issue Security Credentials Parse Response Header Data Items

6.17.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
IssueCredentialsResponseCode	If the request fails, the reason for the failure is returned Valid Set: <ul style="list-style-type: none"> success invalidKeyUsage keyPairGenerationFailed cRProductionFailed 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
CertificationRequest	CertificationRequest shall be as defined in ASN.1 by IETF RFC 5912. For reference, it is in the section headed 'ASN.1 Module for RFC 2986'. This is returned DER encoded CertificationRequest is only included if IssueCredentialsResponseCode ASN1Status is 'success'	xs:base64Binary	None	N/A	Non-Sensitive

6.17.2.1.4 Sample Response

```
<ra:IssueSecurityCredentialsRsp MessageSuccess="true">
  <ra:IssueCredentialsResponseCode ResponseCode="0">
    <ra:ASN1Status>success</ra:ASN1Status>
  </ra:IssueCredentialsResponseCode>
  <ra:CertificationRequest>ZGVmYXVsdA==</ra:CertificationRequest>
</ra:IssueSecurityCredentialsRsp>
```

Figure 95 - Issue Security Credentials Response Sample

6.18 Set Maximum Demand Registers (6.18)

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 6.18 Service Request has been broken into two parts: 6.18.1 (Configurable Time Period) and 6.18.2 (Registers)

6.18.1 Set Maximum Demand Configurable Time Period (6.18.1)

Service Request Name	SetMaximumDemandRegisters	
Service Reference	6.18	
Service Request Variant Name	SetMaximumDemandConfigurableTimePeriod	
Service Reference Variant	6.18.1	
Service Request Objective	To enable a DCC Service User to set the <i>Maximum Demand Configurable Time Period</i> on the ESME as defined by SMETS	
Business Context Statement	The Electricity Network Operator wishes to conduct a network demand survey and requires the Maximum Demand Active Import and Maximum Demand Active Export (if assessing the impact of supply coming onto the network). For surveys at specific times in the day the Network Operator will set the Maximum Demand Configurable Time Period (set by this Service Request) and ensure that the Maximum Demand (Configurable Time) Active Energy Import Value register has been reset (by Service Request 6.18.2, see section 6.18.2).	
User Role Access	<ul style="list-style-type: none"> Electricity Network Operator (ENO) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: <i>SME.C.NC</i>	
Service Request Narrative	<ol style="list-style-type: none"> Maximum Demand Configurable Time Period - A time period of up to 24 hours comprising a number of half-hour periods (commencing at the start of minutes 00 and 30 in each hour) during which recording to the <i>Maximum Demand (Configurable Time) Active Power Import Value</i> is active. This time period is repeated every day until another Service Request 6.18.1 changes it. If both the StartTime and EndTime values are midnight, then the Device will be instructed to stop recording Maximum Demand. Post Condition - Once the Maximum Demand Configurable Time Period has been set to a new value via this Service Request, the authorised DCC Service User (Electricity Network Operator) will need to reset the Maximum Demand registers using Service Request 6.18.2 Reset Maximum Demand Registers. See section 6.18.2. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x004A	N/A
GBCS Use Case	ECS37	N/A

GBCS Use Case Name	Set Maximum Demand Configurable Time Period	N/A
SMETS1 Applicability	No	No

Table 142 Set Maximum Demand Configurable Time Period Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.18.1.1 Service Request

6.18.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its SetMaximumDemandConfigurableTimePeriod XML element defines this Service Request and contains the Calendar (Schedule) defining the time period when the Maximum Demand (Configurable Time) Active Energy Import Value register is to be captured and, for Future Dated Requests, the Execution Date and Time.

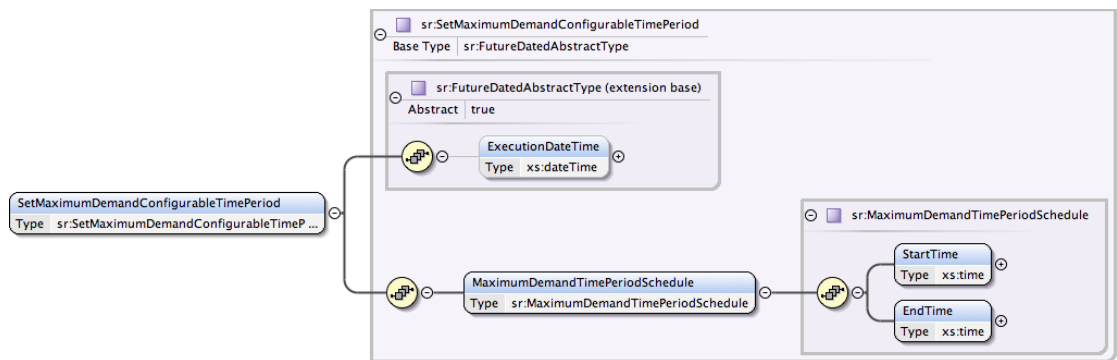


Figure 96 Set Maximum Demand Configurable Time Period Service Request Structure

6.18.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
MaximumDemandTimePeriodSchedule	The date-time period (maximum of 24 hours) when the Maximum Demand is to be recorded on a daily basis.	sr:MaximumDemandTimePeriodSchedule (see section 6.18.1.1.3)	Yes	None	N/A	Non-Sensitive

Table 143 Set Maximum Demand Configurable Time Period Service Request Data Items

6.18.1.1.3 MaximumDemandTimePeriodSchedule Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartTime	The Start time from which the Maximum Demand period begins.	xs:time	Yes	None	N/A	Non-Sensitive
EndTime	The End Time at which the Maximum Demand period ends.	xs:time	Yes	None	N/A	Non-Sensitive

Table 144 Set Maximum Demand Configurable Time Period Service Request - MaximumDemandTimePeriodSchedule Data Items

6.18.1.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 145 Set Maximum Demand Configurable Time Period Modes of Operation

6.18.1.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 146 Set Maximum Demand Configurable Time Period Command Variant Values

6.18.1.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Is the Start Time valid?	Check that the Start Time minutes are 00 or 30	E061801
Is the End Time valid?	Check that the End Time minutes are 00 or 30	E061802

Table 147 Set Maximum Demand Configurable Time Period Service Request Validation

6.18.1.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SetMaximumDemandConfigurableTimePeriod>
  <ExecutionDateTime>2015-02-24T04:03:05.00Z</ExecutionDateTime>
  <MaximumDemandTimePeriodSchedule>
    <StartTime>22:00:00.00Z</StartTime>
    <EndTime>08:00:00.00Z</EndTime>
  </MaximumDemandTimePeriodSchedule>
</SetMaximumDemandConfigurableTimePeriod>
```

Figure 97 Sample Set Maximum Demand Configurable Time Period Service Request (Body) Format

In this example:

- Only 1 out of the 2 possible schedules has been included

6.18.1.2 Responses

The response messages for a "Set Maximum Demand Configurable Time Period" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.18.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E061801	Failed Validation – Invalid Start Time	Error	Invalid Start Time – The Start Time is not valid, Start Time minutes must be either 00 or 30
E061802	Failed Validation – Invalid End Time	Error	Invalid End Time – The End Time is not valid, End Time minutes must be either 00 or 30

Table 148 Failed Set Maximum Demand Configurable Time Period Service Request Response Codes

6.18.1.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is SetMaximumDemandConfigurableTimePeriodRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.18.1.2.2.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	004A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS37</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Maximum Demand Configurable Time Period</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present

Data Item	Electricity Response
Timestamp	Not Present

Table 149 - Set Maximum Demand Configurable Time Period Parse Response Header Data Items

6.18.2 Reset Maximum Demand Registers (6.18.2)

Service Request Name	SetMaximumDemandRegisters	
Service Reference	6.18	
Service Request Variant Name	ResetMaximumDemandRegisters	
Service Reference Variant	6.18.2	
Service Request Objective	To enable a DCC Service User to reset the maximum demand register value(s) to accommodate new network demand survey(s).	
Business Context Statement	<p>The Electricity Network Operator wishes to conduct a network demand survey and requires the Maximum Demand Active Import and Maximum Demand Active Export (if assessing the impact of supply coming onto the network).</p> <p>For surveys at specific times in the day the Network Operator will set the Maximum Demand Configurable Time Period (set by Service Request 6.18.1, (see section 6.18.1) and ensure that the Maximum Demand (Configurable Time) Active Energy Import Value register has been reset (by this Service Request).</p> <p>Any combination of one, two or three of these data items can be re-set via this Service Request to meet the DCC Service Users requirements</p>	
User Role Access	<ul style="list-style-type: none"> Electricity Network Operator (ENO) 	
Security Classification	<p>Non-critical and non-sensitive:</p> <p>GBCS XREF: SME.C.NC</p>	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request should be used once the Maximum Demand Configurable Time Period has been set to a new value by the DCC Service User (Electricity Network Operator) as in Service Request 6.18.1. See section 6.18.1 This Service Request resets the Maximum Demand Configurable Time Active Energy Import, the Maximum Demand Active Energy Export and / or the Maximum Demand Active Energy Import values on the ESME as defined in SMETS 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x005A	N/A
GBCS Use Case	ECS57	N/A

GBCS Use Case Name	Reset ESME Maximum Demand Registers	N/A
SMETS1 Applicability	No	No

Table 150 Reset Maximum Demand Registers Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.18.2.1 Service Request

6.18.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ResetMaximumDemandRegisters XML element defines this Service Request and contains the Maximum Demand Register Values to be reset and, for Future Dated Requests, the Execution Date and Time.

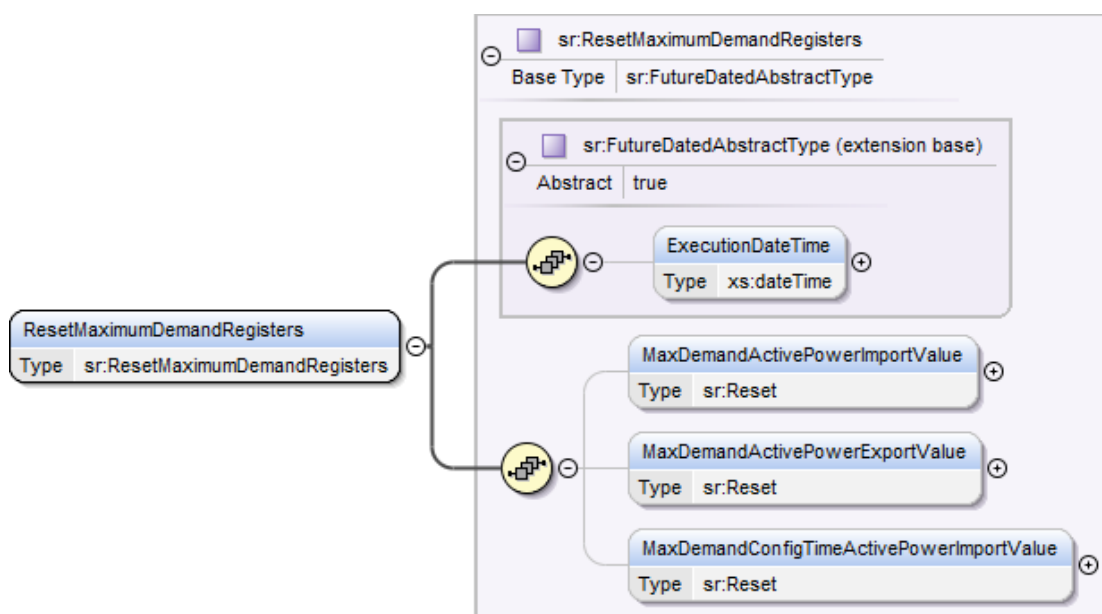


Figure 98 Reset Maximum Demand Registers Service Request Structure

6.18.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MaxDemandActivePowerImportValue	Included if the Maximum Demand Active Power Import Value is to be reset	sr:Reset	Reset MaxDemandActivePowerImportValue: Yes Otherwise: N/A	None	N/A	Non-Sensitive
MaxDemandActivePowerExportValue	Included if the Maximum Demand Active Power Export Value is to be reset	sr:Reset	Reset MaxDemandActivePowerExportValue: Yes Otherwise: N/A	None	N/A	Non-Sensitive
MaxDemandConfigTimeActivePowerImportValue	Included if the Maximum Demand (Configuration Time) Active Power Import Value is to be reset	sr:Reset	Reset MaxDemandConfigTimeActivePowerImportValue: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 151 Reset Maximum Demand Registers Service Request Data Items

6.18.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 152 Reset Maximum Demand Registers Modes of Operation

6.18.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 153 Reset Maximum Demand Registers Command Variant Values

6.18.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Is the Request valid?	Check that the Request contains at least one Maximum Demand Register to reset	E061803

Table 154 Reset Maximum Demand Registers Service Request Validation

6.18.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ResetMaximumDemandRegisters>
  <ExecutionDateTime>2014-10-24T04:03:05.00Z</ExecutionDateTime>
  <MaxDemandActivePowerImportValue/>
  <MaxDemandActivePowerExportValue/>
  <MaxDemandConfigTimeActivePowerImportValue/>
</ResetMaximumDemandRegisters>
```

Figure 99 Sample Reset Maximum Demand Registers Service Request (Body) Format

6.18.2.2 Responses

The response messages for a "Reset Maximum Demand Registers" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.18.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E061803	Failed Validation – Invalid Request	Error	The Request doesn't include any Maximum Demand Register to reset

Table 155 Failed Reset Maximum Demand Registers Service Request Response Codes

6.18.2.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is ResetMaximumDemandRegistersRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.18.2.2.2.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	005A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS57</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Reset ESME Maximum Demand Registers</i>
SupplementaryRemotePartyID	Not Present

Data Item	Electricity Response
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 156 - Reset Maximum Demand Registers Parse Response Header Data Items

6.19 Section 6.19

This section has been intentionally left blank as there is no Service Reference 6.19.

6.20 Set Device Configuration (MPxN) (6.20)

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 6.20 Service Request has been broken into two parts: 6.20.1 (Import MPxN) and 6.20.2 (Export MPAN).

6.20.1 Set Device Configuration (Import MPxN) (6.20.1)

Service Request Name	SetDeviceConfiguration(MPxN)
Service Reference	6.20
Service Request Variant Name	SetDeviceConfiguration(ImportMPxN)
Service Reference Variant	6.20.1
Service Request Objective	To enable a DCC Service User to configure the Import MPxN(s) data items for a specified ESME or GSME for local display on the Device.
Business Context Statement	An authorised DCC Service User may wish to update the Import MPxN displayed on a device from time to time over the lifetime of the Device or subsequently there is a need to change it to correct an earlier entry in to the Device.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request is only used to update the <i>Meter Point Administration Numbers (MPAN)</i> for the ESME as defined in SMETS and Meter Point Reference Number (MPRN) for the GSME as defined in SMETS. This Service Request should be sent following successful completion of Service Reference 8.1.1 – Commission Device (Synchronise Clock) (see section 8.1.1). Used to update the

	<p>Import MPxN(s) on the Meter for display purposes. The Service Request may also be used to update this initial value at any time post its initial setting..</p> <p>3. Electricity Meters: Requests for Single Element, Twin Element or Poly Phase Meters have to include the Primary Element Import MPAN and those for Twin Element Meters can also include the Secondary Element MPAN.</p> <p>4. For Service Requests which include a Secondary Import MPAN, the MPANs are combined into a single string for display on the Device. The first 13 bytes represents primary MPAN, second 13 bytes represents secondary MPAN. Sending a string longer than 13 bytes to a single element meter will result in an error being returned to the DCC Service User.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x004C	0x0087
GBCS Use Case	ECS39a	GCS41
GBCS Use Case Name	Set MPAN Value on the ESME	Set MPRN Value on the GSME
SMETS1 Applicability	No	No

Table 157 Set Device Configuration (Import MPxN) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.20.1.1 Service Request

6.20.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its SetDeviceConfigurationImportMPxN XML element defines this Service Request and contains the Import MPxN(s) and, for Future Dated Requests, the Execution Date and Time.

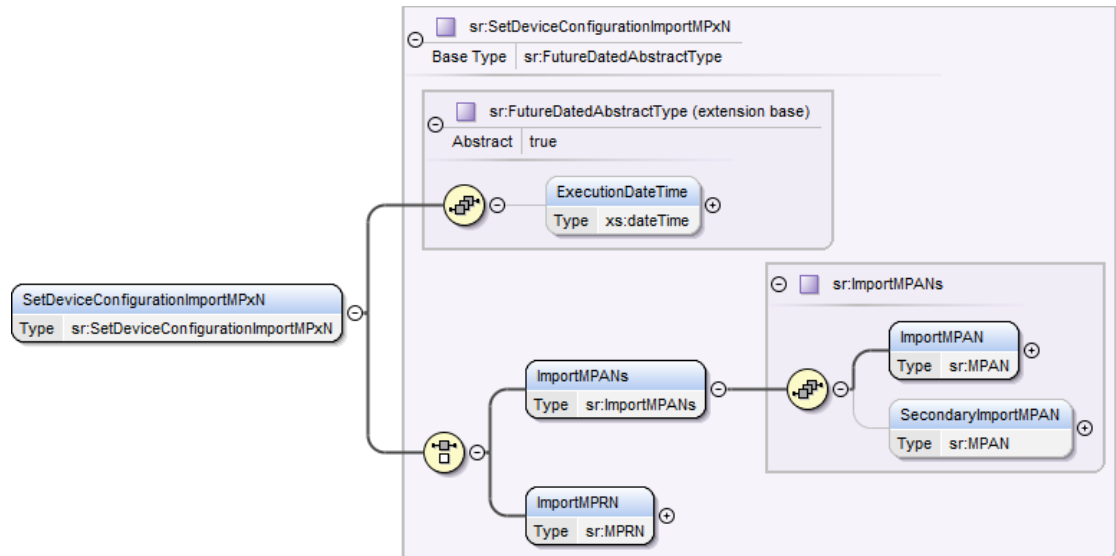


Figure 100 Set Device Configuration (Import MPxN) Service Request Structure

6.20.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ImportMPANs	For Electricity Smart Meters, the Primary Element Import MPAN and, for Twin Element Meters, also the Secondary Element Import MPAN	sr:ImportMPANs (see section 6.20.1.1.3)	Electricity Smart Meter: Yes Otherwise: N/A	None	None	Non-Sensitive
ImportMPRN	For Gas Smart Meters, the reference number identifying a gas metering point	sr:MPRN (Restriction of xs:string (minLength = 1, maxLength = 10))	Gas Smart Meter: Yes Otherwise: N/A	None	None	Non-Sensitive

Table 158 Set Device Configuration (Import MPxN) Service Request Data Items

6.20.1.1.3 ImportMPANs Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ImportMPAN	The reference number identifying an import electricity metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SecondaryImportMPAN	The reference number identifying the secondary import electricity metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Electricity Smart Meter (non Twin Element) N/A Electricity Smart Meter (Twin Element) No	None	N/A	Non- Sensitive

Table 159 Set Device Configuration (Import MPxN) Service Request – ImportMPANs Data Items

6.20.1.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 160 Set Device Configuration (Import MPxN) Modes of Operation

6.20.1.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 161 Set Device Configuration (Import MPxN) Command Variant Values

6.20.1.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.20.1.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SetDeviceConfigurationImportMPxN>
  <ImportMPANs>
    <ImportMPAN>1234567890123</ImportMPAN>
  </ImportMPANs>
</SetDeviceConfigurationImportMPxN>
```

Figure 101 Set Device Configuration (Import MPxN) Service Request (Body) Format

6.20.1.2 Responses

The response messages for a “Set Device Configuration (Import MPxN)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload

- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.20.1.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is SetDeviceConfigurationImportMPxNRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.20.1.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	004C	0087
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS39a</i>	<i>GCS41</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set MPAN Value on the ESME</i>	<i>Set MPRN Value on the GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 162 Set Device Configuration (Import MPxN) Parse Response Header Data Items

6.20.2 Set Device Configuration (Export MPAN) (6.20.2)

Service Request Name	SetDeviceConfiguration(MPxN)
Service Reference	6.20
Service Request Variant Name	SetDeviceConfiguration(ExportMPAN)
Service Reference Variant	6.20.2
Service Request Objective	To enable a DCC Service User to configure the Export MPAN data item for a specified ESME for local display on the Device.
Business Context Statement	An authorised DCC Service User may wish to update the Export MPxN displayed on a Device from time to time over the lifetime of the device or subsequently there is a need to change it to correct an earlier entry in to the Device.

User Role Access	<ul style="list-style-type: none"> Electricity Export Supplier (EES) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> This Use Case is for setting the Export MPAN value on the ESME by the Consumer's export Supplier (who is unknown to the ESME). It is not mandatory to set this value for all ESME Devices; only those that have an active Export capability configured by the Registered Supplier. This Service Request will also need to be used as part of the install and commissioning process to set the Export MPAN if the ESME installation includes active Export capability. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x004D	N/A
GBCS Use Case	ECS39b	N/A
GBCS Use Case Name	Set Export MPAN Value on the ESME	N/A
SMETS1 Applicability	No	No

Table 163 Set Device Configuration (Export MPAN) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.20.2.1 Service Request

6.20.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its SetDeviceConfigurationExportMPAN XML element defines this Service Request and contains the Export MPAN and, for Future Dated Requests, the Execution Date and Time.

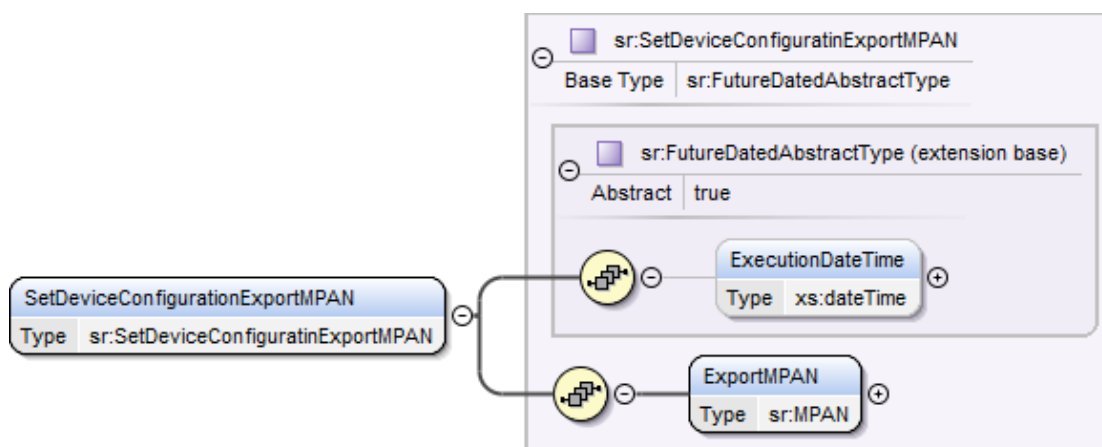


Figure 102 Set Device Configuration (Export MPAN) Service Request Structure

6.20.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ExportMPAN	The reference number identifying an export electricity metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Yes	None	N/A	Non-Sensitive

Table 164 Set Device Configuration (Export MPAN) Service Request Data Items

6.20.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 165 Set Device Configuration (Export MPAN) Modes of Operation

6.20.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 166 Set Device Configuration (Export MPAN) Command Variant Values

6.20.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.20.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SetDeviceConfigurationExportMPAN>
  <ExportMPAN>0123456789012</ExportMPAN>
</SetDeviceConfigurationExportMPAN>
```

Figure 103 Set Device Configuration (Export MPAN) Service Request (Body) Format

6.20.2.2 Responses

The response messages for a “Set Device Configuration (Export MPAN)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.20.2.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is SetDeviceConfigurationExportMPANRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.20.2.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	004D
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS39b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Export MPAN Value on the ESME</i>
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 167 - Set Device Configuration (Export MPAN) Parse Response Header Data Items

6.21 Request Handover of DCC Controlled Device (6.21)

Service Request Name	RequestHandoverOfDCCControlledDevice
Service Reference	6.21
Service Request Variant Name	RequestHandoverOfDCCControlledDevice
Service Reference Variant	6.21

Service Request Objective	<p>SMETS2 or later: To replace the DCC's Security Credentials on a specified Device with the Security Credentials contained within the Service Request.</p> <p>SMETS1: To enable an Import Supplier to specify the Security Credentials which the DCC Data Systems shall hold corresponding to a specified Device.</p>
Business Context Statement	<p>SMETS2 or later: Some devices may require a Supplier set of Security Credentials that are (1) required for full operation but (2) are not known when the device is installed / commissioned. For example, a communications hub installed by a single fuel, electricity supplier will have a Gas Proxy Device. However, the Gas Supplier details could not be set on the Gas Proxy until that second supplier installs a SMETS Gas Meter subsequently. In such case, DCC Security Credentials can be placed on the Gas Proxy Device in the 'Gas Supplier' role (and in the NO role). This ensures the Gas Proxy Device is secured until the second installation. This function can also be used to support MOP roll out operations where multiple suppliers are served.</p> <p>SMETS1: for SMETS1 Devices, the DCC Data Systems shall store Supplier and Network Operator Security Credentials corresponding to each Device, whereas for SMETS2 or later Devices they are stored on the Device. This Service Request enables an Import Supplier as part of commissioning a SMETS1 Device to specify the Security Credentials to be used by the DCC Data Systems in operation of the Device.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and non-sensitive:</p> <p>SMETS2 or later: GBCS XREF: SME.C.C (the GBCS Command is Critical, but it is cryptographically protected by the DSP Access Control Broker, so the Service Request interaction between the DCC Service Users and the DCC is Non-Critical)</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request is applicable in the following cases: <ol style="list-style-type: none"> EIS. <ol style="list-style-type: none"> To change the Supplier Public Security Credentials on the ESME or HCALCS in cases where the existing Supplier Credentials on the Device are those of the DSP Access Control Broker. To change the Network Operator Public Security Credentials on the ESME in cases where the existing Network Operator Credentials on the Device are those of the DSP Access Control Broker. GIS. <ol style="list-style-type: none"> To change the Supplier Public Security Credentials on the GSME in cases where the existing Supplier Credentials on the

	<p>Device are those of the DSP Access Control Broker.</p> <ul style="list-style-type: none">ii. To change the Supplier Public Security Credentials on the GPF in cases where the existing Supplier Credentials on the Device are those of the DSP Access Control Broker.iii. To change the Network Operator Public Security Credentials on the GPF in cases where the existing Network Operator Credentials on the Device are those of the DSP Access Control Broker.
	<p>2. Because the Credentials being replaced on the Device are those of the DSP Access Control Broker:</p> <ul style="list-style-type: none">a. This Service Request is Non-critical.b. The Command will be submitted to the Device by the DSP Broker using the URP interaction type. This Command will include the DSP Access Control Broker MAC and its digital signature.
	<p>3. This Service Request includes data item ApplyTimeBasedCPVChecks to instruct the Device to apply (true) or not apply (false) time based checks as part of Certification Path Validation. It should only be set to false in exceptional circumstances (e.g. credentials on the Device have expired without replacement for unforeseen reasons).</p>
	<p>4. Upon successful processing of this Service Request to replace Security Credentials related to that Remote Party Role, the specified target Device will (for Remote Party Supplier Role) reset the Immediate Execution Counters and Future Dated Counters on the Device to the Remote Party Floor Sequence Number(s) specified within this Service Request.</p>
	<p>5. When constructing a Service Request, a DCC Service User may populate one or more CertificationPathCertificates as appropriate depending on how that DCC Service User has implemented their Security Credentials</p>
	<p>6. Where the DSP receives a Success Response from Update Security Credentials command and where the Remote Party whose certificate has been placed on the Device is not the sender of the Service Request, the DSP shall send a DCC Alert N42 to the Remote Party whose certificate has been placed on the Device (this action is a post-processing step after the Service Response has been sent to the User).</p>
	<p>7. Where the DSP receives a Success Response from Update Security Credentials command and where the Device Status is 'Recovered' and all the ACB Credentials on the Supplier and / or Network Operator slots have been replaced with the corresponding DCC Service User ones, the DSP shall update the Device Status to the value it held immediately prior to its recovery (this action is carried out before the Service Response is generated).</p>

	<p>8. For each certificate specified in a Response or Alert from the Device as being successfully updated by the Update Security Credentials Command, the DCC Data Systems shall update the Smart Metering Inventory with the new certificate identifier as a record of the certificate held in the relevant Trust Anchor Cell on that Device (this action is carried out before the Service Response is generated).</p> <p>9. Guidance note: When transferring control of a Device to the Network Operator, the Import Supplier should use a single Service Request process by sending SRV 6.21 Request Handover Of DCC Controlled Device to give control directly to the Network Operator certificates required for business as usual activities. An alternative option is technically possible for SMETS2 Devices, as the GBCS Use Case and command CS02b Update Security Credentials technically supports a two Service Request process. However, sending SR6.21 Request Handover Of DCC Controlled Device to change the default ACB certificates to their own Supplier certificates, and then a subsequent SR6.15.1 Update Security Credentials (KRP) to change these certificates to the actual Network Operator certificates, is not supported by the DCC Systems. It is assumed that only the Network Operator User Role should be the Eligible User to change the Security Credentials associated with the Network Operator.</p>	
	Electricity	Gas
GBCS Cross Reference		
GBCS Message Code (for each CredentialsReplacementMode)	<p>supplierBySupplier – 0x0102</p> <p>networkOperatorByNetworkOperator – 0x0103</p>	
GBCS Use Case	CS02b	CS02b
GBCS Use Case Name	Update Security Credentials	Update Security Credentials
SMETS1 Applicability	Yes	Yes

<p>Service Request Narrative (SMETS1)</p>	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. For SMETS1 Devices, references to the process and storage of Certificates and Execution Counters on the Device shall be interpreted as meaning storage of Execution Counters and Security Credentials in DCC Data Systems corresponding to the Device, as defined in the SMETS1 Supporting Requirements Document. 2. As defined in the SMETS1 Supporting Requirements Document, it shall not be possible to use Service Request 6.15.1 for a newly-commissioned Device until this Service Request 6.21 has been successfully executed for the same Remote Party Role. 3. Since the Service Request is not to effect a change of control, any value in the RemotePartyFloorSequenceNumber field shall be discarded. 4. Key Agreement Top Up Certificates and floor sequence numbers shall not be used. 5. Time-based checks shall always be applied. 6. Descriptions of behaviour for HCALCS Devices are not applicable to SMETS1. 7. Device status "Recovered" is not applicable to SMETS1 Devices.
--	--

Table 168 Request Handover Of DCC Controlled Device Service Request

The following table summarises the possible combinations of User Roles, Remote Party Roles, Device Types and Certificate Types:

User Role	Remote Party Role	Target Device Type	Certificate Type
EIS	Supplier	ESME	Digital Signing
EIS	Supplier	ESME	Key Agreement
EIS	Supplier	ESME	Key Agreement Top Up
EIS ¹	Supplier	HCALCS	Digital Signing
EIS	NetworkOperator	ESME	Digital Signing
EIS	NetworkOperator	ESME	Key Agreement
GIS	Supplier	GSME	Digital Signing
GIS	Supplier	GSME	Key Agreement
GIS	Supplier	GSME	Key Agreement Top Up
GIS	Supplier	GPF	Digital Signing
GIS	Supplier	GPF	Key Agreement
GIS	NetworkOperator	GPF	Digital Signing
GIS	NetworkOperator	GPF	Key Agreement

Table 169 Request Handover Of DCC Controlled Device Service Request User Roles / Remote Party Roles / Devices / Certificate Types

¹ Row N/A to SMETS1 Services

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.21.1 Service Request

6.21.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RequestHandoverOfDCCControlledDevice XML element defines this Service Request and contains the Public Security Credentials to be updated on the Device and, for Future Dated Requests, the Execution Date and Time.

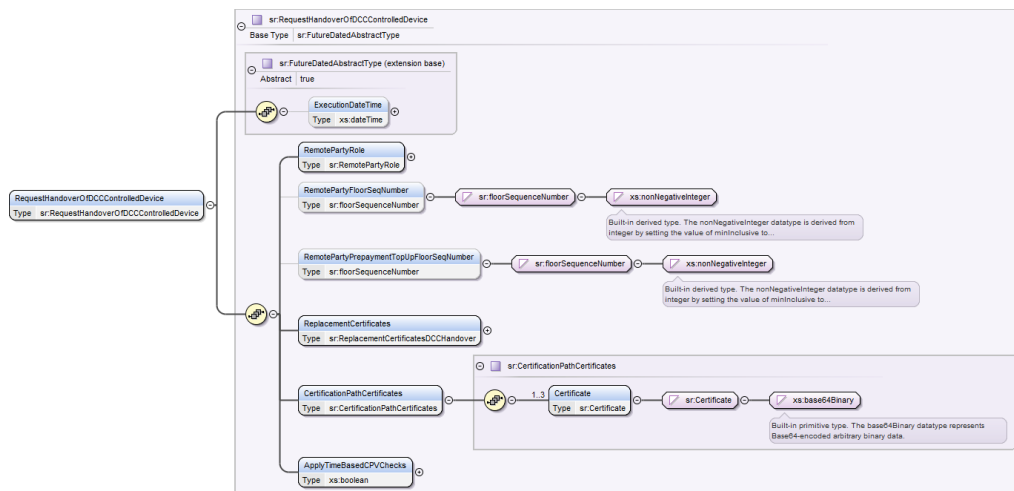


Figure 104 Request Handover Of DCC Controlled DeviceService Request Structure

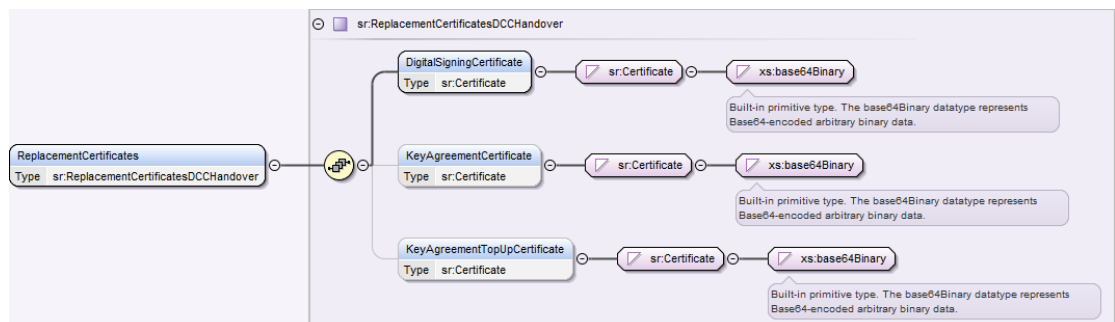


Figure 105 Request Handover Of DCC Controlled DeviceService Request – ReplacementCertificates Structure

6.21.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
RemotePartyRole	Remote Party Role for which the Credentials are being updated Valid Set: <ul style="list-style-type: none"> Supplier NetworkOperator 	Restriction base xs:token (Enumeration)	Yes	None	N/A	Non-Sensitive
RemotePartyFloorSeqNumber	Originator Counter (floor value) for the new Remote Party. This value will be used to prevent replay of Update Security Credentials Commands, and other Commands, for the new controlling Remote Party. Used only where the Remote Party Role for which the Certificates are being updated is Supplier	sr:floorSequenceNumber (Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)	No	None	N/A	Non-Sensitive
RemotePartyPrepaymentTopUpFloorSeqNumber	Only applicable when the Command changes Supplier Credentials and Counters on a Meter and the Counter for its Prepayment Top Ups is different to that used for other Commands. This value will be used to prevent replay of Prepayment Top Up Commands. Where applicable (i.e. the target Device is a Meter and Supplier security credentials are being updated), if not populated then the RemotePartyFloorSeqNumber will be used in prevention of replay of Prepayment Top Up Commands. SMETS1: This value shall not be used.	sr:floorSequenceNumber (Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)	Remote Party Role = Supplier and Device Type = ESME or GSME: No Otherwise: N/A	None	N/A	Non-Sensitive
ReplacementCertificates	This structure provides a list of the replacement Certificates.	sr:ReplacementCertificate sDCCHandover (see section 6.21.1.3)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CertificationPathCertificates	This structure provides the Certificates needed to undertake Certification Path Validation of the new end entity Certificate against the root public key held on the Device. The number of these may be less than the number of replacement certificates (e.g. a Supplier may replace all of its certificates but may only need to supply one Certification Authority Certificate to link them all back to root. SMETS1: the Device shall not use these Certificates but they must be supplied as the element is mandatory.	sr:Certificate (xs:base64Binary minOccurs = "1", maxOccurs = "3")	Yes	None	N/A	Non-Sensitive
ApplyTimeBasedCPVChecks	Specify whether the time based Certification Path Validation should be applied SMETS1: time based checks shall always be applied	xs:boolean	Yes	None	N/A	Non-Sensitive

Table 170 Request Handover Of DCC Controlled Device Service Request Data Items

6.21.1.3 ReplacementCertificatesDCCHandover Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DigitalSigningCertificate	The new Digital Signing Certificate to be placed in the Remote Party Role Key Usage digitalSignature (Cell Usage management) on the Device	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive
KeyAgreementCertificate	The new Key Agreement Certificate to be placed in the Remote Party Role Key Usage keyAgreement (Cell Usage management) on the Device	sr:Certificate (xs:base64Binary)	HCALCS: N/A Otherwise: Yes	None	N/A	Non-Sensitive
KeyAgreementTopUpCertificate	The new Key Agreement Certificate to be placed in the Supplier Remote Party Role Key Usage keyAgreement (Cell Usage prePaymentTopUp) on the Device for those Suppliers that use different Originator Counters for Prepayment Top Up SMETS1: This Certificate shall not be used	sr:Certificate (xs:base64Binary)	Remote Party Role = Supplier, User Role = EIS or GIS and Device Type = ESME or GSME: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 171 Request Handover Of DCC Controlled Device Service Request – ReplacementCertificatesDCCHandover Data Items

6.21.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 172 Request Handover Of DCC Controlled Device Modes of Operation

6.21.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 173 Request Handover Of DCC Controlled Device Command Variant Values

6.21.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Public Security Credentials validation):

Validation Check	Process	Response Code
Is the Remote Party Prepayment Top Up Floor Seq Number applicable to the Request?	Check that the Remote Party Prepayment Top Up Floor Seq Number is only included if the Supplier (EIS or GIS) is updating the Supplier Security Credentials on an ESME or GSME	E062101
Is the Certificate type applicable to the Device type?	Check that if the Certificate Type is: <ul style="list-style-type: none"> Digital Signing. The Device Type is ESME, HCALCS, GSME or GPF Key Agreement. The Device Type is ESME, GSME or GPF Key Agreement Top Up. The Device Type is ESME or GSME 	E062102
Are the Remote Party Role and Device Type valid?	Check that the combination of DCC Service User Role, Remote Party Role and Device Type is valid, i.e. it is one of the valid combinations in Table 169	E062103
Are all the Certificate Types applicable to the Device Type and Remote Party Role included in the Request?	Check that the all the Certificate Types applicable to the Device Type and Remote Party Role defined in Table 169 are included in the Request	E062105

Table 174 Request Handover Of DCC Controlled Device Service Request Validation

6.21.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RequestHandoverOfDCCControlledDevice>
  <RemotePartyRole>Supplier</RemotePartyRole>
  <RemotePartyFloorSeqNumber>23456</RemotePartyFloorSeqNumber>
  <ReplacementCertificates>
    <DigitalSigningCertificate>ZGVmYXVsdA==</DigitalSigningCertificate>
    <KeyAgreementCertificate>ZGVmYXVsdA==</KeyAgreementCertificate>
  </ReplacementCertificates>
  <CertificationPathCertificates>
    <Certificate>ZGVmYXVsdA==</Certificate>
  </CertificationPathCertificates>
  <ApplyTimeBasedCPVChecks>true</ApplyTimeBasedCPVChecks>
</RequestHandoverOfDCCControlledDevice>
```

Figure 106 Request Handover Of DCC Controlled Device Service Request (Body) Format

6.21.2 Responses

The response messages for a "Request Handover Of DCC Controlled Device" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.21.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E062101	Failed Validation – Invalid Remote Party Prepayment Top Up Floor Seq Number	Error	The Remote Party New Prepayment Top Up Floor Seq Number data item is not applicable to the Request
E062102	Failed Validation – Invalid Certificate Type	Error	The Certificate type is not applicable to the Device Type
E062103	Failed Validation –DCC Service User Role / Remote Party Role mismatch	Error	The combination of DCC Service User Role and Remote Party Role is invalid for the Device Type
E062105	Failed Validation – Certificate Type / Device Type & Remote Party Role mismatch or Missing Certificate(s)	Error	The Certificate Type is not applicable to the Device Type & Remote Party Role combination or not all applicable Certificate Types are included in the Request

Table 175 Failed Request Handover Of DCC Controlled Device Service Request Response Codes

6.21.2.2 Parse Output / SMETS1 Response Format

6.21.2.2.1 Format - RequestHandoverOfDCCControlledDeviceRsp

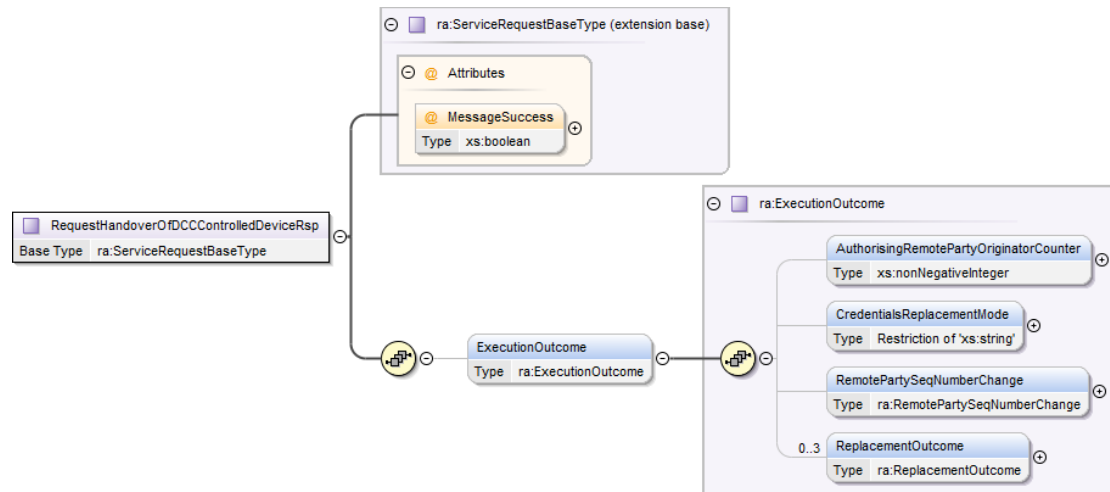


Figure 107 - Request Handover Of DCC Controlled DeviceParse Response / SMETS1 Response Structure

For detailed structure of RemotePartySeqNumberChange and ReplacementOutcome refer to section 6.15.1.2.2.

6.21.2.2.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	Dependent on credentials replacement mode; see GBCS Table 13.3.5.2 or Table 177 in this document	Dependent on credentials replacement mode; see GBCS Table 13.3.5.2 or Table 177 in this document
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS02b</i>	<i>CS02b</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Update Security Credentials</i>	<i>Update Security Credentials</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 176 – Request Handover Of DCC Controlled Device Parse/SMETS1 Response Header Data Items

The Message Code is dependent on the credentials replacement mode, as described in GBCS Table 13.3.5.2 in GBCS section 13.3.5.2, and reproduced here (only Credential Replacement Modes applicable to this Service Request) for convenience.

CredentialsReplacementMode	Message Code
supplierBySupplier	0102

CredentialsReplacementMode	Message Code
networkOperatorByNetworkOperator	0103

Table 177 – Message Codes and Credential Replacement Mode (GBCS Table 13.3.5.2)

6.21.2.2.3 Specific Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuthorisingRemotePartyOriginatorCounter	Originating counter passed in the request, allows alerts to be matched to the request	xs:nonNegativeInteger	None	N/A	Non-Sensitive
CredentialsReplacementMode	Define the valid combinations as to which Remote Party Roles can replace which kinds of credentials. Valid Set: <ul style="list-style-type: none"> SupplierBySupplier NetworkOperatorByNetworkOperator 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
RemotePartySeqNumberChange	The resulting changes to any replay counters held on the Device	ra:RemotePartySeqNumberChange – see 6.15.1.2.3.5 for details	None	N/A	Non-Sensitive
ReplacementOutcome	For each replacement in the request, detail the outcome and impacted parties	ra:ReplacementOutcome – see 6.15.1.2.3.6 for details	None	N/A	Non-Sensitive

6.21.2.2.4 Sample Response

```
<ra:RequestHandoverOfDCCControlledDeviceRsp MessageSuccess="true">
  <ra:ExecutionOutcome>
    <ra:AuthorisingRemotePartyOriginatorCounter>123</ra:AuthorisingRemotePartyOriginatorCounter>
    <ra:CredentialsReplacementMode>SupplierBySupplier</ra:CredentialsReplacementMode>
    <ra:RemotePartySeqNumberChange>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:RemotePartyFloorSeqNumber>1234</ra:RemotePartyFloorSeqNumber>
    </ra:RemotePartySeqNumberChange>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>KeyAgreement</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>DigitalSigning</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
  </ra:ExecutionOutcome>
</ra:RequestHandoverOfDCCControlledDeviceRsp>
```

Figure 108 - Request Handover Of DCC Controlled Device Parse Response Sample

6.22 Configure Alert Behaviour (6.22)

Service Request Name	ConfigureAlertBehaviour
Service Reference	6.22
Service Request Variant Name	ConfigureAlertBehaviour
Service Reference Variant	6.22
Service Request Objective	To enable a DCC Service User to configure Device Alert behaviours

<p>Business Context Statement</p>	<p>This Service Request is for Users to configure Event / Alert behaviours on specified Devices</p> <p>GBCS section 16 defines that some Event / Alert Codes can be configured by a defined User Role to either be</p> <p>‘turned on’ to</p> <ul style="list-style-type: none"> • send WAN Alerts • send HAN Alerts • sound audible Alarms • enable logging of information relating to the Event / Alert Code in the Event Log <p>or ‘turned off’ to</p> <ul style="list-style-type: none"> • not send WAN Alerts, • not send HAN Alerts • not sound audible Alarms • not enable logging of information relating to the Event / Alert Code in the Event Log. <p>Each authorised User may set this configuration for each applicable Alert Code within a specific Device ID</p>
<p>User Role Access</p>	<ul style="list-style-type: none"> • Electricity Import Supplier (EIS) • Gas Import Supplier (GIS) • Electricity Network Operator (ENO)
<p>Security Classification</p>	<p>Non-critical and non-sensitive: GBCS XREF: SME.C.NC</p>
<p>Service Request Narrative</p>	<ol style="list-style-type: none"> 1. Only non-critical Device Events / Alerts, as defined in GBCS, can be configured by this Service Request. These will always be in the range of either 0x80 (Network Operator non critical Events / Alerts. It is possible to configure them as WAN Alerts and / or Events to be logged in the Power Event Log) or 0x81 (Supplier non critical Events / Alerts. It is possible to configure them as WAN Alerts, HAN Alerts, audible Alarms and / or Events to be logged in the Event Log). The WAN Alerts, HAN Alerts, audible Alarms and Events to be logged in the Event Log or Power Event Log that are set to “Enable” in the Service Request will be “turned on” and those set to “Disable” will be “turned off” on the Device. See Main Document of this documentation set for the list of configurable non-critical Events / Alerts 2. Each DCC Service User can only select not to receive those Non-Critical Alerts for which they are responsible. 3. This Service Request can be used to configure single alerts or combinations of them. Configurable alerts for which the DCC Service User is responsible for which are not included in the Service Request will remain unchanged. 4. Note that Critical Events / Alerts, as defined by GBCS, including those relating to security, cannot be configured using this Service Request and so events logged in the security log cannot be configured.

5. For Devices with a Firmware version certified to GBCS v1.0
 - a. The DCC Service Users can continue to configure those WAN Alerts for which they are responsible according to GBCS section 16.2. The exception is Device Alert 0x81A0, which is ONLY introduced in GBCS v2.0 and Device Alerts 0x81A2 and 0x81A3 which are ONLY configurable from GBCS v2.0
 - b. Each DCC Service User must track the Alerts that they have configured for use of their Devices as they cannot be read back by the DCC Service Users at a later date via a Service Request. The DCC Data Systems does not store Event / Alert Configuration information, as this is ONLY stored on the specified target Device. If the DCC Service User is unsure of the current Alert behaviour settings on the Device then they should use this Service Request to configure all of the Alerts for which they are the responsible party again to obtain known values.
6. For Devices with a Firmware version certified to GBCS v2.0 or later
 - a. The DCC Service Users can configure those WAN Alerts, HAN Alerts, audible Alarms and logging of Events in the Event Log(s) for which they are responsible for according to GBCS section 16.2.
 - i. For Electricity each 1 of the 4 possible configuration setting sets of WAN Alerts, HAN Alerts, audible Alarms and logging of Events in the Event Log are available to be configured separately via different GBCS Use Cases, i.e. different instances of this Service Request. For a given Event / Alert Code it is possible to change only the required settings, e.g. those of the WAN Alert, and leave the others unchanged
 - ii. For Gas the WAN Alerts, HAN Alerts, audible Alarms and logging of Events in the Event Log are configured simultaneously per Event / Alert Code via a single GBCS Use Case, i.e. single instance of this Service Request. For a specified Event / Alert Code it is not possible to change only some of the settings, e.g. those of the WAN Alert, and leave the others unchanged. All 4 of the possible configuration setting sets must be populated with the actual behaviours expected from the device for each setting
 - b. The DCC Service Users can read the Alert / Event Configuration via Service Request 6.2.10 - Read Device Configuration (Event and Alert Behaviours). See section 6.2.10.
7. For Devices with a Firmware version certified to GBCS v3.2 or later
 - a. The DCC Service Users can configure the Alert Code 0x81C6.

GBCS Cross Reference	Electricity				Gas
	WAN Alerts	HAN Alerts	Audible Alarms	Event Logging	
GBCS v1.0 Message Code	EIS – 0x00AC ENO – 0x00B0	N/A	N/A	N/A	GIS – 0x00AD
GBCS v1.0 Use Case	EIS – ECS25a ENO – ECS25b	N/A	N/A	N/A	GIS – GCS20
GBCS v1.0 Use Case Name	EIS - Set Alert Behaviours - ESME - Supplier ENO - Set Alert Behaviours - ESME - Network Operator	N/A	N/A	N/A	GIS - Set Alert Behaviours - GSME
GBCS v2.0 or later Message Code	EIS – 0x00AC ENO – 0x00B0	EIS – 0x00EA	EIS – 0x00EB	EIS – 0x00EC ENO – 0x00ED	GIS – 0x00AD
GBCS v2.0 or later Use Case	EIS – ECS25a ENO – ECS25b	EIS - ECS25a1	EIS - ECS25a2	EIS - ECS25a3 ENO - ECS25b3	GIS – GCS20
GBCS v2.0 or later Use Case Name	EIS - Set Alert Behaviours - ESME - Supplier ENO - Set Alert Behaviours - ESME - Network Operator	EIS - Set Event Behaviours - ESME to HAN Device - Supplier	EIS - Set Event Behaviours - ESME audible alarm - Supplier	EIS - Set Event Behaviours - ESME logging - Supplier ENO - Set Event Behaviours - ESME logging - Network Operator	GIS - Set Alert Behaviours - GSME
GBCS Commands - Versioning Details					
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,					

Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DUIS 1: XML Criteria - XML data item ElectricitySupplierAlerts populated only with Device Alerts included in GBCS v1.0 (note that the DUIS 1 XML schema does not include WAN Alerts 0x81A2, 0x81A3 or 0x81A0)	ECS25a	ECS25a
DUIS 2 or later: XML Criteria - XML data item ElectricitySupplierAlerts populated only with Device Alerts included in GBCS v1.0 (WAN Alerts except 0x81A2, 0x81A3 and 0x81A0)	ECS25a	ECS25a
DUIS 2 or later: XML Criteria - XML data item ElectricitySupplierAlerts populated with at least one Device Alert not included in GBCS v1.0 (i.e. 0x81A2, 0x81A3 and 0x81A0)	Response Code – E062203	ECS25a
DUIS 2 or later: XML Criteria - XML data item ElectricitySupplierHANAlertSettings populated	Response Code – E062203	ECS25a1
DUIS 2 or later: XML Criteria - XML data item ElectricitySupplierAlarmSettings populated	Response Code – E062203	ECS25a2
DUIS 2 or later: XML Criteria - XML data item ElectricitySupplierLoggingSettings populated	Response Code – E062203	ECS25a3
DUIS 2 or later: XML Criteria - XML data item ElectricityNetworkOperatorAlerts populated	ECS25b	ECS25b
DUIS 2 or later: XML Criteria - XML data item ElectricityNetworkOperatorLoggingSettings populated	Response Code – E062203	ECS25b3
SMETS1 Applicability	No	No
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DUIS 1 or later: XML Criteria - XML data item GasSupplierAlerts populated (note that GasSupplierAlertEventSettings is not supported in DUIS 1)	GCS20	GCS20
DUIS 2 or later: XML Criteria - XML data item GasSupplierAlertEventSettings populated	Response Code – E062203	GCS20
SMETS1 Applicability	No	No

Table 178 Configure Alert Behaviour Service Request

The following table summarises the possible combinations of User Roles, GBCS UCs and GBCS version:

User Role	GBCS UC	Device's GBCS Version
EIS	ECS25a	>= 1.0
EIS	ECS25a1	>= 2.0
EIS	ECS25a2	>= 2.0
EIS	ECS25a3	>= 2.0
ENO	ECS25b	>= 1.0
ENO	ECS25b3	>= 2.0
GIS	GCS20	= 1.0 (WAN Alerts only) >= 2.0 (WAN Alerts, HAN Alerts, Audible Alarms and / or Event Logging)

Table 179 Configure Alert Behaviour Service Request User Roles / GBCS UCs / GBCS Version

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

This Service Request references the Alert Codes used to configure the ESME or GSME, these codes are defined in GBCS section 16.2, the meaning of each code is not repeated here.

6.22.1 Service Request

6.22.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ConfigureAlertBehaviour XML element defines this Service Request and contains the Device Alert Codes that each User Role can set on each Device Type.

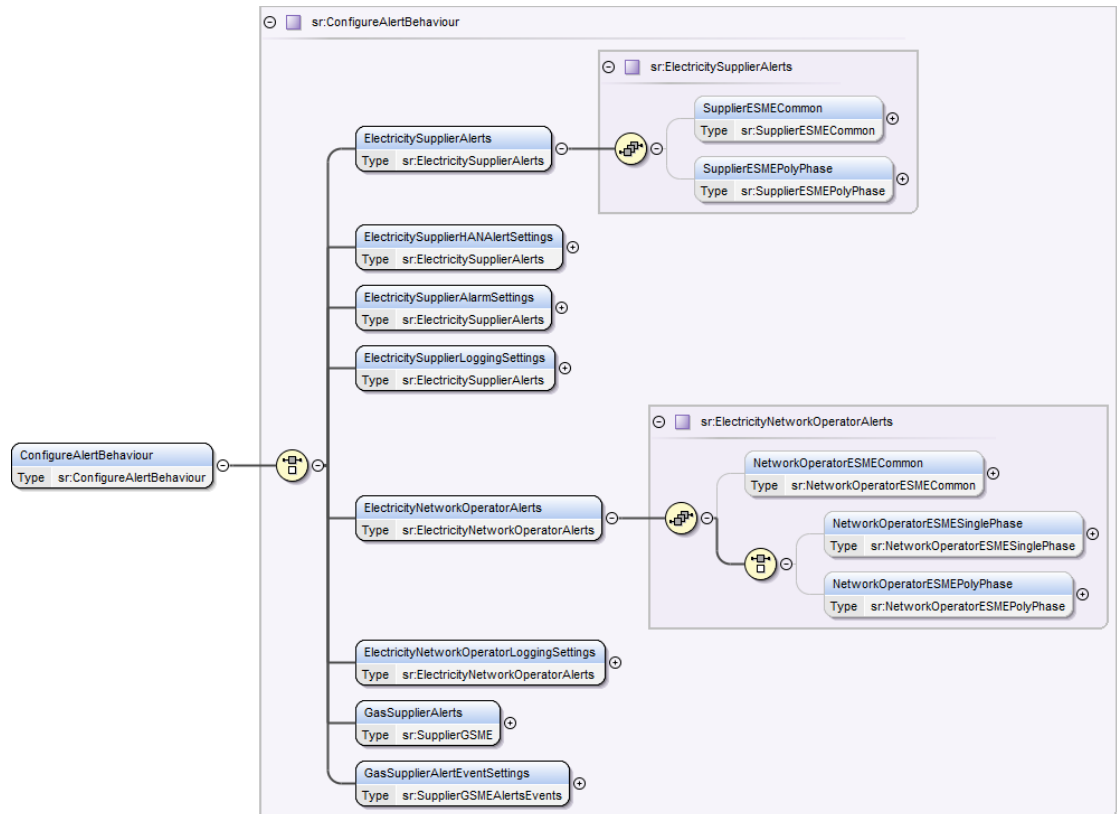


Figure 109 – Configure Alert Behaviour Service Request Structure

6.22.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
ElectricitySupplierAlerts	The configuration settings for WAN Alerts which the registered EIS can configure on the ESME.	sr:ElectricitySupplierAlerts (See 6.22.1.3)	EIS and ESME Firmware certified to GBCS v1.0:: Yes EIS and ESME Firmware certified to GBCS v2.0 or later: Optional Otherwise: N/A	None	N/A	Non-Sensitive
ElectricitySupplierHANAlertSettings	The configuration settings for HAN Alerts which the registered EIS can configure on the ESME. ElectricitySupplierHANAlertSettings is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later	sr:ElectricitySupplierAlerts (See 6.22.1.3)	EIS and ESME Firmware certified to GBCS v2.0 or later: Optional Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
ElectricitySupplierAlarmSettings	The configuration settings for audible Alarms (associated to WAN Alerts, HAN Alerts and / or events recorded in the Event Log) which the registered EIS can configure on the ESME. ElectricitySupplierAlarmSettings is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later	sr:ElectricitySupplierAlerts (See 6.22.1.3)	EIS and ESME Firmware certified to GBCS v2.0 or later: Optional Otherwise: N/A	None	N/A	Non-Sensitive
ElectricitySupplierLoggingSettings	The configuration settings for logging Events in the Event Logs, which the registered EIS can configure on the ESME. ElectricitySupplierLoggingSettings is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later	sr:ElectricitySupplierAlerts (See 6.22.1.3)	EIS and ESME Firmware certified to GBCS v2.0 or later: Optional Otherwise: N/A	None	N/A	Non-Sensitive
ElectricityNetworkOperatorAlerts	The configuration settings for WAN Alerts which the registered ENO can configure on the ESME.	sr: ElectricityNetworkOperatorAlerts (See 6.22.1.4)	ENO and ESME Firmware certified to GBCS v1.0: Yes ENO and ESME Firmware certified to GBCS v2.0 or later: Optional Otherwise: N/A	None	N/A	Non-Sensitive
ElectricityNetworkOperatorLoggingSettings	The configuration settings for logging Events in the Power Event Log, which the registered ENO can configure on the ESME. ElectricityNetworkOperatorLoggingSettings is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later	sr: ElectricityNetworkOperatorAlerts (See 6.22.1.4)	ENO and ESME Firmware certified to GBCS v2.0 or later: Optional Otherwise: N/A	None	N/A	Non-Sensitive
GasSupplierAlerts	The configuration settings for WAN Alerts which the registered GIS can configure on the GSME. GasSupplierAlerts is only supported on Devices with a Firmware version certified to GBCS 1.0	sr:GasSupplierAlerts (See 6.22.1.5)	GIS and GSME Firmware certified to GBCS v1.0: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
GasSupplierAlertEventSettings	<p>The configuration settings for WAN Alerts, HAN Alerts, logging of Events in the Event Log and / or audible Alarms (associated to WAN Alerts, HAN Alerts and / or events recorded in the Event Log) which the registered GIS can configure on the GSME.</p> <p>GasSupplierAlertEventSettings is only supported in DUIS v2 or later on Devices with a Firmware version certified to GBCS v2.0 or later</p>	sr: SupplierGSMEAlertsEvents (See 6.22.1.6)	GIS and GSME Firmware certified to GBCS v2.0 or later: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 180 Configure Alert Behaviour Service Request Data Items

¹ This Service Request is a choice, so it must only include one of the data items in the table

6.22.1.3 ElectricitySupplierAlerts Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SupplierESMECommon	A set of Event / Alert Codes (as defined by GBCS) for which WAN Alert, HAN Alert, audible Alarm or logging of Events to the Event Log behaviours that are applicable to both Single and Poly Phase Electric Smart Meters are to be configured.	See 6.22.1.8	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive
SupplierESMEPolyPhase	A set of Event / Alert Codes (as defined by GBCS) for which WAN Alert, HAN Alert, audible Alarm or logging of Events to the Event Log behaviours that are only applicable to Poly Phase Electric Smart Meters are to be configured.	See 6.22.1.8	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive

Table 181 Configure Alert Behaviour Service Request – ElectricitySupplierAlerts Data Items

6.22.1.4 ElectricityNetworkOperatorAlerts Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
NetworkOperatorESMECommon	A set of Event / Alert Codes (as defined by GBCS) for which WAN Alert or logging of Events to the Power Event Log behaviours that are applicable to both Single and Poly Phase Electric Smart Meters are to be configured.	See 6.22.1.8	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive
NetworkOperatorESMESinglePhase	A set of Event / Alert Codes (as defined by GBCS) for which WAN Alert or logging of Events to the Power Event Log behaviours that are only applicable to Single Phase Electric Smart Meters are to be configured.	See 6.22.1.8	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
NetworkOperatorESMEPolyPhase	A set of Event / Alert Codes (as defined by GBCS) for which WAN Alert or logging of Events to the Power Event Log behaviours that are only applicable to Poly Phase Electric Smart Meters are to be configured.	See 6.22.1.8	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive

Table 182 Configure Alert Behaviour Service Request – ElectricityNetworkOperatorAlerts Data Items

6.22.1.5 GasSupplierAlerts Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GasSupplierAlerts	A set of Event / Alert Codes (as defined by GBCS) for which WAN Alert behaviours that are applicable to GSME are to be configured.	See 6.22.1.8	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive

Table 183 Configure Alert Behaviour Service Request – GasSupplierAlerts Data Items

6.22.1.6 GasSupplierAlertEventSettings Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GasSupplierAlertEventSettings	A set of Event / Alert Codes (as defined by GBCS) with configurable WAN Alert, HAN Alert, Alarm and / or Event Logging that are applicable to GSME are to be configured.	sr:WANHANEventLogAlarm (see 6.22.1.7)	No (If included at least 1 Alert must be configured)	None	N/A	Non-Sensitive

Table 184 Configure Alert Behaviour Service Request – GasSupplierAlertEventSettings Data Items

6.22.1.7 WANHANEventLogAlarm Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
XML Tag name is the GBCS Alert Code without the leading zero.	Applicable to each Event / Alert Code with configurable WAN Alert, HAN Alert, Event Log and Alarm on the GSME. For each of these alerts, e.g. 0x81AA, the WAN Alert, HAN Alert, the Event Log and the Alarm have to be configured at the same time, but their setting (enable / disable) can be different	(see 6.22.1.8)	No	None	N/A	Non-Sensitive

Table 185 Configure Alert Behaviour Service Request – WANHANEventLogAlarm Data Items (Gas)

6.22.1.8 Alert Type Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
XML Tag name is the GBCS Alert Code without the leading zero.	<p>Each of the following elements contain a sequence of GBCS Alert Codes;</p> <ul style="list-style-type: none"> SupplierESMECommon SupplierESMEPolyPhase NetworkOperatorESMECommon NetworkOperatorESMESinglePhase NetworkOperatorESMEPolyPhase GasSupplierAlerts GasSupplierAlertEventSettings <p>See section 16.2 of GBCS for the definition of these codes. Each Alert may be enabled (turned on) or disabled (turned off), if an Alert isn't reconfigured then its configuration state is unchanged.</p>	sr:EnableDisableAlert	No	None	N/A	Non-Sensitive

Table 186 Configure Alert Behaviour Service Request – Alert Type Definition

6.22.1.9 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 187 Configure Alert Behaviour Modes of Operation

6.22.1.10 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 188 Configure Alert Behaviour Command Variant Values

6.22.1.11 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the Service Request valid?	<p>Check that the combination of DCC Service User Role and Service Request contents is as follows and it includes at least one Alert configuration:</p> <ul style="list-style-type: none"> EIS and (ElectricitySupplierAlerts or ElectricitySupplierHANAlertSettings or ElectricitySupplierAlarmSettings or ElectricitySupplierLoggingSettings) <ul style="list-style-type: none"> At least one Alert configuration included ENO and (ElectricityNetworkOperatorAlerts or ElectricityNetworkOperatorLoggingSettings) <ul style="list-style-type: none"> At least one Alert configuration included GIS and (GasSupplierAlerts or GasSupplierAlertEventSettings) <ul style="list-style-type: none"> At least one Alert configuration included 	E062201
Is the Service Request applicable to the ESME variant?	<p>Check that when the EIS or ENO is configuring Device Alerts (WAN or HAN or audible Alarms or Logging of Events) on an ESME (except for those applicable to all variants), the combination of the ESME Variant and the Service Request contents is as follows:</p> <ul style="list-style-type: none"> Single Phase ESME (Variant combinations including A or B) and ESMESinglePhase Poly Phase ESME (Variant combinations including C) and ESMEPolyPhase 	E062202
Does the GBCS version for the Firmware on the Device support the features chosen in the Service Request?	<p>Check that if the Device Firmware version is certified to GBCS v1.0 according to the Smart Metering Inventory records, the Service Request does not include Device Alerts 0x81A0, 0x81A2 or 0x81A3 and that it includes one of:</p> <ul style="list-style-type: none"> ElectricitySupplierAlerts ElectricityNetworkOperatorAlerts GasSupplierAlerts <p>Check that if the Device Firmware version is certified to GBCS v2.0 or later according to the Smart Metering Inventory records, the Service Request doesn't include GasSupplierAlerts.</p> <p>Check that if the request includes an instruction to configure 0x81C6 then the Device Firmware version is certified to GBCS v3.2 or later according to the Smart Metering Inventory records.</p>	E062203

Table 189 Configure Alert Behaviour Service Request Validation

6.22.1.12 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```

<ConfigureAlertBehaviour>
  <ElectricitySupplierAlerts>
    <SupplierESMECommon>
      <x81AB>Enable</x81AB>
      <x81BC>Disable</x81BC>
    </SupplierESMECommon>
  </ElectricitySupplierAlerts>
</ConfigureAlertBehaviour>

```

Figure 110 Configure Alert Behaviour Service Request (Body) Format – Electricity (WAN Alerts - Supplier)

```
<ConfigureAlertBehaviour>
  <ElectricitySupplierHANAlertSettings>
    <SupplierESMECommon>
      <x8119>Enable</x8119>
      <x81AA>Disable</x81AA>
    </SupplierESMECommon>
  </ElectricitySupplierHANAlertSettings>
</ConfigureAlertBehaviour>
```

Figure 111 Configure Alert Behaviour Service Request (Body) Format – Electricity (HAN Alerts - Supplier)

```
<ConfigureAlertBehaviour>
  <ElectricitySupplierAlarmSettings>
    <SupplierESMECommon>
      <x81AB>Disable</x81AB>
      <x81BC>Disable</x81BC>
    </SupplierESMECommon>
  </ElectricitySupplierAlarmSettings>
</ConfigureAlertBehaviour>
```

Figure 112 Configure Alert Behaviour Service Request (Body) Format – Electricity (Audible Alarms - Supplier)

```
<ConfigureAlertBehaviour>
  <ElectricitySupplierLoggingSettings>
    <SupplierESMECommon>
      <x81AB>Enable</x81AB>
      <x81BC>Disable</x81BC>
    </SupplierESMECommon>
  </ElectricitySupplierLoggingSettings>
</ConfigureAlertBehaviour>
```

Figure 113 Configure Alert Behaviour Service Request (Body) Format – Electricity (Logging in Event Log - Supplier)

```
<ConfigureAlertBehaviour>
  <ElectricityNetworkOperatorAlerts>
    <NetworkOperatorESMECommon>
      <x8014>Enable</x8014>
      <x8015>Disable</x8015>
    </NetworkOperatorESMECommon>
  </ElectricityNetworkOperatorAlerts>
</ConfigureAlertBehaviour>
```

Figure 114 Configure Alert Behaviour Service Request (Body) Format – Electricity (WAN Alerts – Network Operator)

```
<ConfigureAlertBehaviour>
  <ElectricityNetworkOperatorLoggingSettings>
    <NetworkOperatorESMECommon>
      <x8014>Enable</x8014>
      <x8015>Disable</x8015>
    </NetworkOperatorESMECommon>
  </ElectricityNetworkOperatorLoggingSettings>
</ConfigureAlertBehaviour>
```

**Figure 115 Configure Alert Behaviour Service Request (Body) Format – Electricity
(Logging in Power Event Log – Network Operator)**

```
<ConfigureAlertBehaviour>
  <GasSupplierAlerts>
    <x81B2>Enable</x81B2>
    <x81C5>Disable</x81C5>
  </GasSupplierAlerts>
</ConfigureAlertBehaviour>
```

**Figure 116 Configure Alert Behaviour Service Request (Body) Format – Gas (WAN
Alerts only)**

```
<ConfigureAlertBehaviour>
  <GasSupplierAlertEventSettings>
    <x810D>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Disable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x810D>
    <x810E>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Disable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x810E>
    <x8145>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Disable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x8145>
    <x8168>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Disable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x8168>
    <x8183>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Disable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x8183>
    <x81AA>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Enable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x81AA>
    <x81C6>
      <WANAAlert>Enable</WANAAlert>
      <HANAAlert>Enable</HANAAlert>
      <EventLog>Enable</EventLog>
      <Alarm>Disable</Alarm>
    </x81C6>
  </GasSupplierAlertEventSettings>
</ConfigureAlertBehaviour>
```

Figure 117 Configure Alert Behaviour Service Request (Body) Format - Gas

6.22.2 Responses

The response messages for a “Configure Alert Behaviour” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.22.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E062201	Failed Validation – Request Invalid	Error	The Service Request is invalid
E062202	Failed Validation – Request / ESME Variant mismatch	Error	The combination of ESME Variant and Service Request contents is invalid
E062203	Failed Validation - Features not supported by GBCS version	Error	The SMI GBCS version of the Firmware running on the Device does not support the chosen features of this Service Request

Table 190 Failed Configure Alert Behaviour Service Request Response Codes

6.22.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is ConfigureAlertBehaviourRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.22.2.2.1 Specific Header Data Items

GBCS v1.0:

Data Item	Electricity Response (Supplier)	Electricity Response (Network Operator)	Gas Response
GBCSHexadecimalMessageCode	00AC	00B0	00AD
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS25a</i>	<i>ECS25b</i>	<i>GCS20</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Alert Behaviours - ESME - Supplier</i>	<i>Set Alert Behaviours - ESME - Network Operator</i>	<i>Set Alert Behaviours - GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 191 – Configure Alert Behaviour Parse Response Header Data Items – GBCS v1.0

GBCS v2.0 or later:

Data Item	Electricity Response (Supplier – WAN Alerts)	Electricity Response (Supplier – HAN Alerts)	Electricity Response (Supplier – Alarms)	Electricity Response (Supplier – Event Logging)
GBCSHexadecimalMessageCode	00AC	0x00EA	0x00EB	0x00EC
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS25a</i>	<i>ECS25a1</i>	<i>ECS25a2</i>	<i>ECS25a3</i>

Data Item	Electricity Response (Supplier – WAN Alerts)	Electricity Response (Supplier – HAN Alerts)	Electricity Response (Supplier – Alarms)	Electricity Response (Supplier – Event Logging)
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Alert Behaviours - ESME - Supplier</i>	<i>Set Event Behaviours - ESME to HAN Device - Supplier</i>	<i>Set Event Behaviours - ESME audible alarm - Supplier</i>	<i>Set Event Behaviours - ESME logging - Supplier</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present	Not Present

Table 192 – Configure Alert Behaviour Parse Response Header Data Items – GBCS v2.0 or later (Electricity Supplier)

Data Item	Electricity Response (Network Operator – WAN Alerts)	Electricity Response (Network Operator – Event Logging)	Gas Response
GBCSHexadecimalMessageCode	00B0	0x00ED	00AD
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS25b</i>	<i>ECS25b3</i>	<i>GCS20</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Alert Behaviours - ESME - Network Operator</i>	<i>Set Event Behaviours - ESME logging - Network Operator</i>	<i>Set Alert Behaviours - GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 193 – Configure Alert Behaviour Parse Response Header Data Items – GBCS v2.0 or later (Electricity Network Operator and Gas Supplier)

6.23 Update Security Credentials (CoS) (6.23)

Service Request Name	Update Security Credentials (CoS)
Service Reference	6.23
Service Request Variant Name	Update Security Credentials (CoS)

Service Reference Variant	6.23
Service Request Objective	<p>SMETS2 or later: To enable an Import Supplier to replace the Supplier Security Credentials on a specified Device with the Security Credentials contained within the Service Request.</p> <p>SMETS1: To enable an Import Supplier to replace the Supplier Security Credentials which the DCC Data Systems holds corresponding to a specified Device with the Security Credentials contained within the Service Request.</p>
Business Context Statement	<p>SMETS2 or later: The gaining Energy Supplier wins a site and requests that the security credentials present on the device are updated to the gaining Energy Supplier's credentials so that they can operate the device.</p> <p>SMETS1: The gaining Energy Supplier wins a site and requests that the security credentials which the DCC Data Systems holds corresponding to the specified Device are updated to the gaining Energy Supplier's credentials so that they can operate the Device.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and non-sensitive:</p> <p>SMETS2 or later: GBCS XREF: SME.C.C (the GBCS Command to the Device is Critical, but it is digitally signed by the CoS Party, so the Service Request interaction between the DCC Service Users and the DCC is Non-Critical)</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> The Services to support the Change of Supplier (CoS) process are a special use case for processing for the DCC Data Systems. In this case, a separate function within the DCC Total System called the CoS Party interacts with the main Access Control Broker (ACB) function to deliver an appropriately signed command to the Device. See Main Document of this documentation set section 2.3.11 for details. To allow the CoS Party to perform Access Control Checks on the Request: <ol style="list-style-type: none"> CoS Party own registration check. This Service Request has to include the Import MPxN (Primary MPAN for ESME or HCALCS and MPRN for GSME or GPF) associated to the Device which the DCC Data Systems will include in the Request to the CoS Party Identity check. The DCC Data Systems will include the DCC Service User Service Request Signature in the Request to the CoS Party This Service Request applies to those Devices for which the DCC Service User Role is a KRP: <ol style="list-style-type: none"> EIS.

- i. Electricity Smart Meter Equipment (ESME)
 - ii. HAN Connected Auxiliary Load Control Switch (HCALCS)
 - b. GIS
 - i. Gas Smart Meter Equipment (GSME)
 - ii. Gas Proxy Function (GPF)
- 4. The Certificates to be changed via this Service Request are summarised in Table 195. The Service Request has to include all the Certificates applicable to the Business Target ID Device Type.
- 5. Because the Command to the Device is generated and signed by the Cos Party:
 - a. This Service Request is Non-critical.
 - b. The Command will be submitted to the Device by the DSP Access Control Broker using a variation of the URP interaction type, where the Command Business Originator ID and Counter are those of the Cos Party
- 6. This Service Request includes data item ApplyTimeBasedCPVChecks to instruct the Device to apply (true) or not apply (false) time based checks as part of Certification Path Validation. It should only be set to false in exceptional circumstances (e.g. credentials on the Device have expired without replacement for unforeseen reasons).
- 7. If the Service Request completes successfully, the Old registered Import Supplier will be sent DCC Alert N27 to inform them of the change of Security Credentials to support the CoS event (this action is a post-processing step after the Service Response has been sent to the User).
- 8. If the Service Request completes successfully, all active DSP Schedules on that Device owned by the Old registered Import Supplier will be automatically deleted by the DCC Data Systems. For each deleted DSP Schedule a DCC Alert N17 will be sent to the Old registered Import Supplier (this action is a post-processing step after the Service Response has been sent to the User).
- 9. If the Service Request completes successfully, all Future Dated (DSP) requests for that Device submitted by the Old registered Import Supplier not yet sent to the Device will be automatically cancelled by the DCC Data Systems. For each cancelled Future Dated (DSP) request a DCC Alert N38 will be sent to the Old registered Import Supplier (this action is a post-processing step after the Service Response has been sent to the User).
- 10. If the Service Request completes successfully, the DCC Data Systems will stop monitoring all Future Dated (Device) Commands for that Device submitted by the Old registered Import Supplier for which no response has been received from the Device. This won't trigger the sending of DCC Alerts to the Old registered Import Supplier.

11. If the Service Request fails access control checks or the processing by the CoS Party, the Service Request Sender will be sent DCC Alert N26 and the Request won't be processed any further (this action is a post-processing step after the Service Response has been sent to the User).
12. The Modes of Operation applicable to this Service Request are:
 - a. On Demand. Only if sent to the DCC Data Systems on or after the CoS Date.
 - b. Future Dated. Only if sent to the DCC Data Systems with an ExecutionDateTime on or after the CoS Date. As explained in the Main Document of this documentation set section 2.3.11, this Service Request uses a Future Date (DSP + Device) Mode of Operation. This means that, where applicable, the DCC Data Systems will hold the Service Request until the day before the Execution Date Time in the Request and then will re-apply access control to it, before forwarding the Request to the CoS Party. If a Future Dated Service Request fails DSP access control (note this includes checking that the certificates haven't been revoked) at the point the Request is to be sent to the CoS Party, the Service Request Sender will be sent DCC Alert N26 and the Request won't be processed any further.
13. Upon successful processing of this Service Request to replace Security Credentials related to the Remote Party Supplier Role, the specified target Device will reset the Immediate Execution Counters and Future Dated Counters on the Device to the Remote Party Role (Supplier) Floor Sequence Number(s) specified within this Service Request
14. As an exception, the Authorisation Check associated to E5 allows the Device Status to be 'Suspended', but successful completion of the Service Request doesn't change the Device Status in the Smart Metering Inventory
15. For each certificate specified in a Response or Alert from the Device as being successfully updated by the Update Security Credentials Command, the DCC Data Systems shall update the Smart Metering Inventory with the new certificate identifier as a record of the certificate held in the relevant Trust Anchor Cell on that Device (this action is carried out before the Service Response is generated).
16. If the DCC Data Systems do not receive any Response to the Service Request then the DCC Data Systems will initiate a Command to read the Organisation Certificates on the target Device. If the Response to this Command indicates that the Supplier certificates have changed from those currently recorded by the DCC Data Systems (ie the original Change of Supplier request was actually successfully completed on the Device) then the DCC Data Systems will carry out all the post-processing actions described in this

	<p>narrative section as if a successful Response had been received to the original request.</p> <p>17. During the period where both the Transitional CoS Party and the Enduring CoS Party are in operation, the device may have a TCoS or ECoS certificate in the CoS Party Trust Anchor Cell. The DCC Data Systems will manage the use of the correct CoS certificate and route the Service Request to the relevant CoS Party. However, Users should note that processing by the Enduring CoS Party may result in additional error response codes being returned in DCC Alert N26. See Main Document of this documentation set section 12.3 for details.</p> <p>18. Where the Device has an ECoS certificate in its CoS Party Trust Anchor Cell, the User shall ensure that the Originator Counter is numerically greater than the value it has used in relation to any previously created 'Update Security Credentials (CoS) (SRV 6.23)' SMETS2 Service Request (i.e. not just on a per-Device basis).</p> <p>19. For this Service Request the check that the Service User is the Registered Supplier for the device is additionally carried out against the Market Participant Identifier that is included within the certificate that is used to sign the Service Request</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code (for each CredentialsReplacementMode)	supplierByTransCoS – 0x0107	
GBCS Use Case	CS02b	CS02b
GBCS Use Case Name	Update Security Credentials	Update Security Credentials
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> For SMETS1 Devices, references to storage of Certificates and Execution Counters on the Device shall be interpreted as meaning storage of Execution Counters and Security Credentials in DCC Data Systems corresponding to the Device, as defined in the SMETS1 Supporting Requirements Document. The User shall ensure that the Originator Counter is numerically greater than the value it has used in relation to any previously created 'Update Security Credentials (CoS) (SRV 6.23)' SMETS1 Service Request (i.e. not just on a per-Device basis), as defined in the SMETS1 Supporting Requirements Document. 	

	<ol style="list-style-type: none"> Protection against Replay shall be applied to this Service Request by the DCC as defined in the SMETS1 Supporting Requirements Document. Time-based checks shall always be applied. Descriptions of behaviour for HCALCS Devices are not applicable to SMETS1. Service Requests for SMETS1 devices are passed to the CoS Party for further authorisation checks, although there is no Command to be created. If the Service Request fails access control checks or the processing by the CoS Party, the Service Request Sender will be sent DCC Alert N26 as for SMETS2 or later devices. The SMETS1 equivalent to “stop monitoring all Future Dated (Device) Commands for that Device” in point 10 in the SMETS2 or later narrative is that The Future Dated (Device) Command pattern is not applicable to SMETS1 Devices.
--	--

Table 194 Update Security Credentials (CoS) Service Request

The following table summarises the relationship between CoS Event Type, Device Types and Supplier Certificates to change on the Device

CoS Type	Device	Device Supplier Certificates to change
Electricity CoS Event	ESME	Digital Signing Key Agreement Key Agreement Top Up
	HCALCS ¹	Digital Signing
Gas CoS Event	GSME	Digital Signing Key Agreement Key Agreement Top Up
	GPF	Digital Signing Key Agreement

Table 195 Update Security Credentials (CoS) – Device / Certificates

¹ N/A to SMETS1 Services

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.23.1 Service Request

6.23.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateSecurityCredentialsCos XML element defines this Service Request and contains the Supplier Public Security Credentials to be updated on the Device and, for Future Dated, the Execution Date and Time.

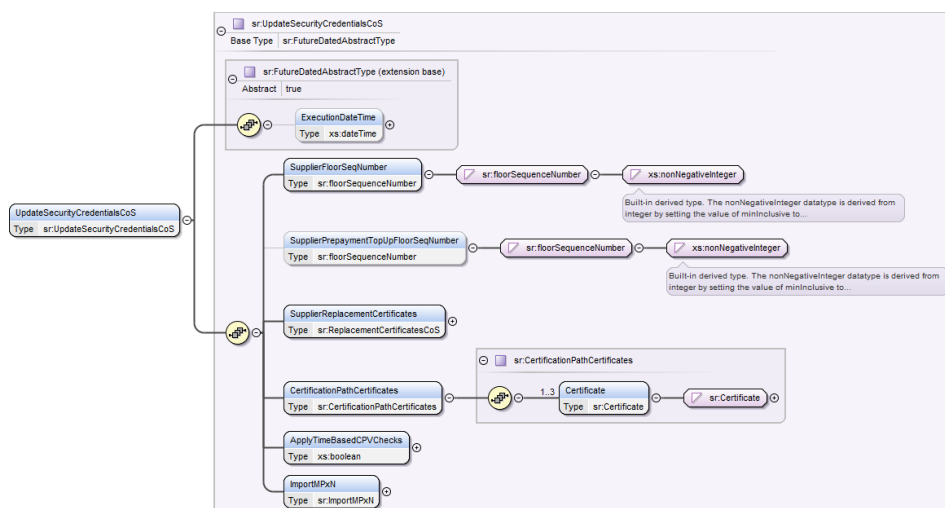


Figure 118 Update Security Credentials (CoS) Service Request Structure

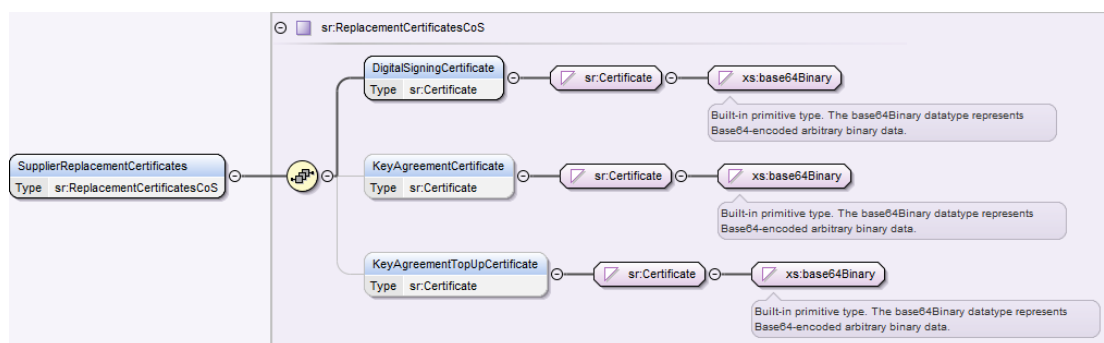


Figure 119 Update Security Credentials (CoS) Service Request – Supplier Replacement Certificates Structure

6.23.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID, i.e. the date when the Supplier Credentials are to be replaced <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
SupplierFloorSeqNumber	New Supplier Originator Counter (floor value). This value will be used to prevent replay of Update Security Credentials Commands, and other Commands, for the new controlling Remote Party.	sr:floorSequenceNumber (Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SupplierPrepaymentTopUpFloorSequenceNumber	<p>Only applicable when the Command changes Supplier Credentials and Counters on a Meter and the Counter for its Prepayment Top Ups is different to that used for other Commands.</p> <p>This value will be used to prevent replay of Prepayment Top Up Commands.</p> <p>Where the target Device is a Meter and Supplier security credentials are being updated this must be populated as it is required for prevention of replay of Prepayment Top Up Commands. However, if not set it can be corrected by the Supplier sending a subsequent SRV 6.15.1.</p> <p>SMETS1: This value shall not be used.</p>	<p>sr:floorSequenceNumber</p> <p>(Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)</p>	<p>ESME or GSME: No</p> <p>Otherwise: N/A</p>	None	N/A	Non-Sensitive
SupplierReplacementCertificates	This structure provides a list of the replacement Certificates.	<p>sr:ReplacementCertificatesCoS</p> <p>(see section 6.23.1.3)</p>	Yes	None	N/A	Non-Sensitive
CertificationPathCertificates	<p>This structure provides the Certificates needed to undertake Certification Path Validation of the new end entity Certificate against the root public key held on the Device. The number of these may be less than the number of replacement certificates (e.g. a Supplier may replace all of its certificates but may only need to supply one Certification Authority Certificate to link them all back to root.</p> <p>SMETS1: the Device shall not use these Certificates but they must be supplied as the element is mandatory.</p>	<p>sr:Certificate</p> <p>(xs:base64Binary minOccurs = "1", maxOccurs = "unbounded")</p>	Yes	None	N/A	Non-Sensitive
ApplyTimeBasedCPVChecks	<p>Specify whether the time based Certification Path Validation should be applied</p> <p>SMETS1: time based checks shall always be applied</p>	xs:boolean	Yes	None	N/A	Non-Sensitive
ImportMPxN	The reference number identifying the primary import electricity or gas metering point associated to the premises to which the Change of Supplier Applies	<p>Restriction of xs:string</p> <p>(minLength = 1, maxLength = 13)</p>	Yes	None	N/A	Non-Sensitive

Table 196 Update Security Credentials (CoS) Service Request Data Items

6.23.1.3 SupplierReplacementCertificates Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DigitalSigningCertificate	The new Supplier digital signing credentials to be placed in the Supplier Remote Party Role Key Usage digitalSignature (Cell Usage management) on the Device	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive
KeyAgreementCertificate	The new Supplier key agreement credentials to be placed in the Supplier Remote Party Role Key Usage keyAgreement (Cell Usage management) on the Device	sr:Certificate (xs:base64Binary)	HCALCS: N/A Otherwise: Yes	None	N/A	Non-Sensitive
KeyAgreementTopUpCertificate	The new Supplier key agreement credentials to be placed in the Supplier Remote Party Role Key Usage keyAgreement (Cell Usage prePaymentTopUp) on the Device, for those Suppliers that use different Originator Counters for Prepayment Top Up SMETS1: This Certificate shall not be used	sr:Certificate (xs:base64Binary)	ESME or GSME: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 197 Update Security Credentials (CoS) Service Request – SupplierReplacementCertificates Data Items

6.23.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP + Device ¹	No
SMETS1	No	Yes	No	DSP	No

Table 198 Update Security Credentials (CoS) Modes of Operation

¹ Variant only applicable to this Service Request, as explained in the narrative (see Table 194)

6.23.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	No ¹	No ¹	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 199 Update Security Credentials (CoS) Command Variant Values

¹ Please note Local Delivery is no longer available from the June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details.

6.23.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Public Security Credentials validation):

Validation Check	Process	Response Code
Is the MPxN in the Request identical to the one in the Smart Metering Inventory? ¹	Check that the MPxN included in the Request matches the Primary Import MPxN associated to the Device in the Smart Metering Inventory ²	E062301
Is the Supplier Prepayment Top Up Floor Seq Number applicable to the Request?	Check that the Supplier Prepayment Top Up Floor Seq Number is included if the Service Request is updating the Supplier Security Credentials on an ESME or GSME and is not included in any other circumstances.	E062302 ⁷
Are all the Certificate Types applicable to the Device type included in the Request?	<p>Check that if the Device Type is:</p> <ul style="list-style-type: none"> ESME. The Certificate Types included are: <ul style="list-style-type: none"> Digital Signing Key Agreement Key Agreement Top Up HCALCS³. The Certificate Types included are: <ul style="list-style-type: none"> Digital Signing GSME. The Certificate Types included are: <ul style="list-style-type: none"> Digital Signing Key Agreement Key Agreement Top Up GPF. The Certificate Types included are: <ul style="list-style-type: none"> Digital Signing Key Agreement <p>In all cases, check that the Certificate Type is the correct usage for the Replacement Certificate data item for which it has been provided.</p>	E062303 ⁷
Do all the Certificates included in the Request Body correspond to the Service User submitting the Request?	Check that all the Certificates included in the Request Body correspond to the Service User submitting the Request and that they have the Supplier role	E062304 ⁷
Does the Device hold a CoS Certificate belonging to an active CoS Party? ³	Check that the Device in question has a CoS Certificate in its CoS Party Trust Anchor Cell belonging to a CoS Party (either TCoS or ECoS) that has not been removed from service	E062305 ^{4, 6}
Does the MPID included within the Certificate that is used to sign the Service Request correspond to the Registered Supplier?	Check that the Service User is the Registered Supplier for the Device by carrying out an additional check using the Market Participant Identifier that is included within the certificate that is used to sign the CoS Service Request.	E062306 ^{1,5, 6}

Table 200 Update Security Credentials (CoS) Service Request Validation

¹ This validation check doesn't replace the Authorisation Check associated to E4, which is also applied to this Service Request

² For Device Types HCALCS and GPF the Device / Primary Import MPxN association check is done via the HAN Device Log

³ N/A to SMETS1

⁴ Since response code E062305 is not supported prior to DUIS 5.1, E19 will be returned for Service Requests rejected due to this check when submitted using a DUIS version earlier than 5.1.

⁵ Since response code E062306 is not supported prior to DUIS 5.1, E4 will be returned for Service Requests rejected due to this check when submitted using a DUIS version earlier than 5.1.

⁶Please note these changes are only created by the DCC Systems alongside the Implementation of the new ECoS functionality, which is not part of the June 2022 Release (expected as part of June 2023 Release). Please see DUGIDS main document Appendix 16 for further details.

⁷ Please note additional security validation applies from the June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details.

Note that for this Service Request and as an exception, the Authorisation Check associated to E5 allows the Device Status to be 'Suspended'

6.23.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateSecurityCredentialsCoS>
  <SupplierFloorSeqNumber>1234567</SupplierFloorSeqNumber>
  <SupplierPrepaymentTopUpFloorSeqNumber>500</SupplierPrepaymentTopUpFloorSeqNumber>
  <SupplierReplacementCertificates>
    <DigitalSigningCertificate>ZGVmYXVsdA==</DigitalSigningCertificate>
    <KeyAgreementCertificate>ZGVmYXVsdA==</KeyAgreementCertificate>
    <KeyAgreementTopUpCertificate>ZGVmYXVsdA==</KeyAgreementTopUpCertificate>
  </SupplierReplacementCertificates>
  <CertificationPathCertificates>
    <Certificate>ZGVmYXVsdA==</Certificate>
  </CertificationPathCertificates>
  <ApplyTimeBasedCPVChecks>true</ApplyTimeBasedCPVChecks>
  <ImportMPxN>1234567890123</ImportMPxN>
</UpdateSecurityCredentialsCoS>
```

Figure 120 Update Security Credentials (CoS) Service Request (Body) Format

This example illustrates the case of the Supplier Security Credentials being updated on an ESME

6.23.2 Responses

The response messages for a "Update Security Credentials (CoS)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.23.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E062301	Failed Validation – Invalid MPxN	Error	The MPxN included in the Request doesn't match the Primary Import MPxN associated to the Device in the Smart Metering Inventory
E062302 ⁴	Failed Validation – Invalid Supplier Prepayment Top Up Floor Seq Number	Error	The Supplier Prepayment Top Up Floor Seq Number data item is not applicable to the Device Type or has not been included where it is applicable to the Device Type
E062303 ⁴	Failed Validation – Device Type / Certificate Type mismatch	Error	The Certificate Type is not applicable to the Device Type or not all Certificate Type applicable to the Device Type have been included in the Request or a certificate with an incorrect key usage has been provided for a Certificate Type
E062304 ⁴	Failed Validation – Service User / Certificate mismatch	Error	At least one of the Certificates included in the Request Body doesn't correspond to the Service User submitting the Request or does not have Supplier role
E062305 ^{2, 5}	Failed Validation – CoS Party / Certificate mismatch ¹	Error	The target Device holds a CoS Certificate in the CoS Party Trust Anchor Cell for which the associated CoS Party has been decommissioned
E062306 ^{3, 5}	Failed Validation – Incorrect MPID	Error	The MPID included within the Certificate that is used to sign the Service Request does not correspond to the Registered Supplier.

Table 201 Failed Update Security Credentials (CoS) Service Request Response Codes

¹ N/A to SMETS1.

² Since response code E062305 is not supported prior to DUIS 5.1, E19 will be returned for Service Requests rejected due to this check when submitted via a DUIS version earlier than 5.1.

³ Since response code E062306 is not supported prior to DUIS 5.1, E4 will be returned for Service Requests rejected due to this check when submitted via a DUIS version earlier than 5.1.

⁴ Please note additional security validation applies from the June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details

⁵ Please note these changes are only created by the DCC Systems alongside the Implementation of the new ECoS functionality, which is not part of the June 2022 Release (expected as part of June 2023 Release). Please see DUGIDS main document Appendix 16 for further details.

6.23.2.2 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request's Command contains a fixed number of instructions ('n' = 1) and activation date-time instructions ('m' = 1). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing 'n' results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing 'n' results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage
 - i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the type described in Annex section 15.4.4.3.3

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases the Response message type is a single SMETS1 Response.

6.23.2.3 Parse Output / SMETS1 Response Format

6.23.2.3.1 Format - UpdateSecurityCredentialsCoSRsp

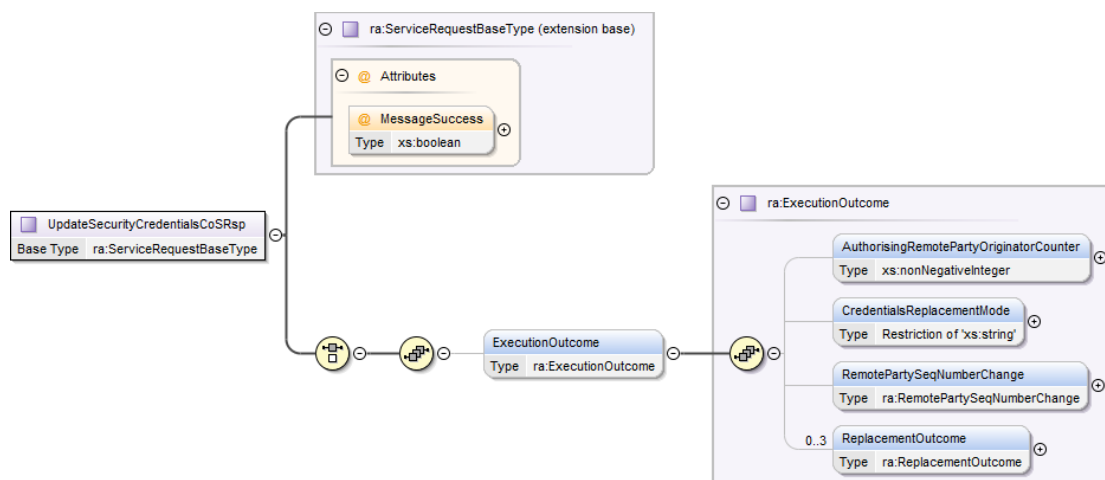


Figure 121 - Update Security Credentials (CoS) Parse Response / SMETS1 Response Structure

For detailed structure of RemotePartySeqNumberChange and ReplacementOutcome refer to section 6.15.1.2.2.

6.23.2.3.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0107	0107

Data Item	Electricity Response	Gas Response
<i>GBCS Use Case Number (for information only - not in header)</i>	CS02b	CS02b
<i>GBCS Use Case Name (for information only - not in header)</i>	Update Security Credentials	Update Security Credentials
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 202 – Update Security Credentials (CoS) Parse/ SMETS1 Response Header Data Items

6.23.2.3.3 Specific Body Data Items

Responses to on demand execution requests will carry the data in the table below.

Parse Response: See section 6.23.2.2 for description of the responses to future dated execution requests. An immediate response to a request for future dated execution will be returned as a status-only response. Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuthorisingRemotePartyOriginatorCounter	Originating counter passed in the request, allows alerts to be matched to the request	xs:nonNegativeInteger	None	N/A	Non-Sensitive
CredentialsReplacementMode	Define the valid combinations as to which Remote Party Roles can replace which kinds of credentials. Valid Set: <ul style="list-style-type: none"> SupplierByTransCoS 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
RemotePartySeqNumberChange	The resulting changes to any replay counters held on the Device	ra:RemotePartySeqNumberChange – see section 6.15.1.2.3.5 for details	None	N/A	Non-Sensitive
ReplacementOutcome	For each replacement in the request, detail the outcome and impacted parties	ra:ReplacementOutcome – see section 6.15.1.2.3.6 for details	None	N/A	Non-Sensitive

6.23.2.3.4 Sample Response

```
<ra:UpdateSecurityCredentialsCoSRsp MessageSuccess="true">
  <ra:ExecutionOutcome>
    <ra:AuthorisingRemotePartyOriginatorCounter>123</ra:AuthorisingRemotePartyOriginatorCounter>
    <ra:CredentialsReplacementMode>SupplierByTransCoS</ra:CredentialsReplacementMode>
    <ra:RemotePartySeqNumberChange>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:RemotePartyFloorSeqNumber>1234</ra:RemotePartyFloorSeqNumber>
    </ra:RemotePartySeqNumberChange>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>KeyAgreement</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>DigitalSigning</ra:CertificateType>
      <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>10-00-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
  </ra:ExecutionOutcome>
</ra:UpdateSecurityCredentialsCoSRsp>
```

Figure 122 - Update Security Credentials (CoS) Parse Response Sample

6.24 Retrieve Device Security Credentials (6.24)

SMETS2 or later

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 6.24 Service Request has been broken into two parts: 6.24.1 (KRP Credentials) and 6.24.2 (Device Credentials)

SMETS1

This Service Request maps to Service Reference Variant 6.24.1 (KRP Credentials)

6.24.1 Retrieve Device Security Credentials (KRP) (6.24.1)

Service Request Name	RetrieveDeviceSecurityCredentials
Service Reference	6.24
Service Request Variant Name	RetrieveDeviceSecurityCredentials(KRP)
Service Reference Variant	6.24.1
Service Request Objective	<p>To enable a DCC Service User to retrieve Remote Party Security Credentials from a specified Device.</p> <p>SMETS1: The security credentials shall be retrieved from the Device's S1SP rather than the Device itself.</p>

Business Context Statement	This is a last resort request which can be used if and when a DCC Service User does not know which Security Credentials are currently held on a specified Device for the Remote Parties known to the Device. The response will return the Remote Parties Security Credentials (Hash Certificates) currently held on the Device.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Electricity Network Operator (ENO) Gas Network Operator (GNO) 	
Security Classification	<p>Non-critical and non-sensitive:</p> <p>SMETS2 or later: GBCS XREF: SME.C.NC (The GBCS Command to the Device is a Variant Message which is not Critical. This Command can either be protected by an Access Control Broker MAC or digitally signed by the KRP, but not both. The DCC Data Systems only supports adding the DSP ACB MAC to the Command, so the Service Request interaction between the DCC Service Users and the DCC is Non-Critical and follows the URP processing pattern in all cases)</p>	
Service Request Narrative (SMETS2 or later)	This Service Request allows the DCC Service User to read the Public Security Credentials (Hash of the Certificates) for all KRPs on Devices for which they themselves are KRPs.	
GBCS Cross Reference	Electricity other than ESME	Gas
GBCS Message Code	0x0008	0x0008
GBCS Use Case	CS02a	CS02a
GBCS Use Case Name	Provide Security Credentials Details	Provide Security Credentials Details
SMETS1 Applicability	Yes	Yes
	Electricity ESME	N/A
GBCS Message Code prior to v4.0	0x0008	N/A
GBCS Use Case prior to v4.0	CS02a	N/A
GBCS Use Case Name prior to v4.0	Provide Security Credentials Details	N/A
GBCS v4.0 Message Code	0x011B	N/A
GBCS v4.0 Use Case	CS02f	N/A

GBCS v4.0 Use Case Name	Provide Security Credentials Details	N/A
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none">For SMETS1 Devices, references to storage of Certificates and Execution Counters on the Device shall be interpreted as meaning storage of Execution Counters and Security Credentials in DCC Data Systems corresponding to the Device, as defined in the SMETS1 Supporting Requirements Document.For protection against Replay the S1SP shall use the Execution Counter corresponding to Service Request 6.15.1 as the floor counter for this Service Request 6.24.1.Remote Party Role LoadController is not applicable to SMETS1 Devices	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device’s firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
Device Type	ESME	
DUIS 1 to DUIS v3.1: DEFAULT - No specific XML criteria	CS02a	CS02f
DUIS 4.0 or later: XML Criteria - no XML data item RemotePartyRole specifying LoadController	CS02a	CS02f
DUIS 4.0 or later: XML Criteria - XML data item RemotePartyRoles specifying LoadController	Response Code – E062402	CS02f
Device Type	Other Device Types	
DUIS 1 to DUIS v3.1: DEFAULT - No specific XML criteria	CS02a	CS02a
DUIS 4.0 or later: XML Criteria - no XML data item RemotePartyRole specifying LoadController	CS02a	CS02a
DUIS 4.0 or later: XML Criteria - XML data item RemotePartyRoles specifying LoadController	Response Code – E062403	Response Code – E062403

Table 203 Retrieve Device Security Credentials (KRP) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.24.1.1 Service Request

6.24.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RetrieveDeviceSecurityCredentialsKRP XML element defines this Service Request and contains the KRP Party Role(s) for which the Public Security Credentials are to be retrieved from the Device.

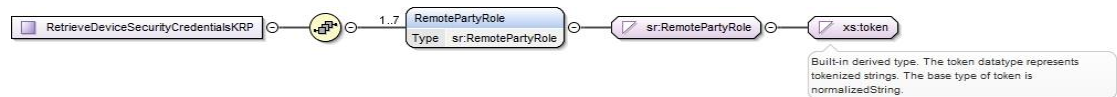


Figure 123 Retrieve Device Security Credentials (KRP) Service Request Structure

6.24.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RemotePartyRole	Remote Party Role for which the Public Security Credentials are required Valid Set: <ul style="list-style-type: none"> ACB² NetworkOperator Recovery² Root² Supplier TransCoS² LoadController^{2, 3} 	Restriction base xs:token (Enumeration)	Yes ¹	None	N/A	Non-Sensitive

Table 204 Retrieve Device Security Credentials (KRP) Service Request Data Items

¹ Minimum of 1 and maximum of 7 for non-SMETS1 Devices (maximum of 2 for SMETS1 Devices)

² Not applicable to SMETS1 Devices

³ Not applicable to Devices with GBCS version prior to v4.0

6.24.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 205 Retrieve Device Security Credentials (KRP) Modes of Operation

6.24.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 206 Retrieve Device Security Credentials (KRP) Command Variant Values

6.24.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the Service Request valid?	Check that: <ul style="list-style-type: none"> If the Business Target ID Device Type is HCALCS the DCC Service User Role is EIS If the Business Target ID Device Type is GSME the DCC Service User Role is GIS 	E062401
Is the GBCS version of the target Device appropriate for all of the requested Remote Party Roles?	If the Device is of Device Type ESME and the requested Remote Party Roles include Load Controller then check that the GBCS version of the Device is v4.0 or later	E062402
Is the Device Type of the target Device appropriate for the Load Controller Remote Party Role?	If the Device is of any Device Type other than ESME then check that the requested Remote Party Roles do not include Load Controller	E062403

Table 207 Retrieve Device Security Credentials (KRP) Service Request Validation

6.24.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveDeviceSecurityCredentialsKRP>
  <RemotePartyRole>Supplier</RemotePartyRole>
</RetrieveDeviceSecurityCredentialsKRP>
```

Figure 124 Retrieve Device Security Credentials (KRP) Service Request (Body) Format

6.24.1.2 Responses

The response messages for a "Retrieve Device Security Credentials (KRP)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output/ SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.24.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E062401	Failed Validation – Device Type / User Role mismatch	Error	The User Role is not a KRP of the Device
E062402	Failed Validation – Remote Party Role / GBCS version mismatch	Error	Mismatch between Remote Party Role and the GBCS version of the target Device.
E062403	Failed Validation – Load Controller Remote Party Role / Device Type mismatch	Error	Mismatch between Load Controller Remote Party Role and the Device Type of the target Device.

Table 208 Failed Retrieve Device Security Credentials (KRP) Service Request Response Codes

6.24.1.2.2 Parse Output/ SMETS1 Response Format

6.24.1.2.2.1 Format - RetrieveDeviceSecurityCredentialsKRPRsp

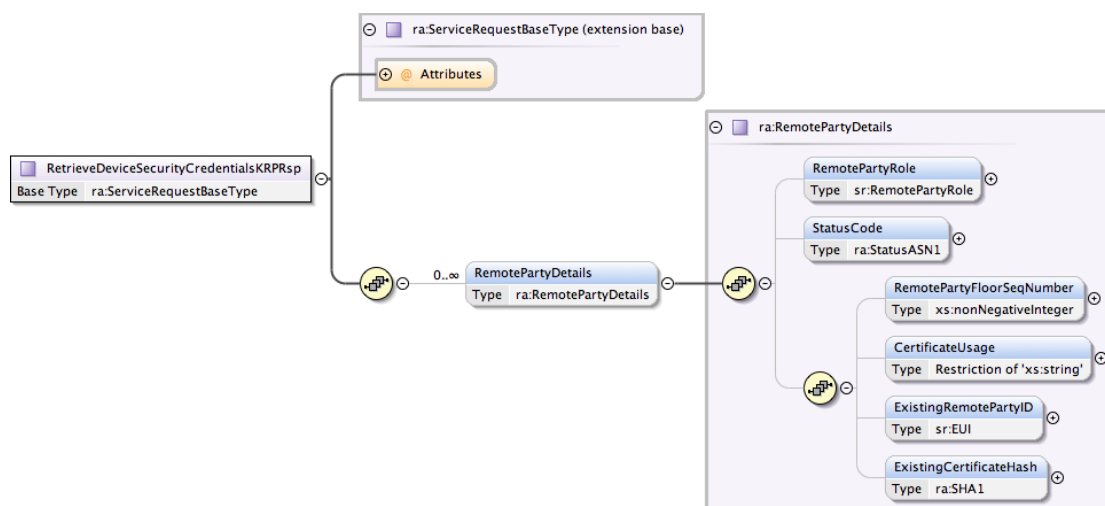


Figure 125 - Retrieve Device Security Credentials (KRP) Response Structure

6.24.1.2.2.1.1 Specific Header Data Items

GBCS prior to v4.0 and SMETS1:

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0008	0008
GBCS Use Case Number (for information only - not in header)	CS02a	CS02a
GBCS Use Case Name (for information only - not in header)	Provide Security Credentials Details	Provide Security Credentials Details

Data Item	Electricity Response	Gas Response
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 209 – Retrieve Device Security Credentials (KRP) Parse Response/ SMETS1 Header Data Items - GBCS prior to v4.0

GBCS v4.0 or later:

Data Item	Electricity Response		Gas Response
Device Type	ESME	Other	
GBCSHexadecimalMessageCode	011B	0008	0008
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS02f</i>	<i>CS02a</i>	<i>CS02a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Provide Security Credentials Details</i>	<i>Provide Security Credentials Details</i>	<i>Provide Security Credentials Details</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 209.1 – Retrieve Device Security Credentials (KRP) Parse Response Header Data Items – GBCS v4.0 or later

6.24.1.2.2.2 Specific Data Items

There will be a RemotePartyDetails structure for each returned credentials.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RemotePartyRole	Remote Party Role for which Credentials are on the Device Valid Set: <ul style="list-style-type: none"> ACB¹ NetworkOperator Recovery¹ Root¹ Supplier TransCoS¹ LoadController^{1, 2} 	Restriction base xs:token (Enumeration)	None	N/A	Non-Sensitive
StatusCode	Outcome of the request for each Certificate. Valid Set: <ul style="list-style-type: none"> success trustAnchorNotFound Other¹ 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
RemotePartyFloorSeqNumber	The counter value held by the device corresponding to the Update Security Credentials GBCS command for the role. Note that the counter is not related to individual certificates, and is the single value "currentSeqNumber" in the GBCS response. Although it occurs once per certificate in the MMC structure, it will be the same in each case. SMETS1: The counter value held by the DCC corresponding to the Update Security Credentials Service Request for the role. Note that the counter is not related to individual certificates. Although it occurs once per certificate in the MMC structure, it will be the same in each case.	xs:nonNegativeInteger	None	N/A	Non-Sensitive
CertificateUsage	To what use can the public key be put. Valid Set: <ul style="list-style-type: none"> DigitalSigning KeyAgreement KeyAgreementTopUp¹ KeyCertSign¹ 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
ExistingRemotePartyId	Identifies the existing subject unique identifier equating to Entity Identifier (64 bit value)	ra:EUI	None	N/A	Non-Sensitive
ExistingCertificateHash	Identifies the existing subject key identifier, a SHA-1 hash, i.e. of the certificate	xs:base64binary	None	N/A	Non-Sensitive

Table 209.2 – Retrieve Device Security Credentials (KRP) Parse Response Data Items

¹ Not applicable to SMETS1 Devices

² Not applicable to Devices with GBCS version prior to v4.0

6.24.1.2.2.3 Sample Response

```
<ra:RetrieveDeviceSecurityCredentialsKRPRsp MessageSuccess="false">
  <ra:RemotePartyDetails>
    <ra:RemotePartyRole>NetworkOperator</ra:RemotePartyRole>
    <ra:StatusCode ResponseCode="3">
      <ra:ASN1Status>noTrustAnchor</ra:ASN1Status>
    </ra:StatusCode>
  </ra:RemotePartyDetails>
  <ra:RemotePartyDetails>
    <ra:RemotePartyRole>ACB</ra:RemotePartyRole>
    <ra:StatusCode ResponseCode="0">
      <ra:ASN1Status>success</ra:ASN1Status>
    </ra:StatusCode>
    <ra:RemotePartyFloorSeqNumber>123</ra:RemotePartyFloorSeqNumber>
    <ra:CertificateUsage>DigitalSigning</ra:CertificateUsage>
    <ra:ExistingRemotePartyID>10-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
    <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
  </ra:RemotePartyDetails>
</ra:RetrieveDeviceSecurityCredentialsKRPRsp>
```

Figure 126 - Retrieve Device Security Credentials (KRP) Response Sample

6.24.2 Retrieve Device Security Credentials (Device) (6.24.2)

Service Request Name	RetrieveDeviceSecurityCredentials	
Service Reference	6.24	
Service Request Variant Name	RetrieveDeviceSecurityCredentials(Device)	
Service Reference Variant	6.24.2	
Service Request Objective	To enable a DCC Service User to retrieve the Device's public security credentials.	
Business Context Statement	A DCC Service User needs to retrieve the public security credentials for a Device to enable validation of the device's MAC, Signature or decryption of encrypted data fields in the Device responses.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C	
Service Request Narrative	Upon receipt of a successful Response from the Device, the DCC shall check the contents of the Response against the Device Certificate details held in the SMI. If the Response indicates that different Device Certificates are in use on the device then the DCC shall update the details held in the SMI and shall initiate an update to the 'in-use' flag in the Public Key Repository (this latter action is a post-processing step after the Service Response has been sent to the User).	
GBCS Cross Reference	Electricity	Gas

GBCS Message Code	0x000C	0x000C
GBCS Use Case	CS02e	CS02e
GBCS Use Case Name	Provide Device Certificates from Device	Provide Device Certificates from Device
SMETS1 Applicability	No	No

Table 210 Retrieve Device Security Credentials (Device) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.24.2.1 Service Request

6.24.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RetrieveDeviceSecurityCredentialsDevice XML element defines this Service Request and contains the Device Public Security Credential Type to be retrieved from the Device.

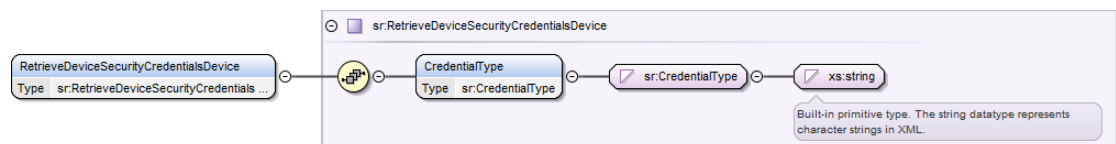


Figure 127 Retrieve Device Security Credentials (Device) Service Request Structure

6.24.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CredentialType	Type of credential to be retrieved Valid Set: <ul style="list-style-type: none"> Digital Signature Key Agreement 	sr:CredentialType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive

Table 211 Retrieve Device Security Credentials (Device) Service Request Data Items

6.24.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 212 Retrieve Device Security Credentials (Device) Modes of Operation

6.24.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 213 Retrieve Device Security Credentials (Device) Command Variant Values

6.24.2.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.24.2.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RetrieveDeviceSecurityCredentialsDevice>  
  <CredentialType>Digital Signature</CredentialType>  
</RetrieveDeviceSecurityCredentialsDevice>
```

Figure 128 Retrieve Device Security Credentials (Device) Transform Service Request (Body) Format

6.24.2.2 Responses

The response messages for a "Retrieve Device Security Credentials (Device)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.24.2.2.1 Parse Output Format

6.24.2.2.1.1 Format - RetrieveDeviceSecurityCredentialsDeviceRsp

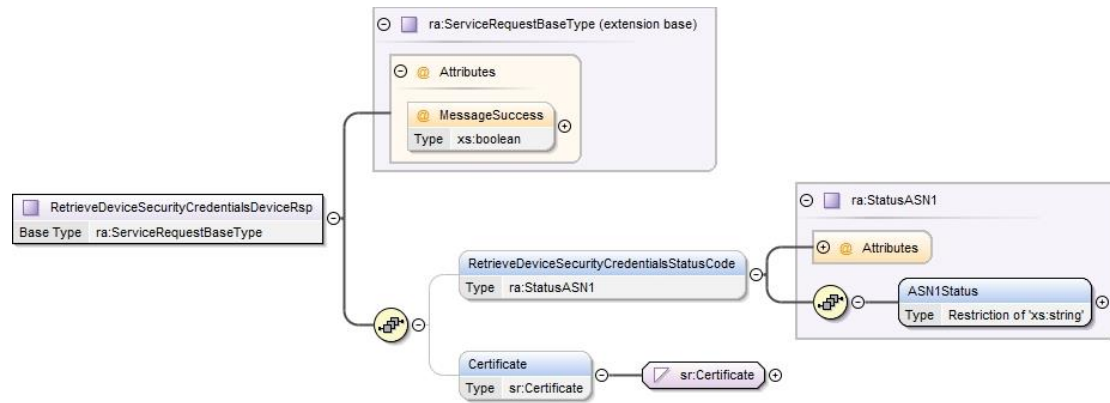


Figure 129 - Retrieve Device Security Credentials (Device) Response Structure

6.24.2.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	000C	000C
GBCS Use Case Number (for information only - not in header)	CS02e	CS02e
GBCS Use Case Name (for information only - not in header)	Provide Device Certificates from Device	Provide Device Certificates from Device
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 214 – Retrieve Device Security Credentials (Device) Parse Response Header Data Items

6.24.2.2.1.3 Specific Data Items

Either RetrieveDeviceSecurityCredentialsStatusCode or Certificate will be populated, but never both in the Response.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RetrieveDeviceSecurityCredentialsStatusCode	When the request is unsuccessful, details the failure Valid Set: <ul style="list-style-type: none"> invalidKeyUsage noCertificateHeld certificateRetrievalFailure 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
Certificate	The certificate requested from the Device, if successful	ra:Certificate (xs:base64Binary)	None	N/A	Non-Sensitive

6.24.2.2.1.4 Response Sample

```
<ra:ResponseMessage>
  <ra:SMETSData>
    <ra:RetrieveDeviceSecurityCredentialsDeviceRsp MessageSuccess="true">
      <ra:RetrieveDeviceSecurityCredentialsStatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:RetrieveDeviceSecurityCredentialsStatusCode>
      <ra:Certificate>ZGVmYXVsdA==</ra:Certificate>
    </ra:RetrieveDeviceSecurityCredentialsDeviceRsp>
  </ra:SMETSData>
</ra:ResponseMessage>
```

Figure 130 - Retrieve Device Security Credentials (Device) Response Sample

6.25 Set Electricity Supply Tamper State (6.25)

Service Request Name	SetElectricitySupplyTamperState	
Service Reference	6.25	
Service Request Variant Name	SetElectricitySupplyTamperState	
Service Reference Variant	6.25	
Service Request Objective	To enable a DCC Service User to configure the <i>Supply Tamper State</i> , as defined in SMETS, on the ESME	
Business Context Statement	The Supply Tamper State is a setting on the ESME to control the state of the Supply in the case of Unauthorised Physical Access being detected, being Locked or unchanged.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive: SMETS2 or later: GBCS XREF: SME.C.C	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request is only for the ESME as the Supply Tamper State is set for the GSME by Service Request 6.7 – Update Gas Configuration (Gas Flow) which is available only to the Gas Import Supplier (GIS). See section 6.7. The Set Electricity Supply Tamper State values can be read by a DCC Service User using Service Request - 6.2.4 Read Device Configuration (Identity Exc MPxN). See section 6.2.4. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0068	N/A
GBCS Use Case	ECS81	N/A
GBCS Use Case Name	Set Supply Tamper State on ESME	N/A
SMETS1 Applicability	Yes	N/A

**Service Request Narrative
(SMETS1)**

The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.

Table 215 Set Electricity Supply Tamper State Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.25.1 Service Request

6.25.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its SetElectricitySupplyTamperState XML element defines this Service Request and contains the supply status in case of a tamper event.

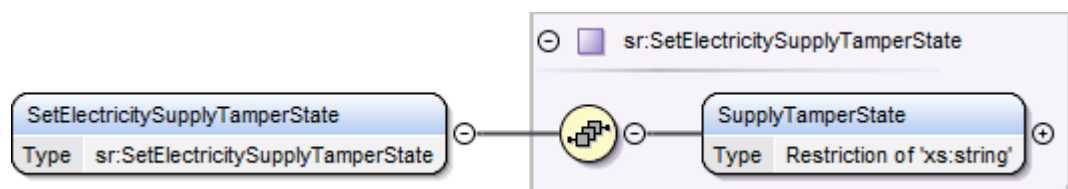


Figure 131 Set Electricity Supply Tamper State Service Request Structure

6.25.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SupplyTamperState	Status to set the Supply in case of a tamper event. Valid Set: <ul style="list-style-type: none"> Locked Unchanged 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 216 Set Electricity Supply Tamper State Service Request Data Items

6.25.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 217 Set Electricity Supply Tamper State Modes of Operation

6.25.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 218 Set Electricity Supply Tamper State Command Variant Values

6.25.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.25.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request.

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SetElectricitySupplyTamperState>
  <SupplyTamperState>Locked</SupplyTamperState>
</SetElectricitySupplyTamperState >
```

Figure 132 Set Electricity Supply Tamper State Transform Service Request (Body) Format

6.25.2 Responses

The response messages for a “Set Electricity Supply Tamper State” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output/SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.25.2.1 Parse Output/SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is SetElectricitySupplyTamperStateRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.25.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0068
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS81</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Supply Tamper State on ESME</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 219 – Set Electricity Supply Tamper State Parse Response Header Data Items

6.26 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) (6.26)

Service Request Name	UpdateDeviceConfiguration(daily resetting of Tariff Block Counter Matrix)
Service Reference	6.26
Service Request Variant Name	UpdateDeviceConfiguration(daily resetting of Tariff Block Counter Matrix)
Service Reference Variant	6.26
Service Request Objective	To enable a DCC Service User to turn daily resetting of the ESME Tariff Block Counter Matrix on or off
Business Context Statement	The DCC Service User requires the ability to reset the Tariff Block Counter Matrix daily, independently of billing calendar
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)
Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C

Service Request Narrative	1. This Service Request is only applicable to ESME Firmware certified to GBCS v2.0 or later and it provides functionality (not previously available) to reset block counters daily on an ESME independently of the Billing Calendar.	
	2. The DCC Service User must track the setting of the Daily Tariff Block Counter Matrix Reset that they have configured for use of their Devices as they cannot be read back by the DCC Service Users at a later date via a Service Request. This information is ONLY stored on the specified target Device. If the DCC Service User is unsure of the current Daily Tariff Block Counter Matrix Reset setting on the Device then they should use this Service Request to configure it again to the required value	
	3. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0	
GBCS Cross Reference	Electricity	Gas
GBCS v1.0	N/A – feature not supported by Device	N/A
GBCS v2.0 Message Code	0x00DB	N/A
GBCS v2.0 Use Case	ECS48	N/A
GBCS v2.0 Use Case Name	Configure daily resetting of Tariff Block Counter Matrix	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	ECS48
SMETS1 Applicability	No	No

Table 220 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.26.1 Service Request

6.26.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationDailyResettingOfBlockCounterMatrix XML element defines this Service Request and contains a boolean to indicate if the Block Counters have to be reset daily or not.

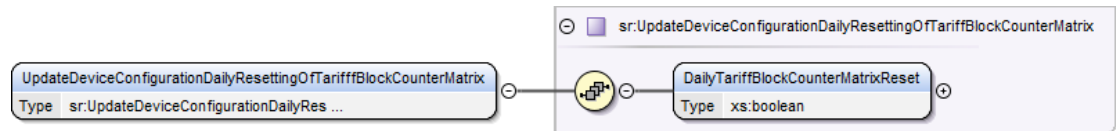


Figure 133 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) Service Request Structure

6.26.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DailyTariffBlockCounterMatrixReset	<p>Specifies whether daily resetting of the ESME Tariff Block Counter Matrix is on or off.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> true. <ul style="list-style-type: none"> daily resetting of the ESME Tariff Block Counter Matrix is ON false. <ul style="list-style-type: none"> daily resetting of the ESME Tariff Block Counter Matrix is OFF 	xs:boolean	Yes	None	N/A	Non-Sensitive

Table 221 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) Service Request Data Items

6.26.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 222 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) Modes of Operation

6.26.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 223 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) Command Variant Values

6.26.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

6.26.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationDailyResettingOfTariffBlockCounterMatrix>
  <DailyTariffBlockCounterMatrixReset>true</DailyTariffBlockCounterMatrixReset>
</UpdateDeviceConfigurationDailyResettingOfTariffBlockCounterMatrix>
```

Figure 134 Update Device Configuration (daily resetting of Tariff Block Counter Matrix) Transform Service Request (Body) Format

6.26.2 Responses

The response messages for an "Update Device Configuration (daily resetting of Tariff Block Counter Matrix)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.26.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationDailyResettingOfTariffBlockCounterMatrixRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.26.1.1.1 Specific Header Data Items

GBCS v2.0:

Data Item	Electricity Response
GBCSHexadecimalMessageCode	00DB
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS48</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Configure daily resetting of Tariff Block Counter Matrix</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 224 – Update Device Configuration (daily resetting of Tariff Block Counter Matrix)
Parse Response Header Data Items – GBCS v2.0

6.27 Update Device Configuration (RMS Voltage Counter Reset) (6.27)

Service Request Name	UpdateDeviceConfiguration(RMSVoltageCounterReset)
Service Reference	6.27
Service Request Variant Name	UpdateDeviceConfiguration(RMSVoltageCounterReset)
Service Reference Variant	6.27
Service Request Objective	To enable an authorised DCC Service User to reset the average RMS over and under voltage counters for a specified meter. The meter shall execute the commands and then confirm that the operation has completed or otherwise fail the request and return the reason for its failure.
Business Context Statement	The DCC Service User requires that the average RMS over and under voltage counters are reset to zero values.
User Role Access	<ul style="list-style-type: none"> Electricity Network Operator (ENO)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> For ESME Firmware certified to GBCS v2.0 or later this Service Request resets the Average RMS Over and Under Voltage Counters. For these Devices it is also possible to reset these Counters if the thresholds and periods are written at the same time via Service Request 6.5 Update Device Configuration (Voltage). See section 6.5. For ESME Firmware certified to GBCS v1.0 the Average RMS Over and Under Voltage Counters are reset every time the

	thresholds and periods are written at the same time via Service Request 6.5 Update Device Configuration (Voltage). See section 6.5.		
	3. The Device Configuration (Voltage) values can be read by a DCC Service User using Service Request – 6.2.1 – Read Device Configuration (Voltage). See section 6.2.1.		
	4. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0		
GBCS Cross Reference	Electricity (Single Phase)	Electricity (Poly Phase)	Gas
GBCS v1.0	N/A – feature not supported byDevice	N/A – feature not supported byDevice	N/A
GBCS v2.0 Message Code	0x00D3	0x00D4	N/A
GBCS v2.0 Use Case	ECS29e	ECS29f	N/A
GBCS v2.0 Use Case Name	Reset RMS Voltage Counters on ESME	Reset RMS Voltage Counters on polyphase ESME	N/A
GBCS Commands - Versioning Details			
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,			
Device Type	ESME (Single Phase)		
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0	
DUIS 1: Not supported	N/A	N/A	
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	ECS29e	
SMETS1 Applicability	No	Yes	
Device Type	ESME (Poly Phase)		
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0	
DUIS 1: Not supported	N/A	N/A	
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	ECS29f	

SMETS1 Applicability	No	No
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> SMETS1 behaviour is aligned only to GBCS v2.0 behaviour. GBCS v1.0 behaviour is not applicable to SMETS1 devices 	

Table 225 Update Device Configuration (RMS Voltage Counter Reset) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.27.1 Service Request

6.27.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateDeviceConfigurationRMSVoltageCounterReset XML element defines this Service Request and, for Future Dated Requests, it contains the Execution Date and Time.

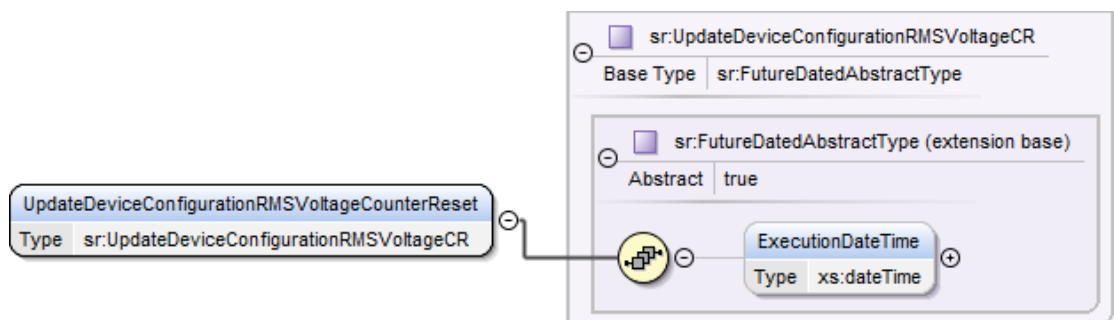


Figure 135 Update Device Configuration (RMS Voltage Counter Reset) Service Request Structure

6.27.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC User requires the command to be executed on the Device ID</p> <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 226 Update Device Configuration (RMS Voltage Counter Reset) Service Request Data Items

6.27.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 227 Update Device Configuration (RMS Voltage Counter Reset) Modes of Operation

6.27.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 228 Update Device Configuration (RMS Voltage Counter Reset) Command Variant Values

6.27.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

6.27.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateDeviceConfigurationRMSVoltageCounterReset/>
```

Figure 136 Update Device Configuration (RMS Voltage Counter Reset) Service Request (Body) Format

6.27.2 Responses

The response messages for an "Update Device Configuration (RMS Voltage Counter Reset)" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.27.2.1 Parse Output/SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateDeviceConfigurationVoltageCounterResetRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

6.27.2.1.1 Specific Header Data Items

GBCS v2.0 or SMETS1:

Data Item	Electricity Response (Single Phase)	Electricity Response (Poly Phase) (N/A to SMETS1)
GBCSHexadecimalMessageCode	00D3	00D4
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS29e</i>	<i>ECS29f</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Reset RMS Voltage Counters on ESME</i>	<i>Reset RMS Voltage Counters on polyphase ESME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 229 – Update Device Configuration (RMS Voltage Counter Reset) Parse Response Header Data Items – GBCS v2.0 or SMETS1

6.28 Set CHF Sub GHz Configuration (6.28)

Service Request Name	SetCHFSubGHzConfiguration
Service Reference	6.28
Service Request Variant Name	SetCHFSubGHzConfiguration
Service Reference Variant	6.28
Service Request Objective	To enable an authorised DCC Service User to set the Sub GHz configuration values on a dual band Communications Hub

Business Context Statement	The DCC Service User requires to configure the Sub GHz Configuration Settings [DBCH] as defined by CHTS and GBCS on a dual band Communications Hub. These are the settings used to control the Communications Hub operations in relation to Sub GHz Bands.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and non-sensitive:</p> <p>GBCS XREF: SME.C.NC</p>
Service Request Narrative	<ol style="list-style-type: none"> This Service Request configures the Sub GHz Configuration Settings to be used on the SMHAN for dual band Communications Hub. This configuration can be read via Service Request 6.30 Read CHF Sub GHz Configuration. See section 6.30. The definition of this Service Request includes all the channels potentially configurable in the Lower Band Sub GHz (863 to 876 MHz) and Upper Band Sub GHz (915 to 921 MHz) frequency ranges. <ol style="list-style-type: none"> The Upper Band Sub GHz channels can only be configured for CHs used in the North Region. For those used in the Central or South Region the UpperBandSubGHzChannels0To26 channel XML tag has to be included, but left empty. Please note the DCC Data Systems will not validate the content of this XML tag. GBCS v2.0 section 10.6.5 summarises the list of configurable channels that comply with UK telecommunications regulations. Currently: <ol style="list-style-type: none"> Channels 0 to 48 at 863 to 876 MHz; and Channels 0 to 12 at 915 to 921 MHz Validation check E062801 will ensure this Service Request only includes channels compliant with UK telecommunications regulations. <ul style="list-style-type: none"> E.g - Response Code E062801 is generated by the DCC Data Systems if Channel49 to Channel61 inclusive are included within the <u>LowerBandSubGHzChannels35To61</u> data item. E.g - Response Code E062801 is generated by the DCC Data Systems if Channel13 to Channel26 inclusive are included within the <u>UpperBandSubGHzChannels0To26</u> data item Because the User Roles that can submit this Service Request are URPs to the Communications Hub Function, the DSP Access Control Broker submits the Command to the Device on their behalf and the CHF response and Device Alert are also returned to the DSP Access Control Broker.

	<div>7. If the Device completes the configuration successfully it returns a Command Response to the DSP Access Control Broker and it sends Device Alert 0x8F2A (Sub GHz Configuration Changed) to the DSP Access Control Broker. The DCC Data Systems then sends<ul style="list-style-type: none">a. the Command Response to the DCC Service User that submitted the Service Requestb. DCC Alert N54 (corresponding to Device Alert 0x8F2A Sub GHz Configuration Changed) to the Registered Import Suppliers for that HAN. See Annex section 16</div> <div>8. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0</div>	
GBCS Cross Reference	Communications Hub Function (Dual Band only)	
GBCS v1.0	N/A – feature not supported by Device	
GBCS v2.0 Message Code	0x010D	
GBCS v2.0 Use Case	DBCH04	
GBCS v2.0 Use Case Name	Set CHF Sub GHz Configuration	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	CHF (Dual Band or Unknown)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	DBCH04
SMETS1 Applicability	No	No
Device Type	CHF (Single Band)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	Response Code – E1011

SMETS1 Applicability	No	No
----------------------	----	----

Table 230 Set CHF Sub GHz Configuration Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.28.1 Service Request

6.28.1.1 Format

The Service Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its SetCHFSubGHzConfiguration XML element defines this Service Request and it contains the configuration data items.

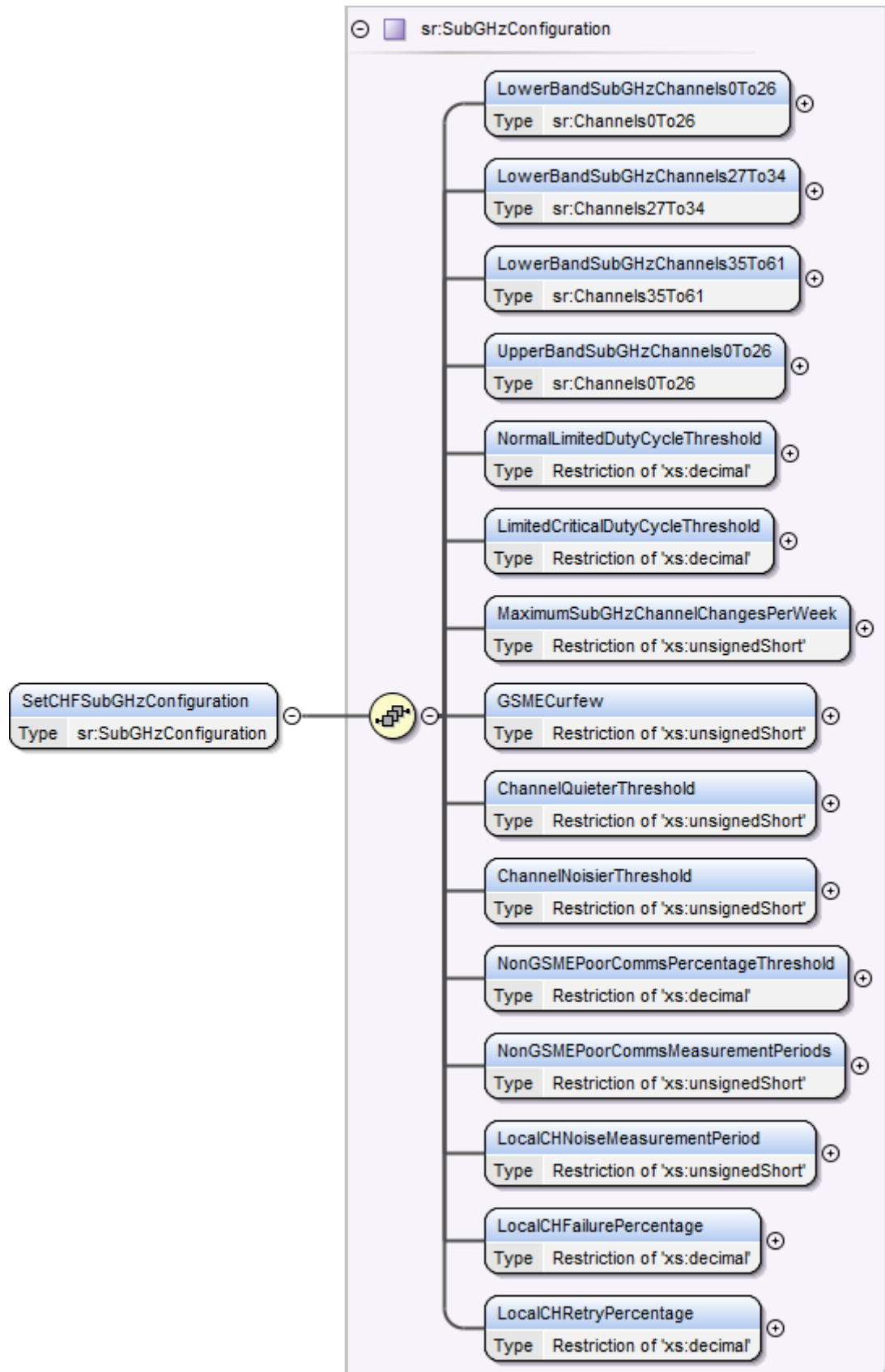


Figure 137 Set CHF Sub GHz Configuration Service Request Structure

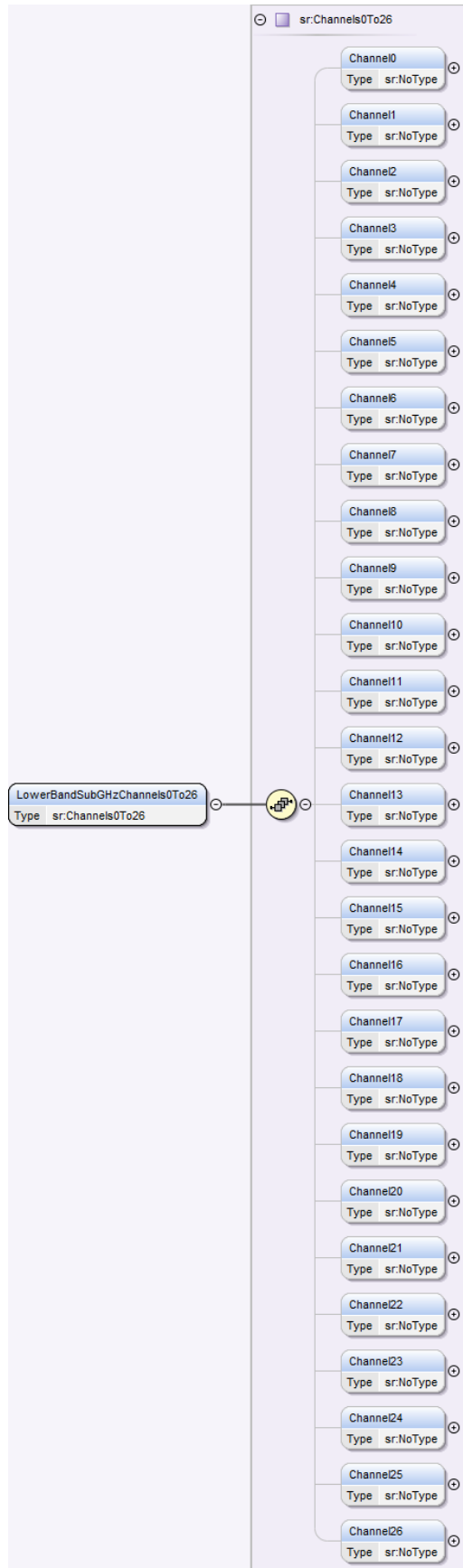


Figure 138 Set CHF Sub GHz Configuration Service Request –
LowerBandSubGHzChannels0To26 Structure

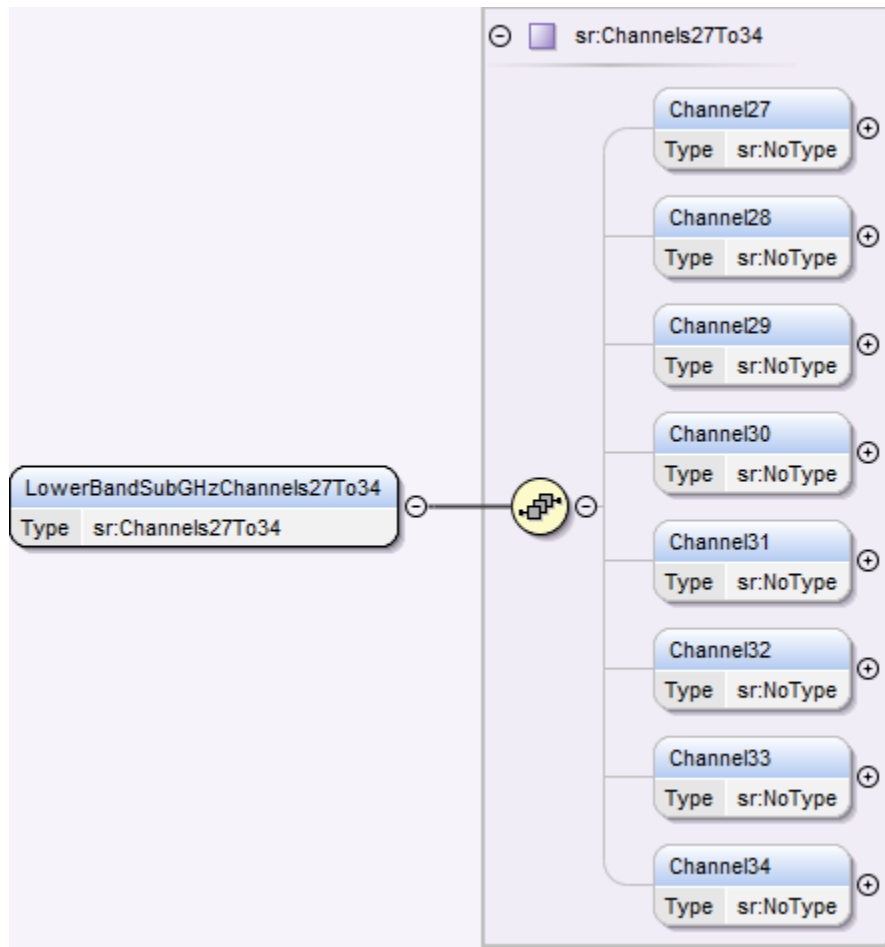


Figure 139 Set CHF Sub GHz Configuration Service Request –
LowerBandSubGHzChannels27To34 Structure

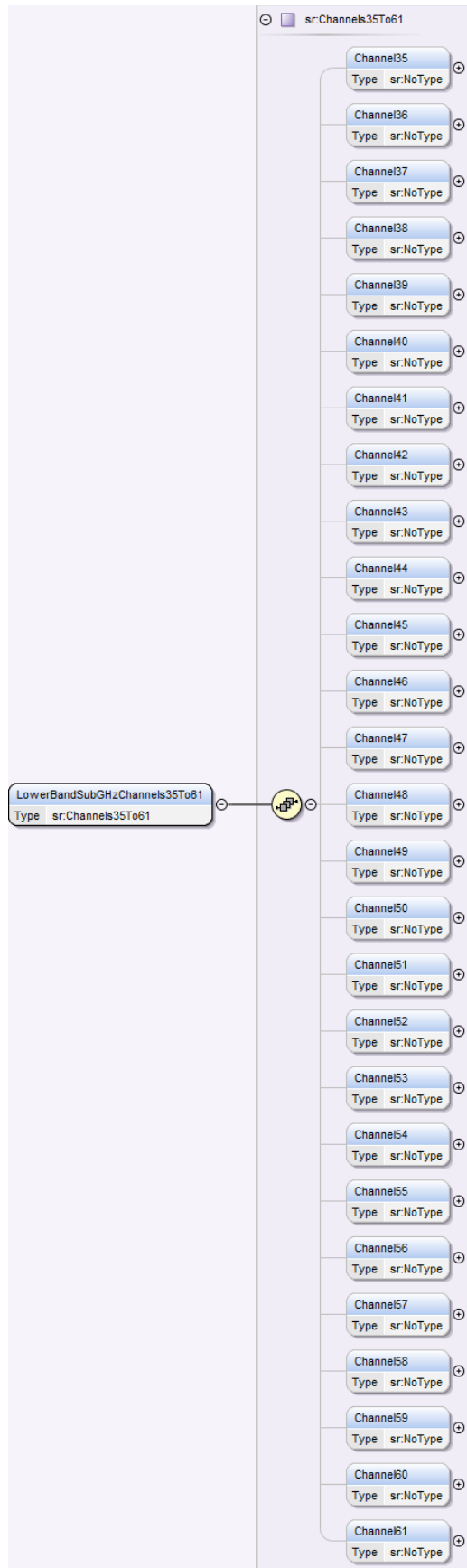


Figure 140 Set CHF Sub GHz Configuration Service Request –
LowerBandSubGHzChannels35To61 Structure

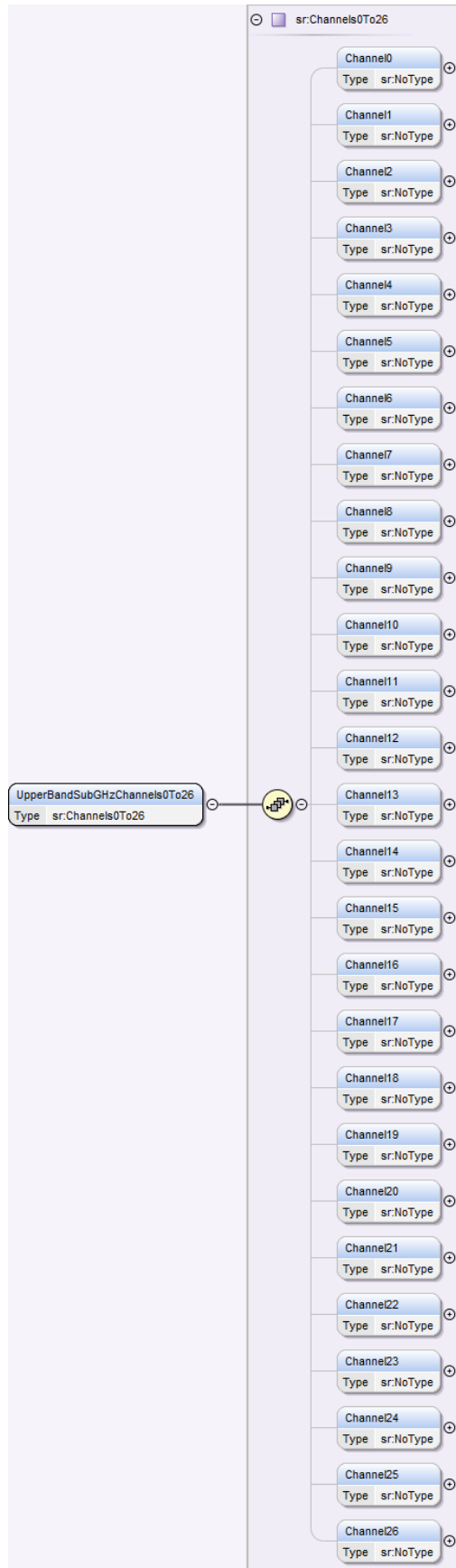


Figure 141 Set CHF Sub GHz Configuration Service Request –
UpperBandSubGHzChannels0To26 Structure

6.28.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
LowerBandSubGHz Channels0To26	<p>Sets the configuration of the Sub GHz Channel Masks for the data item "Page 28 Mask" as defined by GBCS (each page equates to a set of channels that could be used in a specific frequency range)</p> <p>Sets list of channels 0 to 26 in the Lower Band Sub GHz (863 to 876 MHz) frequency range. See Response Code E062801</p> <ul style="list-style-type: none"> By including a Channel number within the SR this shall mean 'channel can be used by the Communications Hub' By NOT including a Channel number within the SR this shall mean 'channel cannot be used by the CH' <p>At least 2 Channels must be set within this data item. See Response Code E062802</p>	<p>sr:Channels0To26 (Sequence of Channel0 sr:NoType to Channel26 sr:NoType, all optional, but a minimum of 2 Channels must be set)</p>	Yes	None	N/A	Non-Sensitive
LowerBandSubGHz Channels27To34	<p>Sets the configuration of the Sub GHz Channel Masks for the data item "Page 29 Mask" as defined by GBCS (each page equates to a set of channels that could be used in a specific frequency range)</p> <p>Sets list of channels 27 to 34 in the Lower Band Sub GHz (863 to 876 MHz) frequency range. See Response Code E062801</p> <ul style="list-style-type: none"> By including a Channel number within the SR this shall mean 'channel can be used by the Communications Hub' By NOT including a Channel number within the SR this shall mean 'channel cannot be used by the CH' <p>At least 2 Channels must be set within this data item. See Response Code E062802</p>	<p>sr:Channels27To34 (Sequence of Channel27 sr:NoType to Channel34 sr:NoType, all optional, but a minimum of 2 Channels must be set)</p>	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
LowerBandSubGHz Channels35To61	<p>Sets the configuration of the Sub GHz Channel Masks for the data item "Page 30 Mask" as defined by GBCS (each page equates to a set of channels that could be used in a specific frequency range)</p> <p>Sets list of channels 35 to 61 in the Lower Band Sub GHz (863 to 876 MHz) frequency range. See Response Code E062801</p> <ul style="list-style-type: none"> By including a Channel number within the SR this shall mean 'channel can be used by the Communications Hub' By NOT including a Channel number within the SR this shall mean 'channel cannot be used by the CH'. <p>At least 2 Channels must be set within this data item. See Response Code E062802</p>	sr:Channels35To61 (Sequence of Channel35 sr:NoType to Channel61 sr:NoType, all optional, but a minimum of 2 Channels must be set)	Yes	None	N/A	Non-Sensitive
UpperBandSubGHz Channels0To26	<p>Sets the configuration of the Sub GHz Channel Masks for the data item "Page 31 Mask" as defined by GBCS (each page equates to a set of channels that could be used in a specific frequency range)</p> <p>List of channels 0 to 26 in the Upper Band Sub GHz (915 to 921 MHz) frequency range. See Response Code E062801</p> <ul style="list-style-type: none"> By including a Channel number within the SR this shall mean 'channel can be used by the Communications Hub' By NOT including a Channel number within the SR this shall mean 'channel cannot be used by the CH'. <p>If the CH is used in the North Region at least 2 Channels must be set within this data item and if it is used in the Central or South Regions this data item must be empty, i.e. it can't include any Channels</p>	sr:Channels0To26 (Sequence of Channel0 sr:NoType to Channel26 sr:NoType, all optional)	Yes	None	N/A	Non-Sensitive
NormalLimitedDuty CycleThreshold	<p>As defined in GBCS section 10.6.2.3.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> Percentage value between 0.5 and 2.0 % 	Restriction of xs:decimal (fractionDigits = 1, minInclusive = 0,5, maxInclusive = 2.0)	Yes	None	%	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
LimitedCriticalDutyCycleThreshold	<p>As defined in GBCS section 10.6.2.3.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> Percentage value between 1.5 and 2.5 % and greater than NormalLimitedDutyCycleThresh hold <p>GBCS specifies this as a range excluding the boundary values (namely 1.5 and 2.5), although DUIS XML schema versions prior to v3.1 do not exclude them. Users on an earlier version of DUIS are advised not to set the threshold to exactly 1.5 or 2.5 since the service request would be rejected by the CHF with a security alert and there would be no response to this SRV 6.28.</p>	<p>Restriction of xs:decimal (fractionDigits = 1, minExclusive = 1.5, maxExclusive = 2.5)</p>	Yes	None	%	Non-Sensitive
MaximumSubGHzChannelChangesPerWeek	<p>The CHF shall not undertake more than this number of Channel Changes per week except where the one or more additional channel changes results from 'DBCH05 Request CHF Sub GHz Channel Scan' Command(s). See section 6.29</p> <p>Valid Set:</p> <ul style="list-style-type: none"> Value between 1 and 7 	<p>Restriction of xs:unsignedShort (minInclusive = 1, maxInclusive = 7)</p>	Yes	None	N/A	Non-Sensitive
GSMECurfew	<p>The numbers of hours without GSME communications before the CHF determines the GSME to be a 'Lost GSME'</p> <p>When the CHF identifies that there is a 'Lost GSME', it shall take actions as defined in GBCS section 10.6.2.6.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> Value > 1 	<p>Restriction of xs:unsignedShort (minExclusive = 1)</p>	Yes	None	Hours	Non-Sensitive
ChannelQuieterThreshold	<p>Shall be the minimum number of decibels by which an alternative channel needs to be quieter, in the conditions defined in GBCS section 10.6.2.8.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> Value between 1 and 255 	<p>Restriction of xs:unsignedShort (minInclusive = 1, maxInclusive = 255)</p>	Yes	None	dB	Non-Sensitive
ChannelNoisierThreshold	<p>Shall be the maximum number of decibels by which an alternative channel may be noisier, in the conditions defined in GBCS section 10.6.2.8.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> Value between 0 and 20 	<p>Restriction of xs:unsignedShort (minInclusive = 0, maxInclusive = 20)</p>	Yes	None	dB	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
NonGSMEPoorCommsPercentageThreshold	The number of 30 minute periods over which assessment of non GSME Device poor communications reports is made by the CH. See GBCS section 10.6.2.6 for details. Valid Set: <ul style="list-style-type: none"> Value between 1.00 and 100.00% 	Restriction of xs:decimal (fractionDigits = 2, minInclusive = 1,00, maxInclusive = 100.00)	Yes	None	%	Non-Sensitive
NonGSMEPoorCommsMeasurementPeriods	The number of 30 minute periods over which assessment of non GSME Device poor communications reports is made by the CH Valid Set: <ul style="list-style-type: none"> Value between 50 and 150 	Restriction of xs:unsignedShort (minInclusive = 50, maxInclusive = 150)	Yes	None	N/A	Non-Sensitive
LocalCHNoiseMeasurementPeriod	The number of trailing minutes over which the CHF shall assess its own percentage of retried messages. Valid Set: <ul style="list-style-type: none"> Value > 60 	Restriction of xs:unsignedShort (minExclusive = 60)	Yes	None	Minutes	Non-Sensitive
LocalCHFFailurePercentage	As defined in GBCS section 10.6.2.6. Valid Set: <ul style="list-style-type: none"> Value between 1.00 and 100.00% 	Restriction of xs:decimal (fractionDigits = 2, minInclusive = 1,00, maxInclusive = 100.00)	Yes	None	%	Non-Sensitive
LocalCHRetryPercentage	As defined in GBCS section 10.6.2.6. Valid Set: <ul style="list-style-type: none"> Value between 1.00 and 100.00% 	Restriction of xs:decimal (fractionDigits = 2, minInclusive = 1,00, maxInclusive = 100.00)	Yes	None	%	Non-Sensitive

Table 231 Set CHF Sub GHz Configuration Service Request Data Items

6.28.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 232 Set CHF Sub GHz Configuration Modes of Operation

6.28.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 233 Set CHF Sub GHz Configuration Command Variant Values

6.28.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks (including access control rules for CHF) and Annex section 17.2 for Dual Band CHF validation).

Validation Check	Process	Response Code
Are the Sub GHz channels valid?	Check that all the Sub GHz channels provided by the DCC Service User in the Service Request are included in the Sub GHz Available Channels ²	E062801
Are the required minimum number of Sub GHz channels included? ¹	Check that each of the Lower Band Sub GHz Page Masks (as defined in GBCS section 10.6.2.3) includes at least 2 channels that can be used by the Communications Hub: <ul style="list-style-type: none"> LowerBandSubGHzChannels0To26 LowerBandSubGHzChannels27To34 LowerBandSubGHzChannels35To61 	E062802
Is the Limited Critical Duty Cycle Threshold valid?	Check that the LimitedCriticalDutyCycleThreshold is > NormalLimitedDutyCycleThreshold	E062803

Table 234 Set CHF Sub GHz Configuration Service Request Validation

¹ It is the DCC Service User responsibility to ensure that if the CH is used in the North Region the UpperBandSubGHzChannels0To26 Page Mask (as defined in GBCS section 10.6.2.3) also includes at least 2 channels and if it is used in the Central or South Regions it doesn't include any channels

² I.e. all the Sub GHz channels provided by the DCC Service User in the Service Request are valid values in the configurable list of allowable channels maintained by the DCC Data Systems

6.28.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```

<SetCHFSubGHzConfiguration>
  <LowerBandSubGHzChannels0To26>
    <Channel0/>
    <Channel7/>
  </LowerBandSubGHzChannels0To26>
  <LowerBandSubGHzChannels27To34>
    <Channel28/>
    <Channel30/>
  </LowerBandSubGHzChannels27To34>
  <LowerBandSubGHzChannels35To61>
    <Channel37/>
    <Channel38/>
  </LowerBandSubGHzChannels35To61>
  <UpperBandSubGHzChannels0To26>
    <Channel3/>
    <Channel9/>
  </UpperBandSubGHzChannels0To26>
  <NormalLimitedDutyCycleThreshold>1.7</NormalLimitedDutyCycleThreshold>
  <LimitedCriticalDutyCycleThreshold>2.1</LimitedCriticalDutyCycleThreshold>
  <MaximumSubGHzChannelChangesPerWeek>3</MaximumSubGHzChannelChangesPerWeek>
  <GSMECurfew>3</GSMECurfew>
  <ChannelQuieterThreshold>10</ChannelQuieterThreshold>
  <ChannelNoisierThreshold>12</ChannelNoisierThreshold>
  <NonGSMEPoorCommsPercentageThreshold>15.00</NonGSMEPoorCommsPercentageThreshold>
  <NonGSMEPoorCommsMeasurementPeriods>75</NonGSMEPoorCommsMeasurementPeriods>
  <LocalCHNoiseMeasurementPeriod>65</LocalCHNoiseMeasurementPeriod>
  <LocalCHFFailurePercentage>12.00</LocalCHFFailurePercentage>
  <LocalCHRetryPercentage>15.3</LocalCHRetryPercentage>
</SetCHFSubGHzConfiguration>

```

Figure 142 Set CHF Sub GHz Configuration Service Request (Body) Format

6.28.2 Responses

The response messages for a “Set CHF Sub GHz Configuration” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.28.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E062801	Failed Validation – Invalid Channel(s)	Error	At least one of the Sub GHz channels in the Service Request is not included in the Sub GHz Available Channels ¹
E062802	Failed Validation – Invalid Number of Channels	Error	The Service Request does not contain the required minimum number of Sub GHz channels in one or more of the Page Masks, as defined in GBCS section 10.6.2.3
E062803	Failed Validation – Invalid Duty Cycle Threshold Configuration	Error	The LimitedCriticalDutyCycleThreshold is not > NormalLimitedDutyCycleThreshold

Table 235 Failed Set CHF Sub GHz Configuration Service Request Response Codes

¹ I.e. at least one of the Sub GHz channels in the Service Request is not included in the configurable list of allowable channels maintained by the DCC Data Systems in line with GBCS and UK telecommunications regulations

6.28.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is SetCHFSubGHzConfigurationRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.28.2.2.1 Specific Header Data Items

Data Item	Dual Band CHF Response
GBCSHexadecimalMessageCode	010D
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>DBCH04</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set CHF Sub GHz Configuration</i>
SupplementaryRemotePartyID	Present

Data Item	Dual Band CHF Response
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 236 – Set CHF Sub GHz Configuration Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.29 Request CHF Sub GHz Channel Scan (6.29)

Service Request Name	RequestCHFSubGHzChannelScan
Service Reference	6.29
Service Request Variant Name	RequestCHFSubGHzChannelScan
Service Reference Variant	6.29
Service Request Objective	To enable an authorised DCC Service User to invoke a Sub GHz Channel Scan on a dual band Communications Hub.
Business Context Statement	The DCC Service User requires the DCC to issue a Command to a dual band Communications Hub to request that the Comms Hub assesses the current levels of interference in Sub GHz Bands and, dependent on that assessment, change the frequency channel on which it is operating within those bands. This will provide the best communication links for creation and maintenance of the HAN.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request scans the Sub GHz channels configured to be used on the HAN. If successful, the CH will select the channel it perceives as being most likely to give the best communication links. Because the User Roles that can submit this Service Request are URPs to the Communications Hub Function, the DSP Access Control Broker submits the Commands to the Device on their behalf and the CHF response and Device Alerts are also returned to the DSP Access Control Broker. If the Device completes the Command validation and stores the request successfully, it returns a Command Response to the DSP Access Control Broker. The DCC Data Systems then send the Command Response to the DCC Service User that submitted the Service Request. Once the Command Response has been sent the Device:

	<div><div><div><div><div><div></div><div>a.</div></div><div>Assesses the scan request. Should a check fail, the CHF shall set the assessment Status Code to the value equating to the failed check and shall not undertake further checks. If no checks fail, Status Code will be set to success. See GBCS for details. To indicate the result of the assessment (success or failure reason) DCC Alert N54 (corresponding to Device Alert 0x8F28 Sub GHz Channel Scan Request Assessment Outcome) will be sent to the Registered Import Suppliers for that HAN. See Annex section 16</div></div></div><div><div><div><div><div></div><div>b.</div></div><div>If the assessment outcome indicates success, the CHF will run the scan (see GBCS for details). If as a result of the scan the Sub GHz operating channel changes, DCC Alert N54 (corresponding to Device Alert 0x8F26 Sub GHz Channel Changed) will be sent to the Registered Import Suppliers for that HAN. See Annex section 16</div></div></div><div><div><div><div><div></div><div>c.</div></div><div>If the assessment outcome indicates failure, the CHF will examine the Status Code and scan trigger. In some cases there will be no further processing. In others, once the reason for the failure is no longer applicable, the CHF will re-assess the scan request (see item ‘a’ above)</div></div><div><div><div><div><div></div><div>i.</div></div><div>Note that one of the reasons for failure is that the CHF Device Log includes an HHT, so if the command is delivered locally, the assessment will fail while the HHT is connected to the HAN. Once it is disconnected, the CHF will repeat the assessment and this check will no longer fail.</div></div></div></div></div><div>5. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0</div></div></div></div></div>	
GBCS Cross Reference	Communications Hub Function (Dual Band only)	
GBCS v1.0	N/A – feature not supported by Device	
GBCS v2.0 Message Code	0x010E	
GBCS v2.0 Use Case	DBCH05	
GBCS v2.0 Use Case Name	Request CHF Sub GHz Channel Scan	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	CHF (Dual Band or Unknown)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0

DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	DBCH05
SMETS1 Applicability	No	No
Device Type	CHF (Single Band)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	Response Code – E1011
SMETS1 Applicability	No	No

Table 237 Request CHF Sub GHz Channel Scan Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.29.1 Service Request

6.29.1.1 Format

The Service Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RequestCHFSubGHzChannelScan XML element defines this Service Request and it doesn't contain any data items.



Figure 143 Request CHF Sub GHz Channel Scan Service Request Structure

6.29.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 238 Request CHF Sub GHz Channel Scan Modes of Operation

6.29.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 239 Request CHF Sub GHz Channel Scan Command Variant Values

6.29.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks (including access control rules for CHF) and Annex section 17.2 for Dual Band CHF validation.

6.29.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RequestCHFSubGHzChannelScan/>
```

Figure 144 Request CHF Sub GHz Channel Scan Service Request (Body) Format

6.29.2 Responses

The response messages for a "Request CHF Sub GHz Channel Scan" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.29.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is RequestCHFSubGHzChannelScanRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

6.29.2.1.1 Specific Header Data Items

Data Item	Dual Band CHF Response
GBCSHexadecimalMessageCode	010E
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>DBCH05</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Request CHF Sub GHz Channel Scan</i>
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present

Data Item	Dual Band CHF Response
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 240 – Request CHF Sub GHz Channel Scan Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.30 Read CHF Sub GHz Configuration (6.30)

Service Request Name	ReadCHFSubGHzConfiguration
Service Reference	6.30
Service Request Variant Name	ReadCHFSubGHzConfiguration
Service Reference Variant	6.30
Service Request Objective	To enable an authorised DCC Service User to read the Sub GHz Configuration values from a dual band Communications Hub
Business Context Statement	The DCC Service User requires to read the Sub GHz Configuration values from a dual band Communications Hub for diagnostics purposes
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request reads the configuration data “Sub GHz Configuration Settings [DBCH]” as defined in GBCS and CHTS. The settings control the CH’s operations in relation to Sub GHz Bands. The definition of this Service Request Response includes all the channels potentially configurable in the Lower Band Sub GHz (863 to 876 MHz) and Upper Band Sub GHz (915 to 921 MHz) frequency ranges and will return those currently set as configurable on the Device. GBCS section 10.6.5 summarises the list of configurable channels that comply with UK telecommunications regulations. Currently: <ul style="list-style-type: none"> Channels 0 to 48 at 863 to 876 MHz; and Channels 0 to 12 at 915 to 921 MHz The “Sub GHz Configuration Settings [DBCH]” configuration can be set using Service Request 6.28 Set CHF Sub GHz Configuration. See section 6.28. Because the User Roles that can submit this Service Request are URPs to the Communications Hub Function, the DSP

	Access Control Broker submits the Command to the Device on their behalf and the CHF response is also returned to the DSP Access Control Broker.	
	6. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0	
GBCS Cross Reference	Communications Hub Function (Dual Band only)	
GBCS v1.0	N/A – feature not supported by Device	
GBCS v2.0 Message Code	0x010C	
GBCS v2.0 Use Case	DBCH03	
GBCS v2.0 Use Case Name	Read CHF Sub GHz Configuration	
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,		
Device Type	CHF (Dual Band or Unknown)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	DBCH03
SMETS1 Applicability	No	No
Device Type	CHF (Single Band)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0
DUIS 1: Not supported	N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria	Response Code - E57	Response Code – E1011
SMETS1 Applicability	No	No

Table 241 Read CHF Sub GHz Configuration Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.30.1 Service Request

6.30.1.1 Format

The Service Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadCHFSubGHzConfiguration XML element defines this Service Request and it doesn't contain any data items.



Figure 145 Read CHF Sub GHz Configuration Service Request Structure

6.30.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 242 Read CHF Sub GHz Configuration Modes of Operation

6.30.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 243 Read CHF Sub GHz Configuration Command Variant Values

6.30.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks (including access control rules for CHF) and Annex section 17.2 for Dual Band CHF validation.

6.30.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadCHFSubGHzConfiguration/>
```

Figure 146 Read CHF Sub GHz Configuration Service Request (Body) Format

6.30.2 Responses

The response messages for a "Read CHF Sub GHz Configuration" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery

- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.30.2.1 Parse Output Format

6.30.2.1.1 Format – ReadCHFSubGHzConfigurationRsp

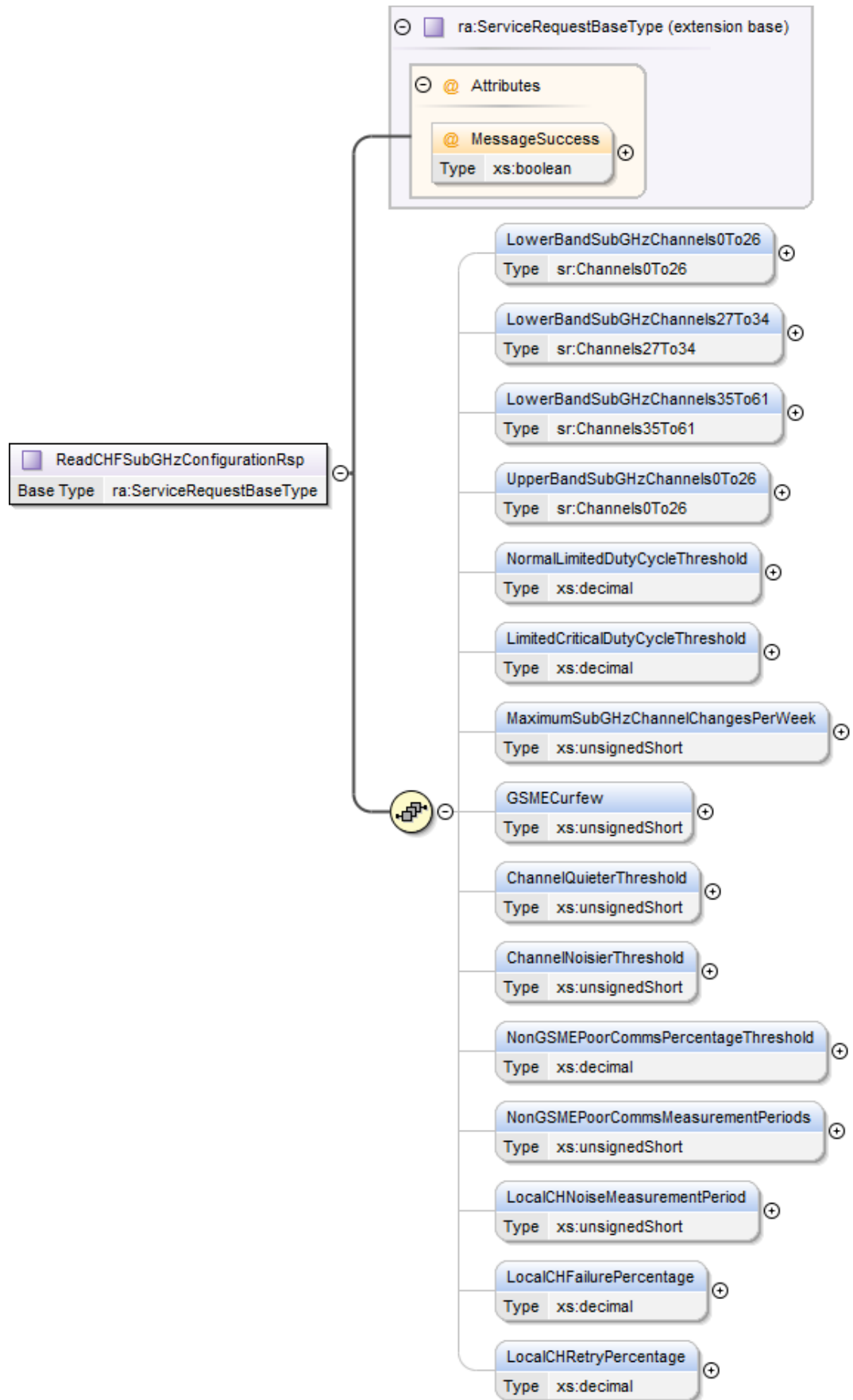


Figure 147 Read CHF Sub GHz Configuration Parse Response Structure

6.30.2.1.2 Specific Header Data Items

Data Item	Dual Band CHF Response
GBCSHexadecimalMessageCode	010C
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>DBCH03</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read CHF Sub GHz Configuration</i>
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 244 – Read CHF Sub GHz Configuration Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.30.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LowerBandSubGHzChannels0To26	Provides the current configuration. See section 6.28.1.2	ra:Channels0To26 (see section 6.28.1.2)	None	N/A	Non-Sensitive
LowerBandSubGHzChannels27To34	Provides the current configuration. See section 6.28.1.2	ra:Channels27To34 (see section 6.28.1.2)	None	N/A	Non-Sensitive
LowerBandSubGHzChannels35To61	Provides the current configuration. See section 6.28.1.2	ra:Channels35To61 (see section 6.28.1.2)	None	N/A	Non-Sensitive
UpperBandSubGHzChannels0To26	Provides the current configuration. See section 6.28.1.2	ra:Channels0To26 (see section 6.28.1.2)	None	N/A	Non-Sensitive
NormalLimitedDutyCycleThreshold	See section 6.28.1.2 Valid Set: <ul style="list-style-type: none"> Percentage value between 0.5 and 2.0 % 	xs:decimal	None	%	Non-Sensitive
LimitedCriticalDutyCycleThreshold	See section 6.28.1.2. Valid Set: <ul style="list-style-type: none"> Percentage value between 1.5 and 2.5 % and greater than NormalLimitedDutyCycleThreshold 	xs:decimal	None	%	Non-Sensitive
MaximumSubGHzChannelChangesPerWeek	See section 6.28.1.2. Valid Set: <ul style="list-style-type: none"> Value between 1 and 7 	xs:unsignedShort	None	N/A	Non-Sensitive
GSMECurfew	See section 6.28.1.2. Valid Set: <ul style="list-style-type: none"> Value > 1 	xs:unsignedShort	None	Hours	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ChannelQuieterThreshold	See section 6.28.1.2. Valid Set: • Value between 1 and 255	xs:unsignedShort	None	dB	Non-Sensitive
ChannelNoisierThreshold	See section 6.28.1.2. Valid Set: • Value between 0 and 20	xs:unsignedShort	None	dB	Non-Sensitive
NonGSMEPoorCommsPercentageThreshold	See section 6.28.1.2. Valid Set: • Value between 1.00 and 100.00%	xs:decimal	None	%	Non-Sensitive
NonGSMEPoorCommsMeasurementPeriods	See section 6.28.1.2. Valid Set: • Value between 50 and 150	xs:unsignedShort	None	N/A	Non-Sensitive
LocalCHNoiseMeasurementPeriod	See section 6.28.1.2. Valid Set: • Value > 60	xs:unsignedShort	None	Minutes	Non-Sensitive
LocalCHFFailurePercentage	See section 6.28.1.2. Valid Set: • Value between 1.00 and 100.00%	xs:decimal	None	%	Non-Sensitive
LocalCHRetryPercentage	See section 6.28.1.2. Valid Set: • Value between 1.00 and 100.00%	xs:decimal	None	%	Non-Sensitive

Table 245 – Read CHF Sub GHz Configuration Parse Response Specific Body Data Items

6.30.2.1.4 Sample Response

Successful responses will include the Sub GHz Configuration:

```
<ra:ReadCHFSubGHzConfigurationRsp MessageSuccess="true">
  <ra:LowerBandSubGHzChannels0To26>
    <ra:Channel0/>
    <ra:Channel7/>
  </ra:LowerBandSubGHzChannels0To26>
  <ra:LowerBandSubGHzChannels27To34>
    <ra:Channel28/>
    <ra:Channel30/>
  </ra:LowerBandSubGHzChannels27To34>
  <ra:LowerBandSubGHzChannels35To61>
    <ra:Channel37/>
    <ra:Channel38/>
  </ra:LowerBandSubGHzChannels35To61>
  <ra:UpperBandSubGHzChannels0To26>
    <ra:Channel3/>
    <ra:Channel9/>
  </ra:UpperBandSubGHzChannels0To26>
  <ra:NormalLimitedDutyCycleThreshold>1.7</ra:NormalLimitedDutyCycleThreshold>
  <ra:LimitedCriticalDutyCycleThreshold>2.1</ra:LimitedCriticalDutyCycleThreshold>
  <ra:MaximumSubGHzChannelChangesPerWeek>3</ra:MaximumSubGHzChannelChangesPerWeek>
  <ra:GSMECurfew>3</ra:GSMECurfew>
  <ra:ChannelQuieterThreshold>10</ra:ChannelQuieterThreshold>
  <ra:ChannelNoisierThreshold>12</ra:ChannelNoisierThreshold>
  <ra:NonGSMEPoorCommsPercentageThreshold>15.00</ra:NonGSMEPoorCommsPercentageThreshold>
  <ra:NonGSMEPoorCommsMeasurementPeriods>75</ra:NonGSMEPoorCommsMeasurementPeriods>
  <ra:LocalCHNoiseMeasurementPeriod>65</ra:LocalCHNoiseMeasurementPeriod>
  <ra:LocalCHFFailurePercentage>12.00</ra:LocalCHFFailurePercentage>
  <ra:LocalCHRetryPercentage>15.3</ra:LocalCHRetryPercentage>
</ra:ReadCHFSubGHzConfigurationRsp>
```

Figure 148 - Read CHF Sub GHz Configuration Parse Response Example

6.31 Read CHF Sub GHz Channel (6.31)

Service Request Name	ReadCHFSubGHzChannel
Service Reference	6.31
Service Request Variant Name	ReadCHFSubGHzChannel
Service Reference Variant	6.31
Service Request Objective	To enable an authorised DCC Service User to read the Sub GHz Channel that a dual band Communication Hub is currently operating on
Business Context Statement	The DCC Service User requires to read the Sub GHz operating channel on a dual band Communications Hub
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	1. This Service Request reads the Data item "Operating Sub GHz Channel" on a Dual Band CH as defined by GBCS and CHTS.

	<div>2. Please note that, as for Single band (2.4 GHz only) CH, there is no requirement on the CH to expose the 2.4 GHz channel in use.</div> <div>3. Because the User Roles that can submit this Service Request are URPs to the Communications Hub Function, the DSP Access Control Broker submits the Command to the Device on their behalf and the CHF response is also returned to the DSP Access Control Broker.</div> <div>4. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0.</div>		
GBCS Cross Reference	Communications Hub Function (Dual Band only)		
GBCS v1.0	N/A – feature not supported by Device		
GBCS v2.0 Message Code	0x010A		
GBCS v2.0 Use Case	DBCH01		
GBCS v2.0 Use Case Name	Read CHF Sub GHz Channel		
GBCS Commands - Versioning Details			
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,			
Device Type		CHF (Dual Band or Unknown)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI		GBCS v1.0	GBCS v2.0
DUIS 1: Not supported		N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria		Response Code - E57	DBCH01
SMETS1 Applicability		No	No
Device Type		CHF (Single Band)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI		GBCS v1.0	GBCS v2.0
DUIS 1: Not supported		N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria		Response Code - E57	Response Code – E1011
SMETS1 Applicability		No	No

Table 246 Read CHF Sub GHz Channel Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.31.1 Service Request

6.31.1.1 Format

The Service Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadCHFSubGHzChannel XML element defines this Service Request and it doesn't contain any data items.



Figure 149 Read CHF Sub GHz Channel Service Request Structure

6.31.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 247 Read CHF Sub GHz Channel Modes of Operation

6.31.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 248 Read CHF Sub GHz Channel Command Variant Values

6.31.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks (including access control rules for CHF) and Annex section 17.2 for Dual Band CHF validation.

6.31.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadCHFSubGHzChannel/>
```

Figure 150 Read CHF Sub GHz Channel Service Request (Body) Format

6.31.2 Responses

The response messages for a “Read CHF Sub GHz Channel” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload

- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.31.2.1 Parse Output Format

6.31.2.1.1 Format – ReadCHFSubGHzChannelRsp

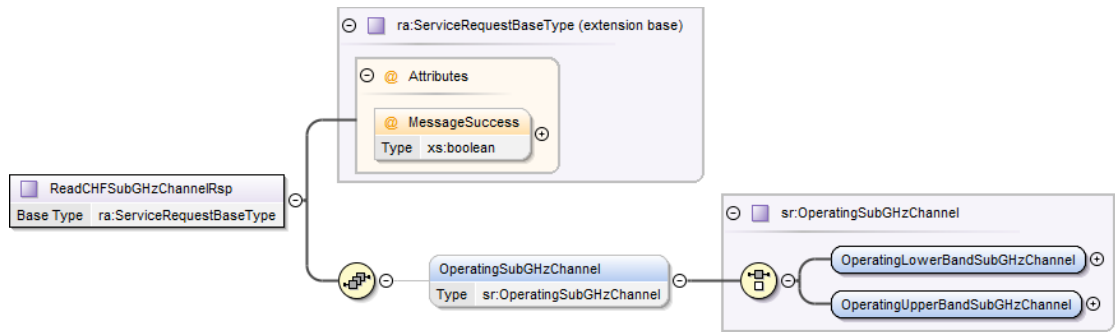


Figure 151 Read CHF Sub GHz Channel Parse Response Structure

6.31.2.1.2 Specific Header Data Items

Data Item	Dual Band CHF Response
GBCSHexadecimalMessageCode	010A
GBCS Use Case Number (for information only - not in header)	DBCH01
GBCS Use Case Name (for information only - not in header)	Read CHF Sub GHz Channel
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 249 – Read CHF Sub GHz Channel Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.31.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
OperatingSubGHzChannel	The Sub GHz Channel currently operating on the SMHAN, being one of 0 to 61 in the Lower Band Sub GHz (863 to 876 MHz) or one of 0 to 26 in the Upper Band Sub GHz (915 to 921 MHz) frequency range	ra:OperatingSubGHzChannel (see Annex 16 section 16.2.1.2.13)	None	N/A	Non-Sensitive

Table 250 – Read CHF Sub GHz Channel Parse Response Specific Body Data Items

6.31.2.1.4 Sample Response

Successful responses will include the Sub GHz channel currently operational:

```
<ra:ReadCHFSubGHzChannelRsp MessageSuccess="true">
  <ra:OperatingSubGHzChannel>
    <ra:OperatingLowerBandSubGHzChannel>
      <ra:Channel27/>
    </ra:OperatingLowerBandSubGHzChannel>
  </ra:OperatingSubGHzChannel>
</ra:ReadCHFSubGHzChannelRsp>
```

Figure 152 - Read CHF Sub GHz Channel Parse Response Example

6.32 Read CHF Sub GHz Channel Log (6.32)

Service Request Name	ReadCHFSubGHzChannelLog
Service Reference	6.32
Service Request Variant Name	ReadCHFSubGHzChannelLog
Service Reference Variant	6.32
Service Request Objective	To enable an authorised DCC Service User to read the Sub GHz Channel log on a dual band Communications Hub
Business Context Statement	The DCC Service User requires to read the Sub GHz band channel log of a dual band Communications Hub
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request reads the data item Sub GHz channel log on a Dual Band CH as defined by GBCS and CHTS. According to CHTS the 'Sub GHz Channel Log' is a circular log containing date-time stamped entries of the last 100 Operating Sub GHz Channel values used, where each entry in the Log specifies (1) the date-time operation began on the Sub GHz Channel, (2) the Sub GHz Channel (by way of a 32 bit bit-string which has the same structure as Operating Sub GHz Channel) and (3) a flag indicating the trigger for the change.

	<div>3. For clarity, the first entry created in this Log shall detail the Sub GHz Channel selected by the CH at initial SMHAN network formation.</div> <div>4. Because the User Roles that can submit this Service Request are URPs to the Communications Hub Function, the DSP Access Control Broker submits the Command to the Device on their behalf and the CHF response is also returned to the DSP Access Control Broker.</div> <div>5. DUIS v1 does not support this Service Request. Users should move to DUIS v2 or later if they wish to use this Service Request to access devices operating to GBCS v2.0</div>		
GBCS Cross Reference	Communications Hub Function (Dual Band only)		
GBCS v1.0	N/A – feature not supported by Device		
GBCS v2.0 Message Code	0x010B		
GBCS v2.0 Use Case	DBCH02		
GBCS v2.0 Use Case Name	Read CHF Sub GHz Channel Log		
GBCS Commands - Versioning Details			
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations,			
Device Type		CHF (Dual Band or Unknown)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI		GBCS v1.0	GBCS v2.0
DUIS 1: Not supported		N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria		Response Code - E57	DBCH02
SMETS1 Applicability		No	No
Device Type		CHF (Single Band)	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI		GBCS v1.0	GBCS v2.0
DUIS 1: Not supported		N/A	N/A
DUIS 2 or later: DEFAULT - No specific XML criteria		Response Code - E57	Response Code – E1011
SMETS1 Applicability		No	No

Table 251 Read CHF Sub GHz Channel Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

6.32.1 Service Request

6.32.1.1 Format

The Service Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadCHFSubGHzChannelLog XML element defines this Service Request and it contains the date-time range for which the log is to be read on the Device.

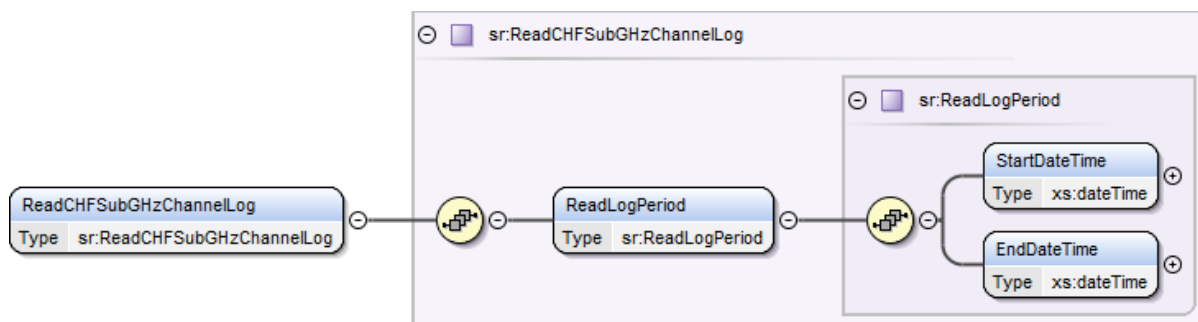


Figure 153 Read CHF Sub GHz Channel Log Service Request Structure

6.32.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ReadLogPeriod	The Start and End Date-Times for which the data is required	sr:ReadLogPeriod (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 252 Read CHF Sub GHz Channel Log Service Request Data Items

6.32.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 253 Read CHF Sub GHz Channel Log Modes of Operation

6.32.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 254 Read CHF Sub GHz Channel Log Command Variant Values

6.32.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks (including access control rules for CHF) and Annex section 17.2 for Read Log Period and Dual Band CHF validation.

6.32.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadCHFSubGHzChannelLog>
  <ReadLogPeriod>
    <StartDateTime>2017-01-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2017-01-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</ReadCHFSubGHzChannelLog>
```

Figure 154 Read CHF Sub GHz Channel Log Service Request (Body) Format

6.32.2 Responses

The response messages for a “Read CHF Sub GHz Channel Log” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

6.32.2.1 Parse Output Format

6.32.2.1.1 Format – ReadCHFSubGHzChannelLogRsp

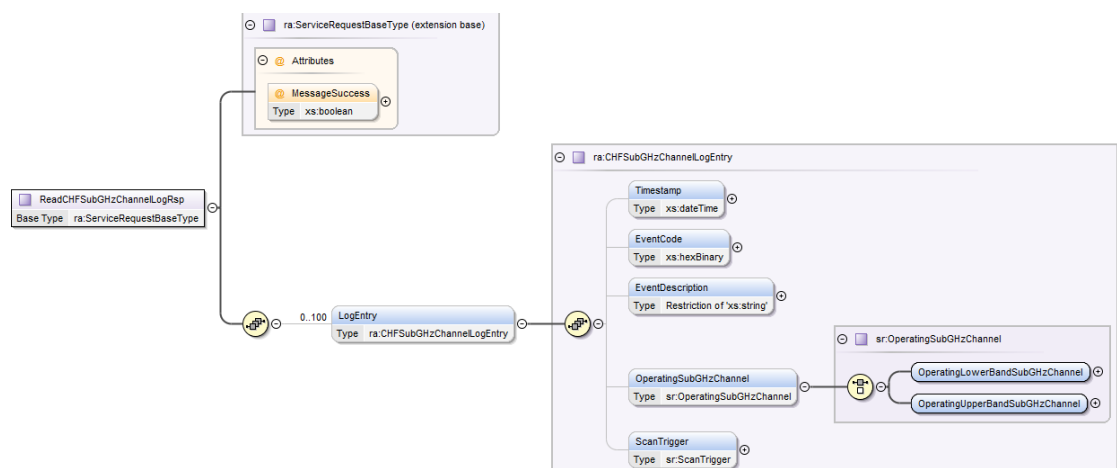


Figure 155 Read CHF Sub GHz Channel Log Parse Response Structure

6.32.2.1.2 Specific Header Data Items

Data Item	Dual Band CHF Response
GBCSHexadecimalMessageCode	010B
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>DBCH02</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read CHF Sub GHz Channel Log</i>
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 255 – Read CHF Sub GHz Channel Log Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

6.32.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
LogEntry	The 'Sub GHz Channel Log' is a circular log containing date-time stamped entries of the last 100 Operating Sub GHz Channel values used, where each entry in the Log specifies a timestamp indicating when operation began on the channel, the Event Code and Description, the Operating Channel and the trigger for the channel change	ra:CHFSubGHzChannelLogEntry (see section 6.32.2.1.4)	None	N/A	Non-Sensitive

Table 256 – Read CHF Sub GHz Channel Log Parse Response Specific Body Data Items

6.32.2.1.4 CHFSubGHzChannelLogEntry Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Timestamp	Date and time indicating when operation began on the Sub GHz Channel	xs:dateTime	None	N/A	Non-Sensitive
EventCode	Code indicating the channel changed Valid Set: ▪ 8F26	xs:hexBinary	None	N/A	Non-Sensitive
EventDescription	Description indicating the channel changed Valid Set: ▪ Sub GHz Channel Changed	Restriction of xs:string (maxLength=200)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
OperatingSubGHzChannel	The Sub GHz Channel becoming the operating one at that time (one of 0 to 61 in the Lower Band Sub GHz (863 to 876 MHz) or one of 0 to 26 in the Lower Band Sub GHz (915 to 921 MHz) frequency range)	ra: OperatingSubGHzChannel (see Annex section 16)	None	N/A	Non-Sensitive
ScanTrigger	Trigger of the Scan that resulted in the change to the operating channel Valid Set: <ul style="list-style-type: none"> RemotePartyCommand GSMERequest GSMEMissedItsCurfew GSMEMissingForTheLastDay CHDetectedMessageFailureProblems CHDetectedMessageRetryProblems SubGHzNon-GSMEDeviceRequest SMHANFormation 	ra:ScanTrigger (see Annex section 16)	None	N/A	Non-Sensitive

**Table 257 – Read CHF Sub GHz Channel Log Parse Response
CHFSubGHzChannelLogEntry Data Items**

6.32.2.1.5 Sample Response

Successful responses will include the Sub GHz channel log:

```
<ra:ReadCHFSubGHzChannelLogRsp MessageSuccess="true">
  <ra:LogEntry>
    <ra:Timestamp>2017-01-07T09:07:03.00</ra:Timestamp>
    <ra:EventCode>8F26</ra:EventCode>
    <ra:EventDescription>Sub GHz Channel Changed</ra:EventDescription>
    <ra:OperatingSubGHzChannel>
      <ra:OperatingLowerBandSubGHzChannel>
        <ra:Channel27/>
      </ra:OperatingLowerBandSubGHzChannel>
    </ra:OperatingSubGHzChannel>
    <ra:ScanTrigger>SMHANFormation</ra:ScanTrigger>
  </ra:LogEntry>
  <ra:LogEntry>
    <ra:Timestamp>2017-01-20T17:25:18.00</ra:Timestamp>
    <ra:EventCode>8F26</ra:EventCode>
    <ra:EventDescription>Sub GHz Channel Changed</ra:EventDescription>
    <ra:OperatingSubGHzChannel>
      <ra:OperatingLowerBandSubGHzChannel>
        <ra:Channel45/>
      </ra:OperatingLowerBandSubGHzChannel>
    </ra:OperatingSubGHzChannel>
    <ra:ScanTrigger>GSMERequest</ra:ScanTrigger>
  </ra:LogEntry>
</ra:ReadCHFSubGHzChannelLogRsp>
```

Figure 156 - Read CHF Sub GHz Channel Log Parse Response Example

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 7 – Supply Management Service

Author: DCC
Version: 5.2a
Date: June 2023

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7 Supply Management Service (7 – SMS)

This section sets out the full content of the DCC Supply Management Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	SupplyManagement	Service Id	7
Service Objective	To enable an authorised DCC Service User to remotely manage the energy at a consumer premises without the need for local interaction, such that the meter can confirm that the operation has either completed or the reason for its failure.		
Business Context Statement	The DCC Service User requires an immediate change to the availability of energy for a specified meter without user interaction, e.g. to restore the electricity supply at a consumer's premises or switch the load on an auxiliary (e.g. heating) circuit.		
User Roles	<p>The following user roles have access to the list of service requests which make up the Supply Management Service:</p> <ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU) 		

Table 1 Overview of Supply Management Service

The mapping between the Supply Management Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
7.1	7.1	Enable Supply	ESME
7.2	7.2	Disable Supply	ESME GSME
7.3	7.3	Arm Supply	ESME GSME
7.4	7.4	Read Supply Status	ESME GPF GSME
7.5	7.5	Activate Auxiliary Load	ESME
7.6	7.6	Deactivate Auxiliary Load	ESME
7.7	7.7	Read Auxiliary Load Control Switch Configuration	ESME
7.8	7.8	Reset Auxiliary Load	ESME
7.9	7.9	Add Auxiliary Load To Boost Button	ESME
7.10	7.10	Remove Auxiliary Load From Boost Button	ESME
7.11	7.11	Read Boost Button Details	ESME

Service Reference	Service Reference Variant	Name	Business Target ID
7.12	7.12	Set Randomised Offset Limit	ESME
7.13	7.13	Set Auxiliary Controller State	ESME
7.14	7.14	Read Auxiliary Controller Configuration Data	ESME
7.15	7.15	Read Auxiliary Controller Operational Data	ESME
7.16	7.16	Limit APC Level	ESME

Table 2 SMS - Service Requests / Devices

For each of the SMS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

7.1 Enable Supply (7.1)

Service Request Name	EnableSupply
Service Reference	7.1
Service Request Variant Name	EnableSupply
Service Reference Variant	7.1
Service Request Objective	To enable a DCC Service User to remotely close the Load Switch on an Electricity Smart Meter to enable electricity supply through the device.
Business Context Statement	The DCC Service User requires that power is immediately enabled to a specified device without physical user interaction, e.g. to restore electricity supply remotely to (or within) the consumer's premises.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)
Security Classification	<p>Critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.C</p>

Service Request Narrative (SMETS2 or later)	<p>Enable Supply in the context of ESME is the act of restoring the flow of electricity to the Premises by closing the Load Switch.</p> <p>This Service Request updates the <i>Supply State</i> on the device to 'Enabled' as defined by SMETS.</p> <p>Enable Supply in the context of GSME is the act of restoring the flow of gas to the Premises by opening the Valve. This action cannot be performed remotely by design, hence why this use case is not available to DCC Service Users.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x004F	N/A
GBCS Use Case	ECS42	N/A
GBCS Use Case Name	Remotely Close the Load Switch on the ESME	N/A
SMETS1 Availability	Yes	N/A
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. This command in SMETS1 is unconditional unlike in SMETS2. Therefore, the Service Request may result in supply being enabled on a SMETS1 Smart Meter when it would not be enabled on a SMETS2 Smart Meter which is in the same state. 	

Table 3 Enable Supply Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.1.1 Service Request

7.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its EnableSupply XML element defines this Service Request and it doesn't contain any data items.



Figure 1 Enable Supply Service Request Structure

7.1.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 4 Enable Supply Modes of Operation

7.1.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 5 Enable Supply Command Variant Values

7.1.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.1.1.5 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<EnableSupply/>

Figure 2 Enable Supply Transform Request (Body) Format

7.1.2 Responses

The Service Response messages for an “Enable Supply” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.1.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is EnableSupplyRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

7.1.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessage Code	004F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS42</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Remotely Close the Load Switch on the ESME</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 6 - Enable Supply Parse Response Header Data Items

7.2 Disable Supply (7.2)

Service Request Name	DisableSupply
Service Reference	7.2
Service Request Variant Name	DisableSupply
Service Reference Variant	7.2
Service Request Objective	To enable a DCC Service User to disable electricity/gas supply through a specified Electricity or Gas Smart Meter by remotely opening the Load Switch on the ESME or closing the Valve on the GSME.
Business Context Statement	The DCC Service User requires that energy consumption is immediately disabled to a specified device without user interaction.

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Critical and non-sensitive SMETS2 or later:: GBCS XREF: SME.C.C	
Service Request Narrative (SMETS2 or later)	1. This Service Request is applicable to: <ul style="list-style-type: none"> Electricity Smart Meters Gas Smart Meters that include a valve 2. This Service Request updates the <i>Supply State</i> on the device to 'Disabled' as defined by SMETS.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0050	0x0081
GBCS Use Case	ECS43	GCS32
GBCS Use Case Name	Remotely Open the Load Switch on the ESME	Remotely close the valve in the GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 7 Disable Supply Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.2.1 Service Request

7.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its DisableSupply XML element defines this Service Request and doesn't contain any data items.

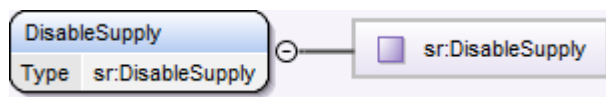


Figure 3 Disable Supply Service Request Structure

7.2.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 8 Disable Supply Modes of Operation

7.2.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 9 Disable Supply Command Variant Values

7.2.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.2.1.5 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<DisableSupply/>

Figure 4 Disable Supply Transform Request (Body) Format

7.2.2 Responses

The Service Response messages for a “Disable Supply” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.2.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is DisableSupplyRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

7.2.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0050	0081
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS43</i>	<i>GCS32</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Remotely Open the Load Switch on the ESME</i>	<i>Remotely close the valve in the GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 10 - Disable Supply Parse Response Header Data Items

7.3 Arm Supply (7.3)

Service Request Name	ArmSupply
Service Reference	7.3
Service Request Variant Name	ArmSupply
Service Reference Variant	7.3
Service Request Objective	To enable a DCC Service User to remotely arm the supply to a specified Electricity of Gas Smart Meter such that it can be enabled by local interaction through that Electricity of Gas Smart Meter.
Business Context Statement	A DCC Service User has previously disabled the supply through an Electricity of Gas Smart Meter and wishes to safely re-establish the supply by arming the supply through the device. Once armed, supply is only restored when the consumer undertakes a defined, on site action (such as pressing a specific button on the meter), having been notified of the armed status via the response to this Service Request.

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Critical and non-sensitive SMETS2 or later:: GBCS XREF: SME.C.C	
Service Request Narrative (SMETS2 or later)	1. This Service Request is applicable to: <ul style="list-style-type: none"> Electricity Smart Meters Gas Smart Meters that include a valve 2. This Service Request updates the <i>Supply State</i> on the device to 'Armed' as defined by SMETS.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0051	0x0085
GBCS Use Case	ECS44	GCS39
GBCS Use Case Name	Arm Load Switch in ESME	Arm Valve in GSME
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: <ol style="list-style-type: none"> This Service Request shall result in a SMETS1 Arm Valve (for GSME) or a SMETS1 Arm Load Switch (for ESME) command. For clarity, these commands in SMETS1 are unconditional unlike the equivalent command in SMETS2. Therefore, the Service Request may result in supply being armed on a SMETS1 Smart Meter when it would not be armed on a SMETS2 Smart Meter which is in the same state. 	

Table 11 Arm Supply Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.3.1 Service Request

7.3.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ArmSupply XML element defines this Service Request and doesn't contain any data items.



Figure 5 Arm Supply Service Request Structure

7.3.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 12 Arm Supply Modes of Operation

7.3.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 13 Arm Supply Command Variant Values

7.3.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.3.1.5 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ArmSupply/>

Figure 6 Arm Supply Transform Request (Body) Format

7.3.2 Responses

The Service Response messages for an “Arm Supply” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery

- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.3.2.1 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is ArmSupplyRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

7.3.2.1.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0051	0085
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS44</i>	<i>GCS39</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Arm Load Switch in ESME</i>	<i>Arm Valve in GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 14 - Arm Supply Parse Response Header Data Items

7.4 Read Supply Status (7.4)

Service Request Name	ReadSupplyStatus
Service Reference	7.4
Service Request Variant Name	ReadSupplyStatus
Service Reference Variant	7.4
Service Request Objective	To enable a DCC Service User to read the current supply status at a specified Electricity or Gas Smart Meter and additionally on the Gas Smart Meter the remaining battery capacity.

Business Context Statement	The DCC Service User needs to know whether the Valve of a Gas Smart Meter or the Load Switch of an Electricity Smart Meter is armed, open or closed, for example in order to respond to a customer query.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) 	
Security Classification	Non-critical and non-sensitive SMETS2 or later:: GBCS XREF: SME.C.NC	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request reads the <i>Supply State</i> on the specified device as defined by SMETS. The Supply State on a device can be one of 'Enabled', 'Disabled' or 'Armed' as defined by SMETS. For GSME only, the remaining battery capacity result is returned to a DCC Service User with the remaining battery life in days returned. For reading the <i>Supply Status</i> value from the GSME, the DCC Service User should wherever possible request this to be read from the GPF as the primary use case. Only when the GPF is not available for query should this Service Request be targeted to the GSME. This will save battery life on the GSME for all Users. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0052	0x0082
GBCS Use Case	ECS45	GCS33
GBCS Use Case Name	Read Status of Load Switch in the ESME	Read GSME Valve Status
SMETS1 Applicability	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices.	

Table 15 Read Supply Status Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.4.1 Service Request

7.4.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadSupplyStatus XML element defines this Service Request and doesn't contain any data items.



Figure 7 Read Supply Status Service Request Structure

7.4.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 16 Read Supply Status Modes of Operation

7.4.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 17 Read Supply Status Command Variant Values

7.4.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.4.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadSupplyStatus/>
```

Figure 8 Read Supply Status Service Request (Body) Format

7.4.2 Responses

The Service Response messages for a "Read Supply Status" Request follow the generic format for all "Device" response messages. The generic responses applicable to this Service Request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.4.2.1 Parse Output / SMETS1 Response Format

7.4.2.1.1 Format - ReadSupplyStatusRsp

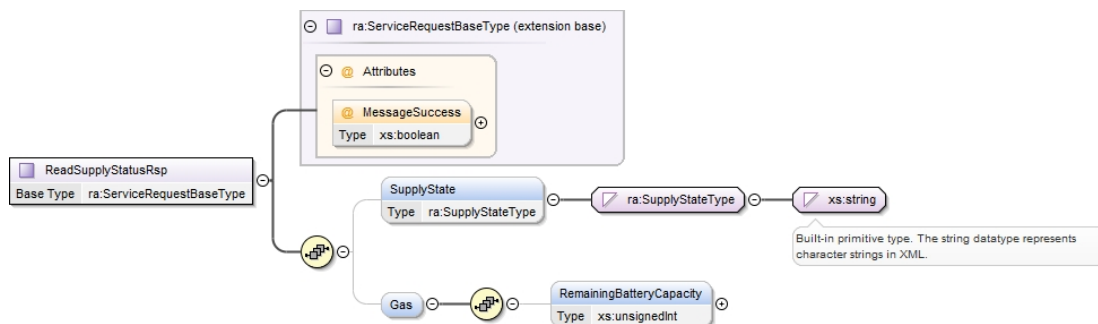


Figure 9 - Read Supply Status Parse Response / SMETS1 Response Structure

7.4.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0052	0082
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS45</i>	<i>GCS33</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Status of Load Switch in the ESME</i>	<i>Read GSME Valve Status</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 18 - Read Supply Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

7.4.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SupplyState	The state of the Supply, being Enabled, Disabled or Armed.	ra:SupplyStateType restriction of xs:string (Enumeration)	None	N/A	Non-Sensitive
RemainingBatteryCapacity	Remaining battery life. Applicable to gas only.	xs:unsignedInt	None	Days	Non-Sensitive

Table 19 - Read Supply Parse Response / SMETS1 Response Body Data Items

7.4.2.1.4 Sample Response

```
<ra:ReadSupplyStatusRsp MessageSuccess="true">
  <ra:SupplyState>Enabled</ra:SupplyState>
  <ra:Gas>
    <ra:RemainingBatteryCapacity>10</ra:RemainingBatteryCapacity>
  </ra:Gas>
</ra:ReadSupplyStatusRsp>
```

Figure 10 - Read Supply Status Parse Response Sample

7.5 Activate Auxiliary Load (7.5)

Service Request Name	ActivateAuxiliaryLoad
Service Reference	7.5
Service Request Variant Name	ActivateAuxiliaryLoad
Service Reference Variant	7.5
Service Request Objective	To enable a DCC Service User to control, by closing, either, an Auxiliary Load Control Switch (ALCS) within a specified Electricity Smart Meter or a specified HAN connected Auxiliary Load Control Switch (HCALCS).
Business Context Statement	The DCC Service User requires that an Auxiliary Load Control Switch is immediately closed e.g. to switch on a consumer's electric storage heating remotely.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)
Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C

Service Request Narrative	<ol style="list-style-type: none"> 1. For Devices with GBCS version prior to v4.0 this Service Request sets the value of the <i>Auxiliary Load Control Switch [n]</i> – <i>Status</i> as defined by SMETS. The current status being “open” or “closed”. 2. This Service Request is applicable to an ESME connected to ALCS and / or HCALCS. The Business Target ID = ESME Device ID. 3. An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS. The switch labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the switch types, Device IDs (HCALCS only) and Calendar (schedule) are defined via Service Request 6.14.2 (see Annex section 6.14.2). 4. This Service Request causes the specified <i>Auxiliary Load Control Switch [n]</i> to close immediately. The Service Request shall include a time period. When this time period has elapsed, ESME shall be capable of causing the switch to open or remain closed as defined in the <i>Auxiliary Load Control Switch Calendar</i> as defined by SMETS. 5. A command to close an <i>Auxiliary Load Control Switch [n]</i> shall be executed by the ESME only if the Supply is Enabled. If the Supply is Armed or Disabled, the Command shall be executed when the Supply is Enabled. 6. For Devices with GBCS version 4.0 or later this Service Request is not applicable and Users should instead use the later equivalent 7.13 Set Auxiliary Controller State 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to v4.0	0x0055	N/A
GBCS Use Case prior to v4.0	ECS47	N/A
GBCS Use Case Name prior to v4.0	Set or Reset HC ALCS or ALCS State	N/A
GBCS v4.0 or later	N/A – feature not supported by Device	N/A
SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	

DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	ECS47	Response Code - E57

Table 20 Activate Auxiliary Load Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.5.1 Service Request

7.5.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ActivateAuxiliaryLoad XML element defines this Service Request and contains the Switch (1, 2, 3, 4 or 5) to be closed (activated) and the activation duration.

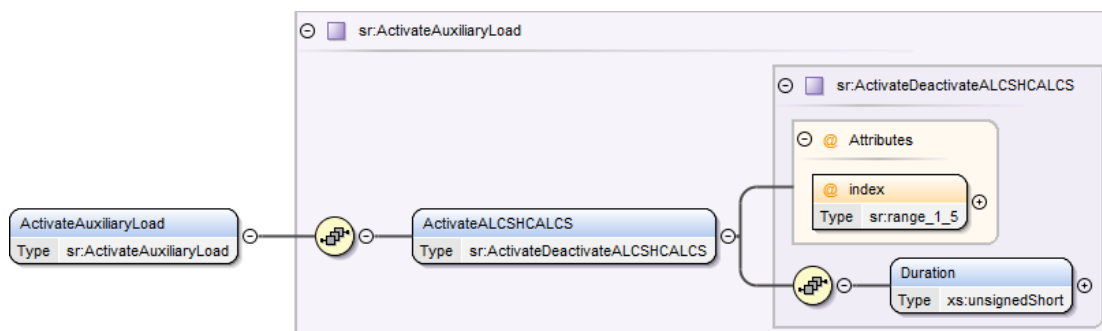


Figure 11 Activate Auxiliary Load Service Request Structure

7.5.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ActivateALCSHCALCS	The Switch (ALC or HCALCS) to be activated and the activation duration The index is the Switch Identifier	sr:ActivateDeactivateALCSHCALCS (see section 7.5.1.3)	Yes	None	N/A	Non-Sensitive
index (attribute of ActivateALCSHCALCS)	The identifier associated with the ALCS / HCALCS	sr:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	Yes	None	N/A	Non-Sensitive

Table 21 Activate Auxiliary Load Service Request Data Items

7.5.1.3 ActivateDeactivateALCSHCALCS Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Duration	The time period during which the switch is to remain closed (activated)	xs:unsignedShort	Yes	None	Minutes	Non-Sensitive

Table 22 Activate Auxiliary Load Service Request – ActivateDeactivateALCSHCALS Data Items

7.5.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 23 Activate Auxiliary Load Modes of Operation

7.5.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 24 Activate Auxiliary Load Command Variant Values

7.5.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.5.1.7 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ActivateAuxiliaryLoad>
  <ActivateALCSHCALCS index="3">
    <Duration>60</Duration>
  </ActivateALCSHCALCS>
</ActivateAuxiliaryLoad>
```

Figure 12 Activate Auxiliary Load Transform Request (Body) Format

7.5.2 Responses

The Service Response messages for an "Activate Auxiliary Load" Request follow the generic format for all "Device" response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement

- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.5.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is ActivateAuxiliaryLoadRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.5.2.1.1 Specific Header Data Items

Data Item	Electricity Response (HC ALCS or ALCS)
GBCSHexadecimalMessageCode	0055
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS47</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set or Reset HC ALCS or ALCS State</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 25 – Activate Auxiliary Load Parse Response Header Data Items

7.6 Deactivate Auxiliary Load (7.6)

Service Request Name	DeactivateAuxiliaryLoad
Service Reference	7.6
Service Request Variant Name	DeactivateAuxiliaryLoad
Service Reference Variant	7.6

Service Request Objective	To enable a DCC Service User to control, by opening, either, an Auxiliary Load Control Switch (ALCS) within a specified Electricity Smart Meter or a specified HAN connected Auxiliary Load Control Switch (HCALCS).	
Business Context Statement	The DCC Service User requires that an Auxiliary Load Control Switch is immediately opened e.g. to switch off a consumer's electric storage heating remotely.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive: <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative	<ol style="list-style-type: none"> For Devices with GBCS version prior to v4.0 this Service Request sets the value of the <i>Auxiliary Load Control Switch [n] - Status</i> as defined by SMETS. The current status being "open" or "closed". This Service Request is applicable to an ESME connected to ALCS and / or HCALCS. The Business Target ID = ESME Device ID. An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS. The switch labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the switch types, Device IDs (HCALCS only) and Calendar (schedule) are defines via Service Request 6.14.2 (see Annex section 6.14.2). This Service Request causes the specified <i>Auxiliary Load Control Switch [n]</i> to open immediately. The Service Request shall include a time period. When this time period has elapsed, the ESME shall be capable of causing the switch to close or remain open as defined in the <i>Auxiliary Load Control Switch Calendar</i>, as defined in SMETS. For Devices with GBCS version 4.0 or later this Service Request is not applicable and Users should instead use the later equivalent 7.13 Set Auxiliary Controller State 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to v4.0	0x0055	N/A
GBCS Use Case prior to v4.0	ECS47	N/A
GBCS Use Case Name prior to v4.0	Set or Reset HC ALCS or ALCS State	N/A
GBCS v4.0 or later	N/A – feature not supported by Device	N/A
SMETS1 Availability	No	N/A

GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	ECS47	Response Code - E57

Table 26 Deactivate Auxiliary Load Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.6.1 Service Request

7.6.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its DeactivateAuxiliaryLoad XML element defines this Service Request and contains the Switch (1, 2, 3, 4 or 5) to be opened (deactivated) and the deactivation duration.

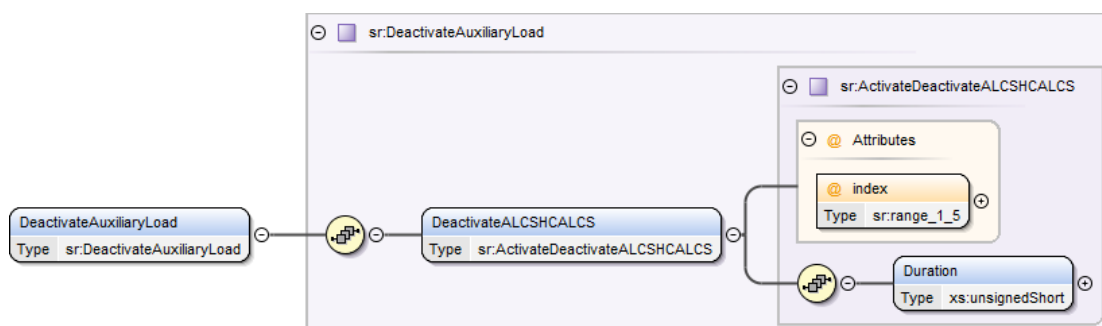


Figure 13 Deactivate Auxiliary Load Service Request Structure

7.6.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeactivateALCSHCALCS	The Switch (ALC or HCALCS) to be deactivated and the deactivation duration The index is the Switch Identifier	sr: ActivateDeactivateALCSHCALCS (see section 7.6.1.3)	Yes	None	N/A	Non-Sensitive
index (attribute of DeactivateALCSHCALCS)	The identifier associated with the ALCS / HCALCS	sr:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	Yes	None	N/A	Non-Sensitive

Table 27 Deactivate Auxiliary Load Service Request Data Items

7.6.1.3 ActivateDeactivateALCSHCALCS Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Duration	The time period during which the switch is to remain open (deactivated)	xs:unsignedShort	Yes	None	Minutes	Non-Sensitive

Table 28 Deactivate Auxiliary Load Service Request – ActivateDeactivateALCSHCALCS Data Items

7.6.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 29 Deactivate Auxiliary Load Modes of Operation

7.6.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 30 Deactivate Auxiliary Load Command Variant Values

7.6.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.6.1.7 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<DeactivateAuxiliaryLoad>
  <DeactivateALCSHCALCS index="3">
    <Duration>60</Duration>
  </DeactivateALCSHCALCS>
</DeactivateAuxiliaryLoad>
```

Figure 14 Deactivate Auxiliary Load Transform Request (Body) Format

7.6.2 Responses

The Service Response messages for a “Deactivate Auxiliary Load” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.6.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is DeactivateAuxiliaryLoadRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.6.2.1.1 Specific Header Data Items

Data Item	Electricity Response (HC ALCS or ALCS)
GBCSHexadecimalMessageCode	0055
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS47</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set or Reset HC ALCS or ALCS State</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 31 – Deactivate Auxiliary Load Parse Response Header Data Items

7.7 Read Auxiliary Load Control Switch Data (7.7)

Service Request Name	ReadAuxiliaryLoadControlSwitchData
Service Reference	7.7
Service Request Variant Name	ReadAuxiliaryLoadControlSwitchData
Service Reference Variant	7.7

Service Request Objective	To enable a DCC Service User to read the configuration data of Auxiliary Load Control Switches (ALCS or HCALCS) for a specified Device.
Business Context Statement	The DCC Service User wishes to check configuration data for an ALCS or HCALCS, for example to ensure that activation / deactivation is applied to the correct circuit.
User Role Access	<ul style="list-style-type: none">• Electricity Import Supplier (EIS)• Electricity Network Operator (ENO)• Other User (OU)
Security Classification	Non-critical and non-sensitive: <i>GBCS XREF: SME.C.NC</i>

Service Request Narrative	<ol style="list-style-type: none"> For Devices with GBCS version prior to v4.0 this Service Request reads: <ul style="list-style-type: none"> The <i>Auxiliary Load Control Switch Calendar</i> as defined by SMETS. This is a Switching Table containing a set of rules for setting the commanded state of each Auxiliary Load Control Switches or HAN Connected Auxiliary Load Control Switches. For each switch: <ol style="list-style-type: none"> The Label, Type (ALCS or HCALCS) and Device ID (HCALCS only) The status (Open or Closed) This Service Request is applicable to an ESME connected to ALCS and / or HCALCS. The Business Target ID = ESME Device ID. An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS. The switch labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the switch types, Device IDs (HCALCS only) and Calendar (schedule) are defines via Service Request 6.14.2 (see Annex section 6.14.2). The Electricity Smart Meter also includes an HCALCS Event Log, which is read via Service Request 6.13 (see Annex section 6.13). This Service Request will return data from all the ALCS / HCALCS connected to the Electricity Smart Meter Please note, if the switch label being read refers to an HCALCS then the value of the switch label has no meaning (since an ESME cannot be certain of the status of an HC ALCS) This Service Request is applicable to User Role ENO, irrespective of the ESME's GBCS version. Even though the ENOs are not URP to the Device, the Command will be forwarded to the Device by the DSP Access Control Broker using the URP interaction type, because GBCS Use Case ECS61a is only applicable to the Supplier and ACB roles. For Devices with GBCS version 4.0 or later this Service Request is not applicable and for equivalent functionality Users should instead use a combination of 7.14 Read Auxiliary Controller Configuration Data and 7.15 Read Auxiliary Controller Operational Data. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to v4.0	0x00BB	N/A
GBCS Use Case prior to v4.0	ECS61a	N/A

GBCS Use Case Name prior to v4.0	Read HC ALCS and ALCS Data from ESME	N/A
GBCS v4.0 or later	N/A – feature not supported by Device	N/A
SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	ECS61a	Response Code - E57

Table 32 Read Auxiliary Load Control Switch Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.7.1 Service Request

7.7.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadALCSData XML element defines this Service Request and, for Future Dated Requests, it contains the Execution Date and Time.

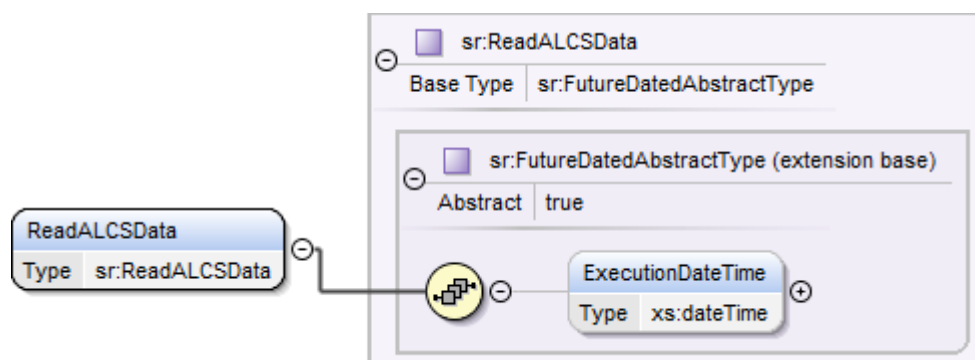


Figure 15 Read Auxiliary Load Control Switch Data Service Request Structure

7.7.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 33 Read Auxiliary Load Control Switch Data Service Request Data Items

7.7.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 34 Read Auxiliary Load Control Switch Data Modes of Operation

7.7.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 35 Read Auxiliary Load Control Switch Data Command Variant Values

7.7.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

7.7.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadALCSDData/>

Figure 16 Read Auxiliary Load Control Switch Data Service Request (Body) Format

7.7.2 Responses

The Service Response messages for a "Read Auxiliary Load Control Switch Data" Request follow the generic format for all "Device" response messages. The generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload

- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.7.2.1 Parse Output Format

7.7.2.1.1 Format - ReadALCSDataRsp

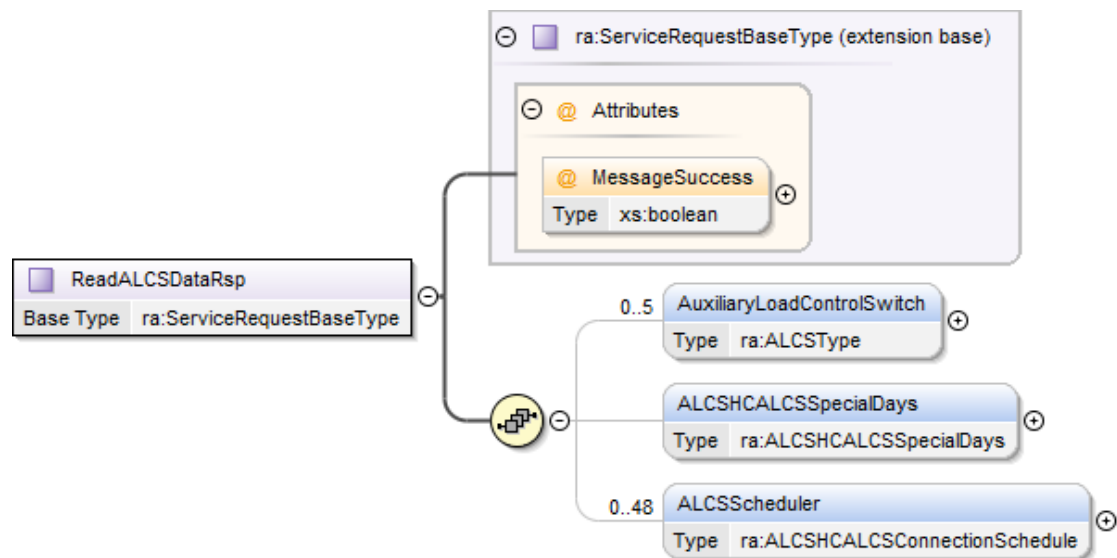


Figure 17 - Read ALCS Data Response Structure

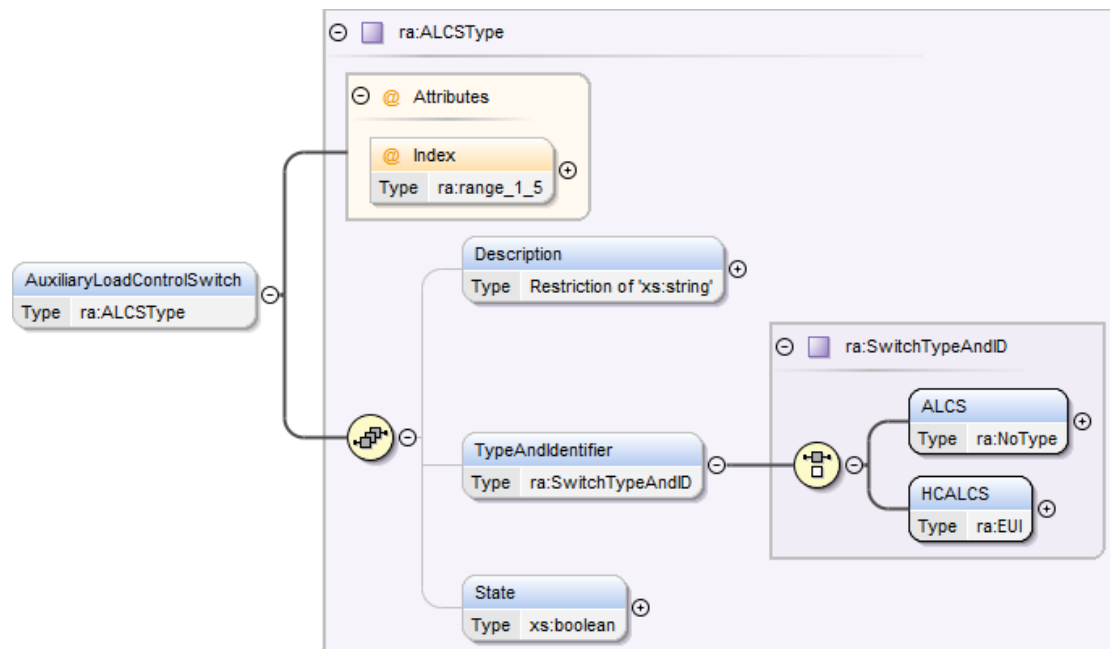


Figure 18 - AuxiliaryLoadControlSwitch Structure

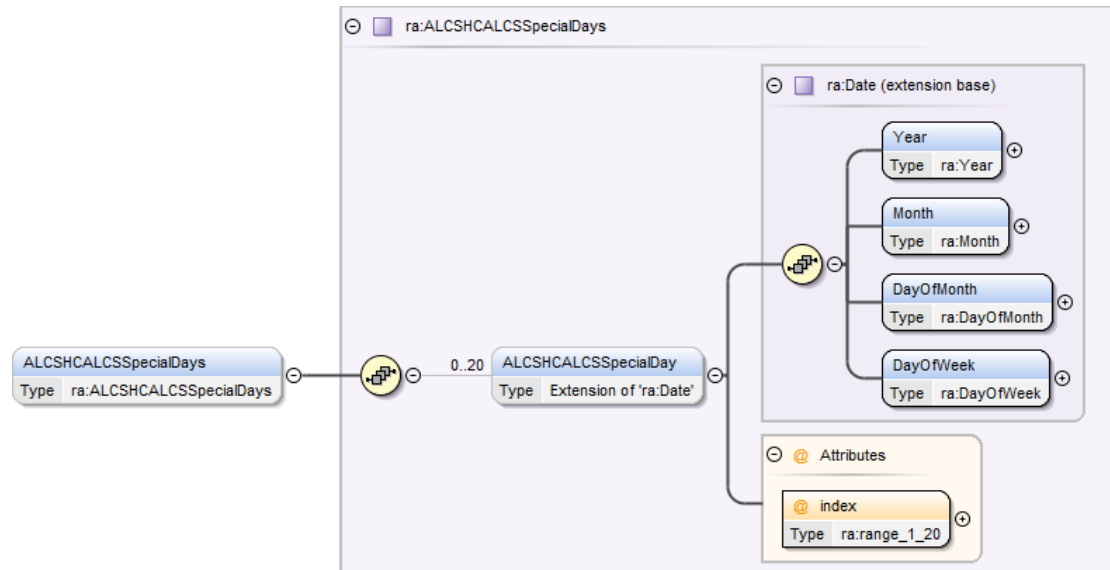


Figure 19 - ALCSHCALCSSpecialDays Structure

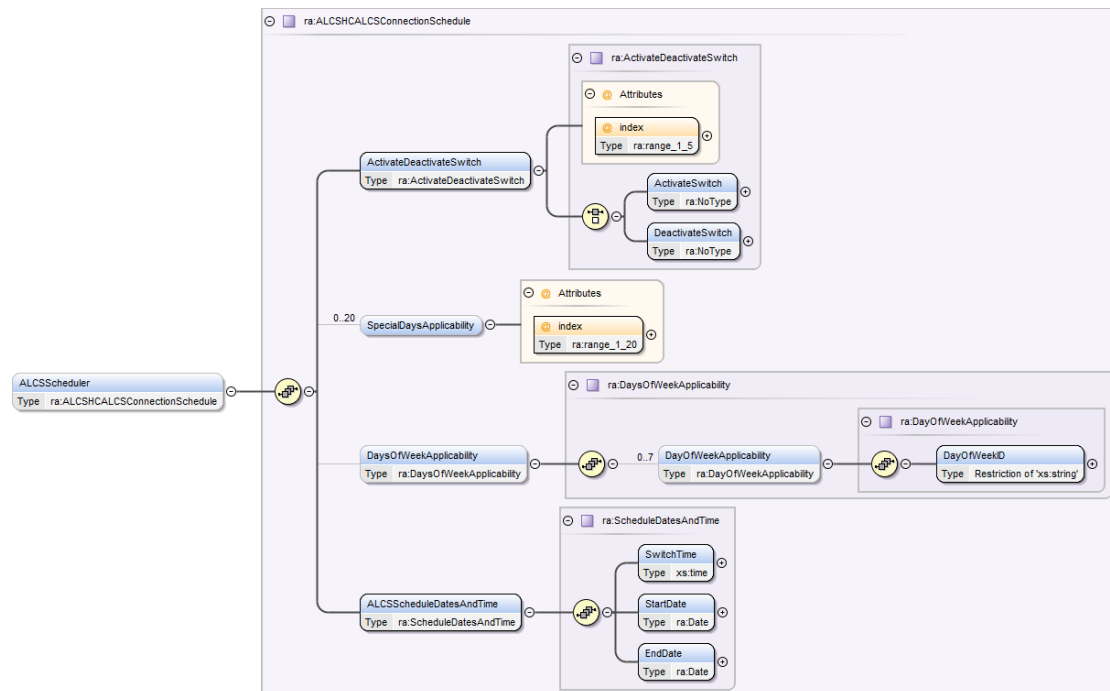


Figure 20 - ALCSScheduler Structure

7.7.2.1.2 Specific Header Data Items

Data Item	Electricity Response (HC ALCS and ALCS)
GBCSHexadecimalMessageCode	00BB
GBCS Use Case Number (for information only - not in header)	ECS61a

Data Item	Electricity Response (HC ALCS and ALCS)
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read HC ALCS and ALCS Data from ESME</i>
SupplementaryRemotePartyID	Present where originator is a URP or the originator's User Role is ENO
SupplementaryRemotePartyCounter	Present where originator is a URP or the originator's User Role is ENO
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 36 – Read ALCS Data Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

7.7.2.1.3 Specific Body Data Items

The main XML sub-elements under the XML element ReadALCSDataRsp are listed in this table.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Description	For each Auxiliary Load Control Switch or HAN Connected Auxiliary Load Control Switch, a description of the type of controlled load connected and the switch type.	xs:string (maxLength=22)	None	N/A	Non-Sensitive
TypeAndIdentifier	The Switch Type (ALCS or HC ALCS) and, for HCALCS, the Device ID	ra:SwitchTypeAndID (see section 7.7.2.1.4)	None	N/A	Non-sensitive
State	The current status (being "open"/false or "closed"/true) of Auxiliary Load Control Switch [n] as commanded by ESME. Please note, if the state refers to an HCALCS then the value returned has no meaning (since an ESME cannot be certain of the status of an HC ALCS)	xs:boolean	None	N/A	Non-Sensitive
ALCSHCALCSSpecialDay	The date (or set of dates if wildcards are used) of the corresponding special day. Includes an index attribute denoting the day identifier.	ra:Date (see the similar sr:Date in Annex section 17)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SwitchTime	The trigger points in the calendar, specified in terms of the time of day when the schedule is to be activated.	xs:time	None	N/A	Non-Sensitive
ActivateDeactivateSwitch	Identifier of the Switch to be Activated or Deactivated. The index is the Switch Identifier. Valid set: <ul style="list-style-type: none"> ActivateSwitch. To close the Switch identified by the index DeactivateSwitch. To open the Switch identified by the index 	ra:ActivateDeactivateSwitch (choice of: ActivateSwitch DeactivateSwitch)	None	N/A	Non-Sensitive
DaysOfWeekApplicability	The days of the week to which the schedule applies defined as an array of 7 Day IDs Valid set: <ul style="list-style-type: none"> Monday Tuesday Wednesday Thursday Friday Saturday Sunday 	ra:DayOfWeekID restriction of xs:string (Enumeration)	Yes (min 1 day)	N/A	Non-Sensitive
SpecialDaysApplicability	Defines special days on which the entry is valid by linking to the special days table.	xs:integer	None	N/A	Non-Sensitive
StartDate	Start of the date period in which the entry is valid.	ra:Date (see the similar sr:Date in Annex section 17)	None	N/A	Non-Sensitive
EndDate	End of the date period in which the entry is valid.	ra:Date (see the similar sr:Date in Annex section 17)	None	N/A	Non-Sensitive

Table 37 - Read ALCS Data Parse Response Body Data Items

7.7.2.1.4 SwitchTypeAndId Data Items Definition

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ALCS	Identifies Switch Type as ALCS	ra:NoType (see Annex 17)	None	N/A	Non-Sensitive
HCALCS	Identifies Switch Type as HCALCS and it defines its Device ID	ra:EUI	None	N/A	Non-Sensitive

Table 38 Read ALCS Data – SwitchTypeAndId Data Items

7.7.2.1.5 Sample Response

```

<ra:ReadALCSDDataRsp MessageSuccess="true">
  <ra:AuxiliaryLoadControlSwitch Index="1">
    <ra:Description>Description1</ra:Description>
    <ra:TypeAndIdentifier><ra:ALCS/></ra:TypeAndIdentifier>
    <ra:State>false</ra:State>
  </ra:AuxiliaryLoadControlSwitch>
  <ra:AuxiliaryLoadControlSwitch Index="2">
    <ra:Description>Description2</ra:Description>
    <ra:TypeAndIdentifier>
      <ra:HCALCS>00-00-00-00-00-00-00</ra:HCALCS>
    </ra:TypeAndIdentifier>
    <ra:State>true</ra:State>
  </ra:AuxiliaryLoadControlSwitch>
  <ra:ALCSHCALCSSpecialDays>
    <ra:ALCSHCALCSSpecialDay index="1">
      <ra:Year>
        <ra:SpecifiedYear>2015</ra:SpecifiedYear>
      </ra:Year>
      <ra:Month>
        <ra:SpecifiedMonth>6</ra:SpecifiedMonth>
      </ra:Month>
      <ra:DayOfMonth>
        <ra:SpecifiedDayOfMonth>16</ra:SpecifiedDayOfMonth>
      </ra:DayOfMonth>
      <ra:DayOfWeek>
        <ra:SpecifiedDayOfWeek>4</ra:SpecifiedDayOfWeek>
      </ra:DayOfWeek>
    </ra:ALCSHCALCSSpecialDay>
    <ra:ALCSHCALCSSpecialDay index="2">
      <ra:Year>
        <ra:SpecifiedYear>2015</ra:SpecifiedYear>
      </ra:Year>
      <ra:Month>
        <ra:SpecifiedMonth>7</ra:SpecifiedMonth>
      </ra:Month>
      <ra:DayOfMonth>
        <ra:SpecifiedDayOfMonth>12</ra:SpecifiedDayOfMonth>
      </ra:DayOfMonth>
      <ra:DayOfWeek>
        <ra:SpecifiedDayOfWeek>5</ra:SpecifiedDayOfWeek>
      </ra:DayOfWeek>
    </ra:ALCSHCALCSSpecialDay>
  </ra:ALCSHCALCSSpecialDays>
  <ra:ALCSScheduler>
    <ra:ActivateDeactivateSwitch index="1"><ra:DeactivateSwitch/></ra:ActivateDeactivateSwitch>
    <ra:SpecialDaysApplicability index="1"/>
    <ra:SpecialDaysApplicability index="2"/>
    <ra:DaysOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Monday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Tuesday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
    </ra:DaysOfWeekApplicability>
    <ra:ALCSScheduleDatesAndTime>
      <ra:SwitchTime>06:00:00.00</ra:SwitchTime>
      <ra:StartDate>
        <ra:Year><ra:NonSpecifiedYear/></ra:Year>
        <ra:Month><ra:SpecifiedMonth>01</ra:SpecifiedMonth></ra:Month>
        <ra:DayOfMonth><ra:SpecifiedDayOfMonth>01</ra:SpecifiedDayOfMonth></ra:DayOfMonth>
        <ra:DayOfWeek><ra:NonSpecifiedDayOfWeek/></ra:DayOfWeek>
      </ra:StartDate>
      <ra:EndDate>
        <ra:Year><ra:NonSpecifiedYear/></ra:Year>
        <ra:Month><ra:SpecifiedMonth>03</ra:SpecifiedMonth></ra:Month>
        <ra:DayOfMonth><ra:SpecifiedDayOfMonth>31</ra:SpecifiedDayOfMonth></ra:DayOfMonth>
        <ra:DayOfWeek><ra:NonSpecifiedDayOfWeek/></ra:DayOfWeek>
      </ra:EndDate>
    </ra:ALCSScheduleDatesAndTime>
  </ra:ALCSScheduler>
</ra:ReadALCSDDataRsp>

```

Figure 21 - Read ALCS Data Response Sample

7.8 Reset Auxiliary Load (7.8)

Service Request Name	ResetAuxiliaryLoad	
Service Reference	7.8	
Service Request Variant Name	ResetAuxiliaryLoad	
Service Reference Variant	7.8	
Service Request Objective	To enable a DCC Service User to reset the specified Auxiliary Load Control Switch or Han Connected Auxiliary Load Control Switch to the state determined by the calendar for a specified ESME.	
Business Context Statement	The DCC Service User requires that an auxiliary load control switch to an additional circuit, controlled by the specified device, is reset to the normal state it would be in (as determined by the ALCS's calendar). This would typically be following prior commands from the DCC Service Users to Activate or Deactivate the ALCS / HCALCS.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive: <i>GBCS XREF: SME.C.C</i>	
Service Request Narrative	<ol style="list-style-type: none"> For Devices with GBCS version prior to v4.0 this Service Request resets the value of the <i>Auxiliary Load Control Switch [n] - Status</i> to open, close or maintain its state, as defined in the <i>Auxiliary Load Control Switch Calendar</i> as defined by SMETS. This Service Request is applicable to an ESME connected to ALCS and / or HCALCS. The Business Target ID = ESME Device ID. An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS. The switch labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the switch types, Device IDs (HCALCS only) and Calendar (schedule) are defines via Service Request 6.14.2 (see Annex section 6.14.2). For Devices with GBCS version 4.0 or later this Service Request is not applicable. There is no direct equivalent of this Service Request for Devices with GBCS version 4.0 or later. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code prior to v4.0	0x0055	N/A
GBCS Use Case prior to v4.0	ECS47	N/A
GBCS Use Case Name prior to v4.0	Set or Reset HC ALCS or ALCS State	N/A

GBCS v4.0 or later	N/A – feature not supported by Device	N/A
SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	ECS47	Response Code - E57

Table 39 Reset Auxiliary Load Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.8.1 Service Request

7.8.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ResetAuxiliaryLoad XML element defines this Service Request and contains the Switch (1, 2, 3, 4 or 5) to be reset.

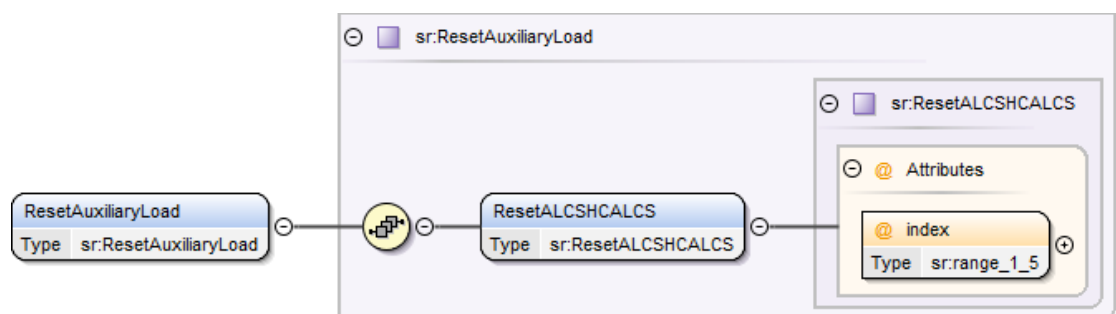


Figure 22 Reset Auxiliary Load Service Request Structure

7.8.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ResetALCSHCALCS	Switch (ALCS or HCALCS) to be reset The index is the Switch Identifier	sr:ResetALCSHCALCS (N/A)	Yes	None	N/A	Non-Sensitive
index (attribute of ResetALCSHCALCS)	The identifier associated with the ALCS / HCALCS	sr:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	Yes	None	N/A	Non-Sensitive

Table 40 Reset Auxiliary Load Service Request Data Items

7.8.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 41 Reset Auxiliary Load Modes of Operation

7.8.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 42 Reset Auxiliary Load Command Variant Values

7.8.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.8.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ResetAuxiliaryLoad>
  <ResetALCSHCALCS index="3" />
</ResetAuxiliaryLoad>
```

Figure 23 Reset Auxiliary Load Transform Request (Body) Format

7.8.2 Responses

The Service Response messages for a “Reset Auxiliary Load” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.8.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is ResetAuxiliaryLoadRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.8.2.1.1 Specific Header Data Items

Data Item	Electricity Response (HC ALCS or ALCS)
GBCSHexadecimalMessageCode	0055
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS47</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set or Reset HC ALCS or ALCS State</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 43 – Reset Auxiliary Load Configuration Parse Response Header Data Items

7.9 Add Auxiliary Load To Boost Button (7.9)

Service Request Name	AddAuxiliaryLoadToBoostButton
Service Reference	7.9
Service Request Variant Name	AddAuxiliaryLoadToBoostButton
Service Reference Variant	7.9

Service Request Objective	To enable a DCC Service User to associate an Auxiliary Load Control (ALCS prior to GBCS v4.0, ALCS or APC for GBCS v4.0 or later) with a boost button by placing the Switch under the control of the Boost button on a specified Electricity Smart Meter.	
Business Context Statement	The DCC Service User requires that an Electricity Smart Meter connected auxiliary load control switch or APC is placed under the control of the Boost Button on the electricity meter.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Non-critical and non-sensitive: <i>GBCS XREF: SME.C.NC</i>	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request sets the <i>Boost Function Control [n]</i> as defined by SMETS. An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS, or additionally APC from GBCS v4.0. For Devices prior to GBCS v4.0, the switch labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the switch types, Device IDs (HCALCS only) and Calendar (schedule) are defined via Service Request 6.14.2 (see Annex section 6.14.2). For Devices with GBCS v4.0 or later the labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the Calendar (schedule) is defined via Service Request 6.14.3 (see Annex section 6.14.3). This Service Request has to include 5 switches, even if the ESME is connected to less than 5. <ol style="list-style-type: none"> Those 'n' switches already controlled by the Boost Button or to be controlled by it have to be set to true. The other 5 – 'n' switches, if any, have to be set to false. Note that if the switch was previously controlled by the Boost Button, this Request will result in the switch no longer being controlled by it. If ESME connected to less than 5 switches, this applies to those switches that don't exist. This Service Request is treated by the DCC Data Systems with the same priority as a Service Request with a Target Response Time of 30 seconds. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x005F	N/A
GBCS Use Case	ECS62	N/A
GBCS Use Case Name	Set ALCS and Boost Button Association (prior to GBCS v4.0)	N/A

	Set ALCS/APC and Boost Button Association (GBCS v4.0 or later)	
SMETS1 Availability	No	N/A

Table 44 Add Auxiliary Load To Boost Button Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.9.1 Service Request

7.9.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its AddAuxiliaryLoadToBoostButton XML element defines this Service Request and contains 5 switches and for each one whether it is to be controlled by the Boost Button or not and, for Future Dated Requests, the date-time when the association between switches and the Boost Button is to be changed.

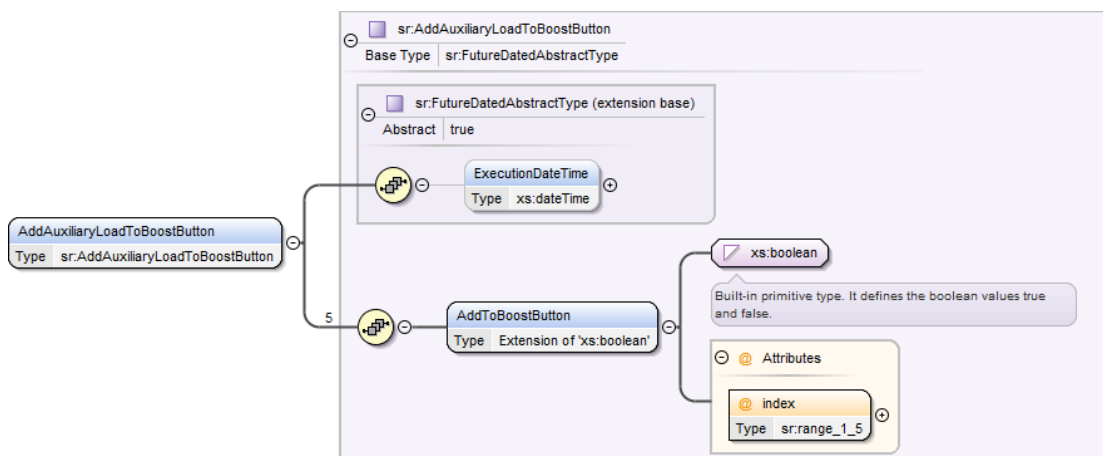


Figure 24 Add Auxiliary Load To Boost Button Service Request Structure

7.9.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AddToBoostButton	Identifies the Auxiliary Load Control Switches to be controlled by the boost button. The index is the Switch Identifier Valid set: <ul style="list-style-type: none"> true. Switch to be controlled by the boost button false. Switch not to be controlled by the boost button 	xs:boolean	Yes ¹	None	N/A	Non-Sensitive
index (attribute of AddToBoostButton)	The value of the index identifies the switch that is associated with the button.	sr:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	Yes	None	N/A	Non-Sensitive

Table 45 Add Auxiliary Load To Boost Button Service Request Data Items

¹ A minimum of 5 and a maximum of 5

7.9.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 46 Add Auxiliary Load To Boost Button Modes of Operation

7.9.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 47 Add Auxiliary Load To Boost Button Command Variant Values

7.9.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

7.9.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<AddAuxiliaryLoadToBoostButton>
  <AddToBoostButton index="1">false</AddToBoostButton>
  <AddToBoostButton index="2">true</AddToBoostButton>
  <AddToBoostButton index="3">false</AddToBoostButton>
  <AddToBoostButton index="4">false</AddToBoostButton>
  <AddToBoostButton index="5">false</AddToBoostButton>
</AddAuxiliaryLoadToBoostButton>
```

Figure 25 Add Auxiliary Load To Boost Button Service Request (Body) Format

In this example switch 2 is being set to controlled by the Boost Button and 1, 3, 4 and 5 are being set to not controlled by the Boost Button

7.9.2 Responses

The Service Response messages for an “Add Auxiliary Load To Boost Button” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.9.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is AddAuxiliaryLoadToBoostButtonRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.9.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	005F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS62</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set ALCS and Boost Button Association (prior to GBCS v4.0) Set ALCS/APC and Boost Button Association (GBCS v4.0 or later)</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 48 – Add Auxiliary Load To Boost Button Parse Response Header Data Items

7.10 Remove Auxiliary Load From Boost Button (7.10)

Service Request Name	RemoveAuxiliaryLoadFromBoostButton
Service Reference	7.10
Service Request Variant Name	RemoveAuxiliaryLoadFromBoostButton
Service Reference Variant	7.10
Service Request Objective	To enable a DCC Service User to remove an Auxiliary Load Control (ALCS prior to GBCS v4.0, ALCS or APC for GBCS v4.0 or later) with a boost button by removing the Switch under the control of the Boost button on a specified Electricity Smart Meter.
Business Context Statement	The DCC Service User requires that an Electricity Smart Meter connected auxiliary load control switch or APC is removed from the control of the Boost Button on the electricity meter.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)
Security Classification	Non-critical and non-sensitive: <i>GBCS XREF: SME.C.NC</i>
Service Request Narrative	<ol style="list-style-type: none"> This Service Request sets the <i>Boost Function Control [n]</i> as defined by SMETS. An Electricity Smart Meter can be connected to a maximum of 5 switches, each of which can be ALCS or HCALCS, or additionally APC from GBCS v4.0. For Devices prior to GBCS v4.0, the switch labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the switch types, Device IDs (HCALCS only) and Calendar (schedule) are defined via Service Request 6.14.2 (see Annex section 6.14.2). For Devices with GBCS v4.0 or later the labels are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the Calendar (schedule) is defined via Service Request 6.14.3 (see Annex section 6.14.3). This Service Request has to include 5 switches, even if the ESME is connected to less than 5. <ol style="list-style-type: none"> Those 'n' switches not controlled by the Boost Button or to be removed from the Boost Button control have to be set to true. If ESME connected to less than 5 switches, this applies to those switches that don't exist. The other 5 – 'n' switches, if any, have to be set to false. Note that if the switch wasn't previously controlled by the Boost Button, this Request will result in the switch being controlled by it.

GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x005F	N/A
GBCS Use Case	ECS62	N/A
GBCS Use Case Name	Set ALCS and Boost Button Association (prior to GBCS v4.0) Set ALCS/APC and Boost Button Association (GBCS v4.0 or later)	N/A
SMETS1 Availability	No	N/A

Table 49 Remove Auxiliary Load From Boost Button Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.10.1 Service Request

7.10.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its RemoveAuxiliaryLoadFromBoostButton XML element defines this Service Request and contains 5 switches and for each one whether it is to be controlled by the Boost Button or not and, for Future Dated Requests, the date-time when the association between switches and the Boost Button is to be changed.

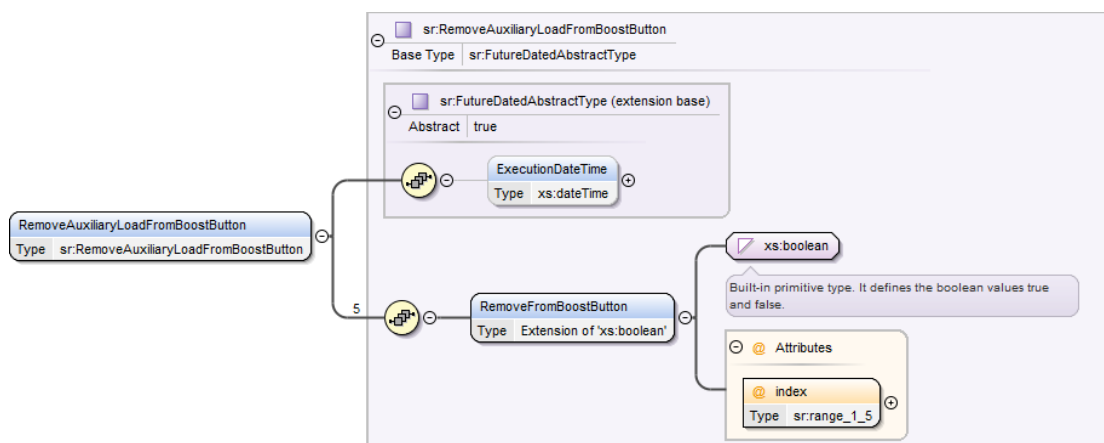


Figure 26 Remove Auxiliary Load From Boost Button Service Request Structure

7.10.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
RemoveFromBoostButton	Identifies the Auxiliary Load Control Switches to be controlled by the boost button. The index is the Switch Identifier Valid set: <ul style="list-style-type: none"> true. Switch not to be controlled by the boost button false. Switch to be controlled by the boost button 	xs:boolean	Yes ¹	None	N/A	Non-Sensitive
index (attribute of RemoveFromBoostButton)	The value of the index identifies the switch that is associated with the button.	sr:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	Yes	None	N/A	Non-Sensitive

Table 50 Remove Auxiliary Load From Boost Button Service Request Data Items

¹ A minimum of 5 and a maximum of 5

7.10.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 51 Remove Auxiliary Load From Boost Button Modes of Operation

7.10.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 52 Remove Auxiliary Load From Boost Button Command Variant Values

7.10.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

7.10.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RemoveAuxiliaryLoadFromBoostButton>
  <RemoveFromBoostButton index="1">true</RemoveFromBoostButton>
  <RemoveFromBoostButton index="2">false</RemoveFromBoostButton>
  <RemoveFromBoostButton index="3">true</RemoveFromBoostButton>
  <RemoveFromBoostButton index="4">true</RemoveFromBoostButton>
  <RemoveFromBoostButton index="5">true</RemoveFromBoostButton>
</RemoveAuxiliaryLoadFromBoostButton>
```

Figure 27 Remove Auxiliary Load From Boost Button Service Request (Body) Format

In this example switch 2 is being set to controlled by the Boost Button and 1, 3, 4 and 5 are being set to not controlled by the Boost Button

7.10.2 Responses

The Service Response messages for a "Remove Auxiliary Load From Boost Button" Request follow the generic format for all "Device" response messages. The generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.10.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is RemoveAuxiliaryLoadFromBoostButtonRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.10.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	005F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS62</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set ALCS and Boost Button Association (prior to GBCS v4.0) Set ALCS/APC and Boost Button Association (GBCS v4.0 or later)</i>

Data Item	Electricity Response
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 53 – Remove Auxiliary Load From Boost Button Parse Response Header Data Items

7.11 Read Boost Button Details (7.11)

Service Request Name	ReadBoostButtonDetails	
Service Reference	7.11	
Service Request Variant Name	ReadBoostButtonDetails	
Service Reference Variant	7.11	
Service Request Objective	To enable a DCC Service User to read the details of the Boost Button on a specified Electricity Smart Meter.	
Business Context Statement	This may be required which the DCC Service User is taking on a customer who has a meter which has a boost button installed	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Other User (OU) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<p>This Service Request reads the following as defined by SMETS;</p> <ul style="list-style-type: none"> - <i>Boost Function Availability</i> - <i>Boost Function Control [n]</i> - A data item to identify whether Auxiliary Controller [n] is to be controlled by the Boost Function. For a Device with GBCS v4.0 or later an Auxiliary Controller may be an APC or ALCS, and prior to GBCS v4.0 it can only refer to an ALCS. - <i>Boost Function Event Log</i> - A single log capable of storing entries for the most recent 25 Boost Periods including the UTC date and time of the beginning and end of the Boost Period. <p>For Service User Roles to which registration checks apply, the Service Request sender needs to be registered for that Device for the entire date-time period for which the Boost Function Event Log is requested. If the sender is not authorised to read data for the entire period requested, an error will be returned.</p>	
GBCS Cross Reference	Electricity	Gas

GBCS Message Code	0x005E	N/A
GBCS Use Case	ECS61c	N/A
GBCS Use Case Name	Read Boost Button Data from ESME	N/A
SMETS1 Availability	No	N/A

Table 54 Read Boost Button Details Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.11.1 Service Request

7.11.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadBoostButtonDetails XML element defines this Service Request and it contains the date-time period for which the Boost Button Function Event Log is to be read and, for Future Dated Requests, the Execution Date and Time.

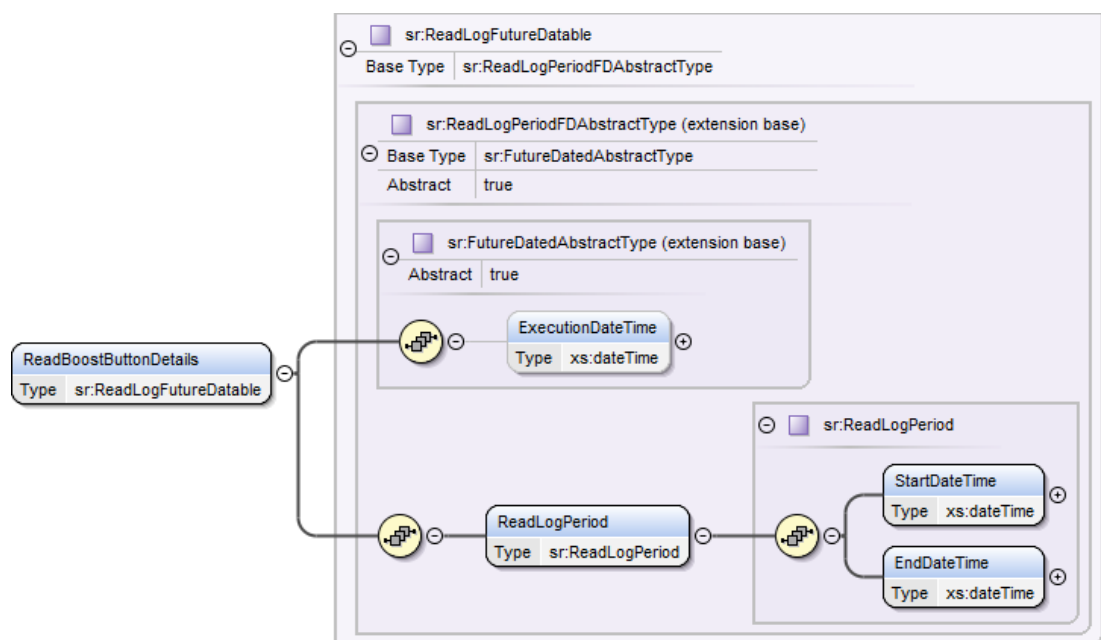


Figure 28 Read Boost Button Details Service Request Structure

7.11.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The Start and / or End Date-Times for which the Boost Button Event Log data is required	sr:ReadLogPeriod (see Annex section 17 for details)	Yes	None	N/A	Non-Sensitive

Table 55 Read Boost Button Details Service Request Data Items

7.11.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 56 Read Boost Button Details Modes of Operation

7.11.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 57 Read Boost Button Details Command Variant Values

7.11.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Read Log Period validation.

7.11.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadBoostButtonDetails>
  <ReadLogPeriod>
    <StartDateTime>2013-12-01T00:00:00.00Z</StartDateTime>
    <EndDateTime>2013-12-31T23:59:59.00Z</EndDateTime>
  </ReadLogPeriod>
</ReadBoostButtonDetails>
```

Figure 29 Read Boost Button Details Service Request (Body) Format

7.11.2 Responses

The Service Response messages for a “Read Boost Button Details” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.11.2.1 Parse Output Format

7.11.2.1.1 Format - ReadBoostButtonDetailsRsp

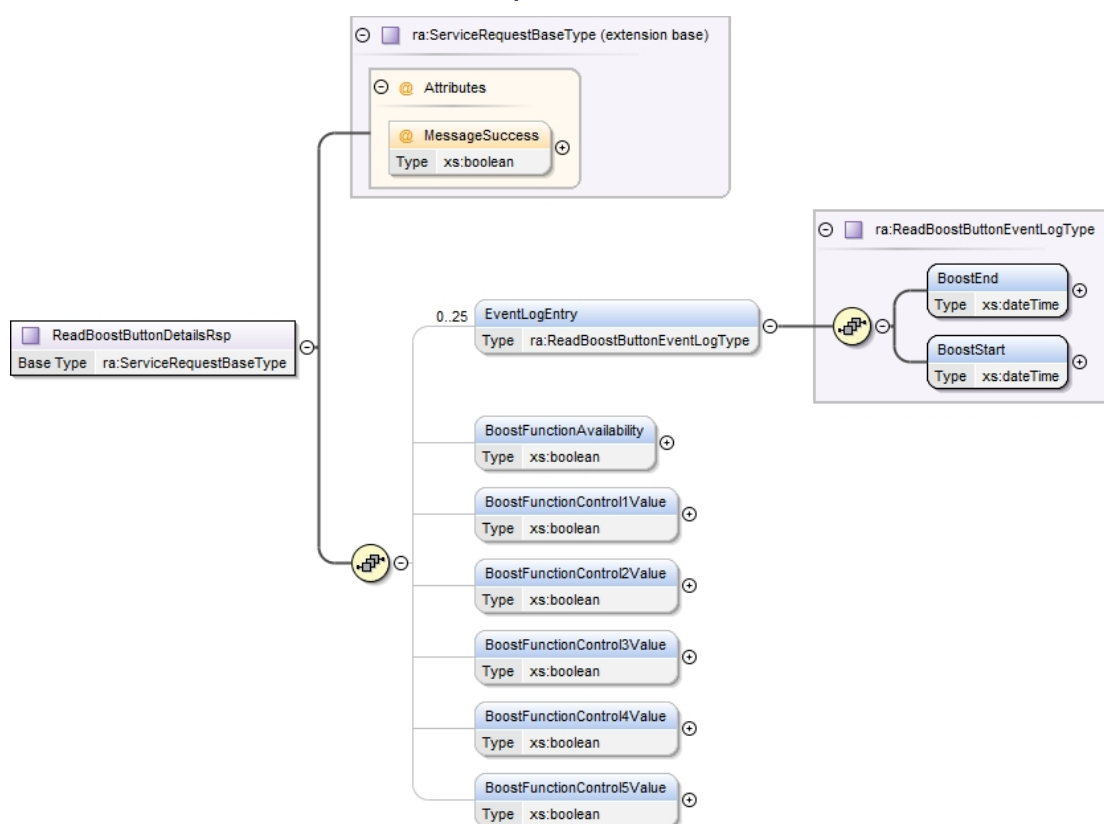


Figure 30 - Read Boost Button Details Response Structure

7.11.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	005E
GBCS Use Case Number (for information only - not in header)	ECS61c
GBCS Use Case Name (for information only - not in header)	Read Boost Button Data from ESME

Data Item	Electricity Response
SupplementaryRemotePartyID	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 58 – Read Boost Button Details Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

7.11.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
BoostEnd	End of boost period.	xs:dateTime	None	N/A	Non-Sensitive
BoostStart	Start of boost period.	xs:dateTime	None	N/A	Non-Sensitive
BoostFunctionAvailability	Identifies if ESME has a configured boost function. Fixed at manufacture to represent presence (true) or absence (false) of boost function.	xs:boolean	None	N/A	Non-Sensitive
BoostFunctionControl1Value	Identifies whether Auxiliary Load Control Switch [1] is to be controlled by the Boost Function.	xs:boolean	None	N/A	Non-Sensitive
BoostFunctionControl2Value	Identifies whether Auxiliary Load Control Switch [2] is to be controlled by the Boost Function.	xs:boolean	None	N/A	Non-Sensitive
BoostFunctionControl3Value	Identifies whether Auxiliary Load Control Switch [3] is to be controlled by the Boost Function.	xs:boolean	None	N/A	Non-Sensitive
BoostFunctionControl4Value	Identifies whether Auxiliary Load Control Switch [4] is to be controlled by the Boost Function.	xs:boolean	None	N/A	Non-Sensitive
BoostFunctionControl5Value	Identifies whether Auxiliary Load Control Switch [5] is to be controlled by the Boost Function.	xs:boolean	None	N/A	Non-Sensitive

Table 59 - Read Boost Button Details Parse Response Body Data Items

7.11.2.1.4 Sample Response

```
<ra:ReadBoostButtonDetailsRsp MessageSuccess="true">
  <ra:EventLogEntry>
    <ra:BoostEnd>2006-05-04T18:13:51.0</ra:BoostEnd>
    <ra:BoostStart>2006-05-04T18:16:51.0</ra:BoostStart>
  </ra:EventLogEntry>
  <ra:EventLogEntry>
    <ra:BoostEnd>2006-05-07T18:13:51.0</ra:BoostEnd>
    <ra:BoostStart>2006-05-07T19:21:51.0</ra:BoostStart>
  </ra:EventLogEntry>
  <ra:BoostFunctionAvailability>false</ra:BoostFunctionAvailability>
  <ra:BoostFunctionControl1Value>false</ra:BoostFunctionControl1Value>
  <ra:BoostFunctionControl2Value>false</ra:BoostFunctionControl2Value>
  <ra:BoostFunctionControl3Value>false</ra:BoostFunctionControl3Value>
  <ra:BoostFunctionControl4Value>false</ra:BoostFunctionControl4Value>
  <ra:BoostFunctionControl5Value>false</ra:BoostFunctionControl5Value>
</ra:ReadBoostButtonDetailsRsp>
```

Figure 31 - Read Boost Button Details Response Sample

7.12 Set Randomised Offset Limit (7.12)

Service Request Name	SetRandomisedOffsetLimit	
Service Reference	7.12	
Service Request Variant Name	SetRandomisedOffsetLimit	
Service Reference Variant	7.12	
Service Request Objective	To enable a DCC Service User to set the Randomised Offset limit on a specified Electricity Smart Meter.	
Business Context Statement	For example, the DCC Service User requires that, on installation, the Randomised Offset Limit is set on the meter, to put a bound on the randomised offset applied by the meter when switching tariffs and auxiliary load control switches.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) 	
Security Classification	Critical and non-sensitive: GBCS XREF: SME.C.C	
Service Request Narrative	<p>This Service Request sets the <i>Randomised Offset Limit</i> value as defined in SMETS.</p> <p>The product of the <i>Randomised Offset Limit</i> and the <i>Randomised Offset Number</i> as defined in SMETS (a randomly generated value between 0 and 1) rounded to the nearest second creates a Randomised Offset value for a Device. This value is used to delay the Tariff Switching Table times, the Auxiliary Load Control Switch switching times, and HAN Connected Auxiliary Load Control Switch switching times.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x004B	N/A

GBCS Use Case	ECS38	N/A
GBCS Use Case Name	Update Randomised Offset Limit	N/A
SMETS1 Availability	No	N/A

Table 60 Set Randomised Offset Limit Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.12.1 Service Request

7.12.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its RandomisedOffsetLimit XML element defines this Service Request and contains the Randomised Offset Limit.

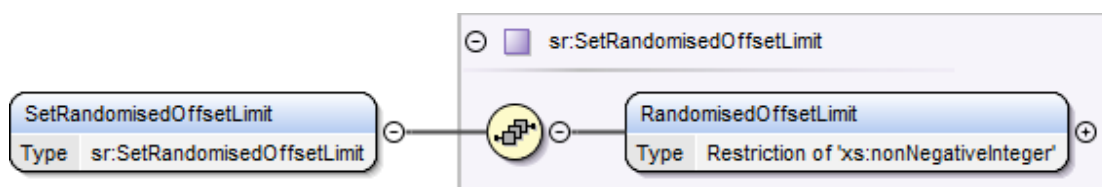


Figure 32 Randomised Offset Limit Service Request Structure

7.12.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RandomisedOffsetLimit	A value in seconds in the range 0 to 1799	Restriction of xs:nonNegativeInteger (minInclusive = 0, maxInclusive = 1799)	Yes	None	Seconds	Non-Sensitive

Table 61 Randomised Offset Limit Service Request Data Items

7.12.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 62 Randomised Offset Limit Modes of Operation

7.12.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 63 Randomised Offset Limit Command Variant Values

7.12.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.12.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SetRandomisedOffsetLimit>
  <RandomisedOffsetLimit>1250</RandomisedOffsetLimit>
</SetRandomisedOffsetLimit>
```

Figure 33 Randomised Offset Limit Transform Request (Body) Format

7.12.2 Responses

The Service Response messages for a “Randomised Offset Limit” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.12.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is SetRandomisedOffsetLimitRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.12.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	004B

Data Item	Electricity Response
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS38</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Update Randomised Offset Limit</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 64 – Set Randomised Offset Limit Parse Response Header Data Items

7.13 Set Auxiliary Controller State (7.13)

Service Request Name	SetAuxiliaryControllerState
Service Reference	7.13
Service Request Variant Name	SetAuxiliaryControllerState
Service Reference Variant	7.13
Service Request Objective	<p>To enable a DCC Service User to define a period for a single Auxiliary Controller during which the state that is specified in this Service Request will override the configuration defined in the Auxiliary Controller Calendar.</p> <p>The Auxiliary Controller may be an Auxiliary Proportional Controller (APC) or Auxiliary Load Control Switch (ALCS) within a specified ESME (including SAPC), or an ALCS switch in a specified HAN connected Auxiliary Load Control Switch (HCALCS).</p>
Business Context Statement	The DCC Service User requires that for a defined period an Auxiliary Load Control Switch is closed or opened e.g. to switch on or off a consumer's electric storage heating remotely, or that the level of an Auxiliary Proportional Controller is set to an input or output level from 0-100%.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS)
Security Classification	<p>Critical and non-sensitive:</p> <p>GBCS XREF: SME.C.C</p>

Service Request Narrative	<ol style="list-style-type: none"> 1. This Service Request is applicable only to ESME Devices with GBCS v4.0 or later. Service Requests 7.5 and 7.6 provide equivalent functionality for Devices with GBCS versions prior to v4.0. 2. This Service Request is applicable to an ESME (including SAPC) with APC, ALCS and / or HCALCS capabilities. The Business Target ID = ESME Device ID. 3. An ESME (including SAPC) can be connected to a maximum of 5 Auxiliary Controllers, each of which can be APC, ALCS or HCALCS. This Service Request will set one of the 5 Auxiliary Controllers as specified by the attribute auxiliaryControllerN in the request. 4. This Service Request defines a period during which the value of the <i>Auxiliary Controller [n] State</i> as defined by SMETS is intended to be set to the state specified in the Service Request. The period is defined in SMETS as <i>APC [n] Setting Period</i> for an APC, <i>ALCS [n] Setting Period</i> for an ALCS and <i>HCALCS [n] Setting Period</i> for an HCALCS. 5. The state of an Auxiliary Controller is expressed as the percentage to which its commanded state level is to be set. Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow). 6. The default direction of energy flow is to output energy to the controlled load. Where an Auxiliary Controller is an APC it is possible for the commanded state to command that the direction of energy flow shall be to input from the controlled load device. 7. If the Device applies the Command successfully then the Device may generate a Device Alert 0x8F88 when the operational state of the Auxiliary Controller changes. A Device Alert 0x8F88 may be sent to the Device's Import Supplier, Network Operator, or Load Controller, or any two of them. Note that in this context Load Controller means the DCC Service User with organisation certificates in the Load Controller trust anchor cells, which in this version of the interface can be only an Electricity Import Supplier. 8. Only one setting period may be defined for an Auxiliary Controller at any one time. 	
GBCS Cross Reference	Electricity	Gas
GBCS prior to v4.0	N/A – feature not supported by Device	N/A
GBCS v4.0 Message Code	0x011E	N/A
GBCS v4.0 Use Case	ECS47a	N/A
GBCS v4.0 Use Case Name	Set Auxiliary Controller [n] State	N/A

SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	Response Code - E57	ECS47a

Table 65 Set Auxiliary Controller State Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.13.1 Service Request

7.13.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its SetAuxiliaryControllerState XML element defines this Service Request and contains the index of the specific Auxiliary Controller to which the Service Request shall apply.

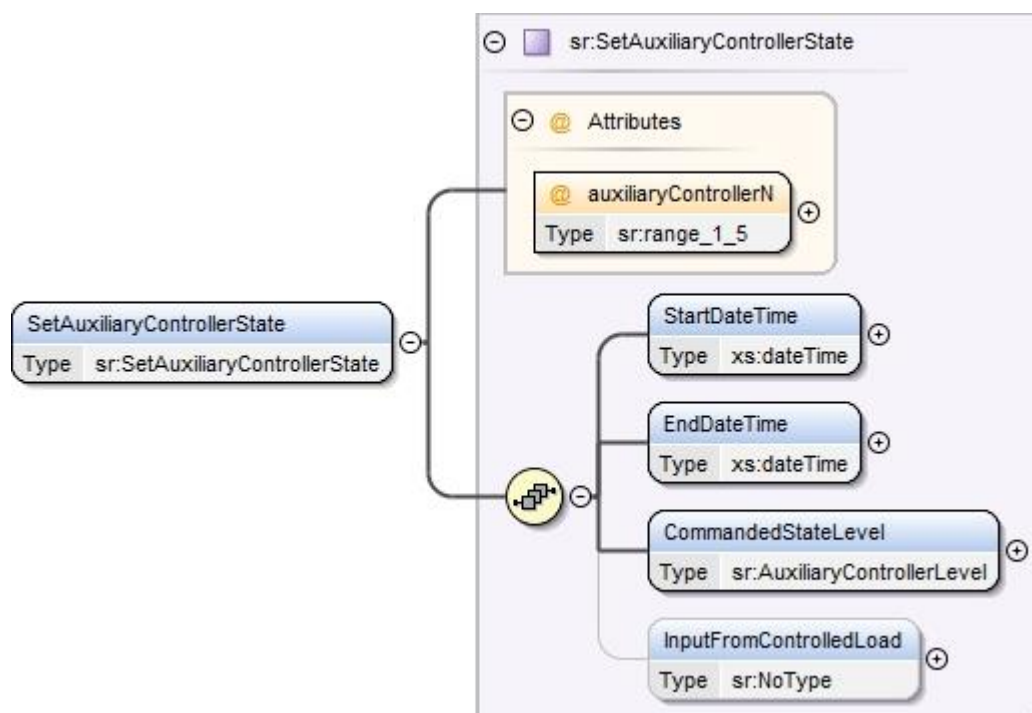


Figure 34 Set Auxiliary Controller State Service Request Structure

7.13.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
auxiliaryControllerN (Attribute of SetAuxiliaryControllerState)	The value of this attribute indicates which one of the Auxiliary Controllers on the Device is to have the state commanded. An ESME supports up to 5 Auxiliary Controllers.	sr:range_1_5 (xs:positiveInteger from 1 to 5)	Yes	None	N/A	Non-Sensitive
StartDateTime	The UTC date and time at which the DCC Service User requires the Device to start the Auxiliary Controller's setting period, in order to set the required commanded state of the specified Auxiliary Controller.	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
EndDateTime	The UTC date and time at which the DCC Service User requires the Device to the end the Auxiliary Controller's setting period. As stated in SMETS, a Command where the specified setting period has a duration of more than 24 hours will not be accepted by the Device.	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
CommandedStateLevel	An integer indicating the required state of the Auxiliary Controller. Where the Auxiliary Controller is an APC, the number reflects the percentage to which its commanded state level is to be set. Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow). Where the Auxiliary Controller is an APC, the commanded direction of energy flow is determined by the presence or absence of an InputFromControlledLoad element. Valid set: <ul style="list-style-type: none"> Integer in the range 0 to 100 	sr:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
InputFromControlledLoad	<p>This element is only relevant to an APC, and will be ignored where the Auxiliary Controller is not an APC.</p> <p>If present, this element specifies that the direction of energy flow in the commanded state of the APC shall be to input energy from the controlled load device.</p> <p>If the InputFromControlledLoad element is not present, then the energy flow shall default to output of energy to the controlled load.</p>	sr:NoType (see Annex 17)	No	None	N/A	Non-Sensitive

Table 66 Set Auxiliary Controller State Service Request Data Items

7.13.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 67 Set Auxiliary Controller State Modes of Operation

7.13.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 68 Set Auxiliary Controller State Command Variant Values

7.13.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.13.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<SetAuxiliaryControllerState auxiliaryControllerN="1">
  <StartDateTime>2021-12-01T17:00:00.00Z</StartDateTime>
  <EndDateTime>2021-12-01T18:59:59.00Z</EndDateTime>
  <CommandedStateLevel>50</CommandedStateLevel>
  <InputFromControlledLoad/>
</SetAuxiliaryControllerState>
```

Figure 35 Set Auxiliary Controller State Transform Request (Body) Format

7.13.2 Responses

The Service Response messages for a “Set Auxiliary Controller State” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1; response specific information details are given below.

7.13.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is SetAuxiliaryControllerStateResp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.13.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0x011E
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS47a</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Set Auxiliary Controller [n] State</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 69 – Set Auxiliary Controller State Parse Response Header Data Items

7.14 Read Auxiliary Controller Configuration Data (7.14)

Service Request Name	ReadAuxiliaryControllerConfigurationData
Service Reference	7.14
Service Request Variant Name	ReadAuxiliaryControllerConfigurationData

Service Reference Variant	7.14
Service Request Objective	To enable a DCC Service User to read the configuration data of Auxiliary Controller load control positions (each of which may be APC, ALCS or HCALCS) for a specified Device.
Business Context Statement	The DCC Service User wishes to check configuration data for all the Auxiliary Controller positions of an ESME (including SAPC), for example to ensure that activation / deactivation is applied to the correct circuit.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO) Other User (OU)
Security Classification	Non-critical and non-sensitive: <i>GBCS XREF: SME.C.NC</i>
Service Request Narrative	<ol style="list-style-type: none"> This Service Request is applicable only to ESME Devices with GBCS v4.0 or later. Service Request 7.7 returns corresponding configuration data for Devices with GBCS versions prior to v4.0. This Service Request reads the Auxiliary Controller Calendar as defined by SMETS. This is a Switching Table containing a set of rules for setting the commanded state of each Auxiliary Controller. The commanded state level is stored as a value between 0 and 100 inclusive and the interpretation depends on the type of Auxiliary Controller. As the type of Auxiliary Controller is not returned by this Service Request, the Response provides only the number defined in the configuration, and the DCC Service User must interpret the response according to any knowledge they may have of the type of Auxiliary Controller. <ul style="list-style-type: none"> Where the Auxiliary Controller is an APC the value indicates the percentage of energy flow to which its commanded state level will be set Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow) This Service Request is applicable to an ESME (including SAPC) connected with Auxiliary Controller capability. The Business Target ID = ESME Device ID. An ESME (including SAPC) can be connected to a maximum of 5 Auxiliary Controllers, each of which can be APC, ALCS or HCALCS. For Devices from GBCS v4.0 the descriptions (labels) are defined via Service Request 6.14.1 (see Annex section 6.14.1) and the calendar schedules and actions are defined via Service Request 6.14.3 (see Annex section 6.14.3). This Service Request will return data from all the Auxiliary Controllers connected to the ESME (including SAPC).

GBCS Cross Reference	Electricity	Gas
GBCS prior to v4.0	N/A – feature not supported by Device	N/A
GBCS v4.0 Message Code	0x011C	N/A
GBCS v4.0 Use Case	ECS61d	N/A
GBCS v4.0 Use Case Name	Read Auxiliary Controller Configuration Data	N/A
SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	Response Code - E57	ECS61d

Table 70 Read Auxiliary Controller Configuration Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.14.1 Service Request

7.14.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadAuxiliaryControllerConfigurationData XML element defines this Service Request and, for Future Dated Requests, it contains the Execution Date and Time.

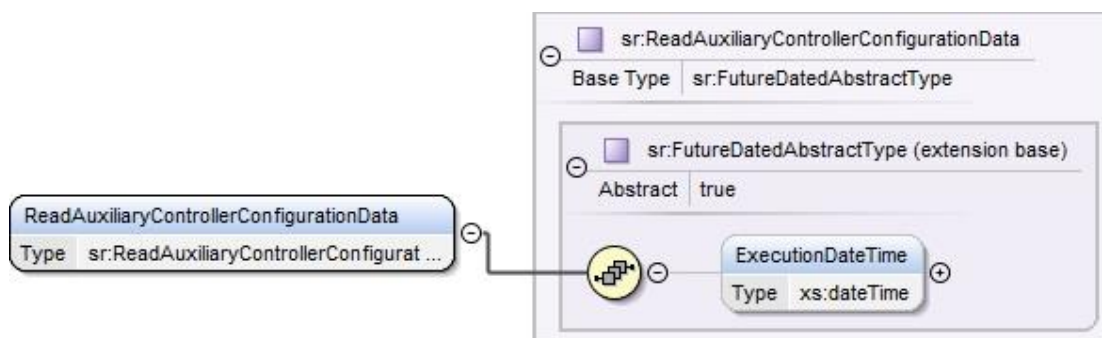


Figure 36 Read Auxiliary Controller Configuration Data Service Request Structure

7.14.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 71 Read Auxiliary Controller Configuration Data Service Request Data Items

7.14.1.3

7.14.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 72 Read Auxiliary Controller Configuration Data Modes of Operation

7.14.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 73 Read Auxiliary Controller Configuration Data Command Variant Values

7.14.1.6 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

7.14.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadAuxiliaryControllerConfigurationData/>
```

Figure 37 Read Auxiliary Controller Configuration Data Service Request (Body) Format

7.14.2 Responses

The Service Response messages for a “Read Auxiliary Controller Configuration Data” Request follow the generic format for all “Device” response messages. The generic responses applicable to this Service Request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.14.2.1 Parse Output Format

7.14.2.1.1 Format – ReadAuxiliaryControllerConfigurationDataRsp

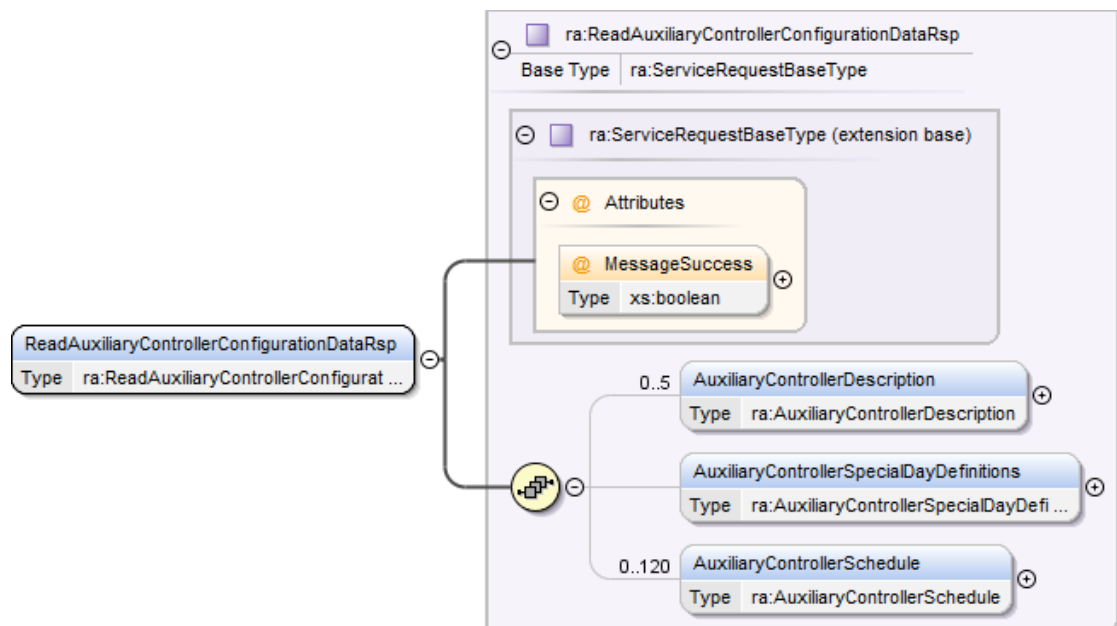


Figure 38 – Read Auxiliary Controller Configuration Data Response Structure

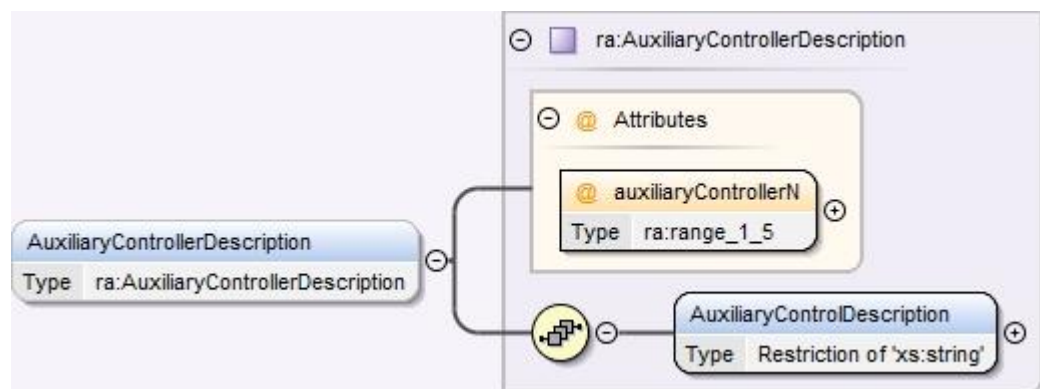


Figure 39 – AuxiliaryControllerDescription Structure

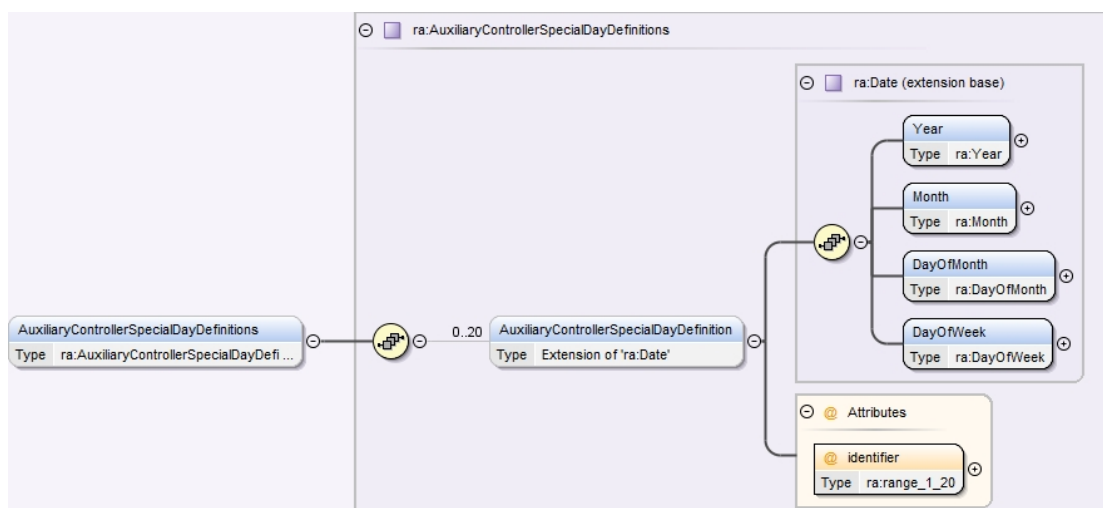


Figure 40 – AuxiliaryControllerSpecialDayDefinitions Structure

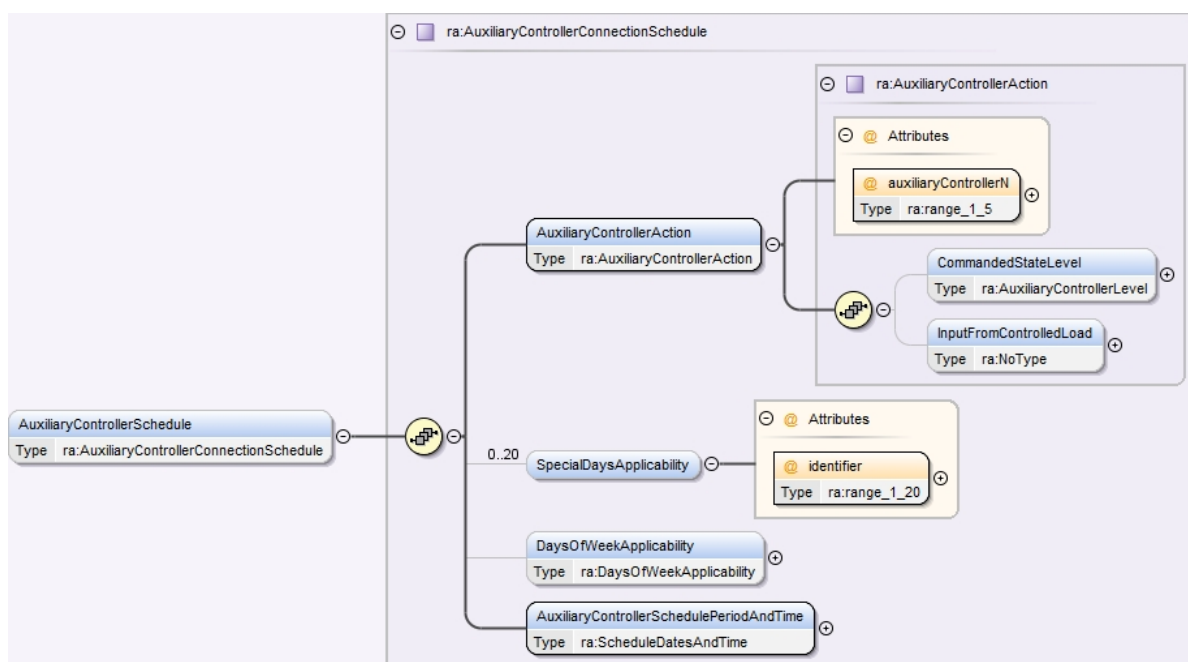


Figure 41 – AuxiliaryControllerConnectionSchedule Structure

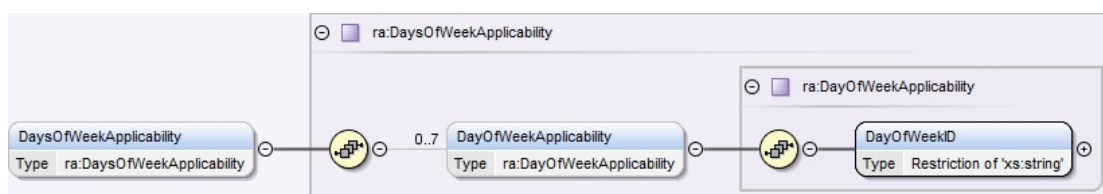


Figure 42 – DaysOfWeekApplicability Structure

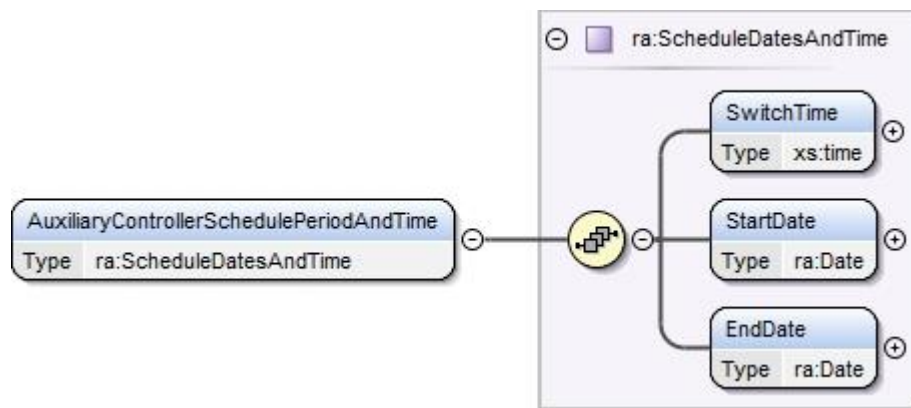


Figure 43 – ScheduleDatesAndTime Structure

7.14.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0x011C
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS61d</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Auxiliary Controller Configuration Data</i>
SupplementaryRemotePartyID	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 74 – Read Auxiliary Controller Configuration Data Response Header Data Items

7.14.2.1.3 Specific Body Data Items

The main XML sub-elements under the XML element ReadAuxiliaryControllerConfigurationDataRsp are listed in this table.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuxiliaryControllerDescription	<p>For one of up to 5 Auxiliary Controller positions in an ESME (including SAPC), a description of the type of controlled load connected, as defined by a Supplier via Service Request 6.14.1 (see Annex section 6.14.1).</p> <p>Up to 5 positions may be present. The index of an individual Auxiliary Controller position is included as attribute auxiliaryControllerN in the AuxiliaryControllerDescription</p>	xs:string (maxLength=22)	None	N/A	Non-sensitive
AuxiliaryControllerSpecialDayDefinitions	<p>This enables the definition of up to 20 special days which may be used in load control schedules, e.g. enabling the definition of different rules on public holidays such as Christmas Day.</p> <p>These definitions are used in Auxiliary Controller Schedule definitions.</p>	ra:AuxiliaryControllerSpecialDayDefinitions (see section 7.14.2.1.4)	None	N/A	Non-Sensitive
AuxiliaryControllerSchedule	<p>Information defining up to 120 load control changes, each including a schedule definition, which one of the 5 Auxiliary Controller positions in an ESME is to be commanded, and the new commanded state.</p> <p>A new commanded state includes the level which is a value between 0 and 100 inclusive, and will be interpreted as a percentage to which its commanded state level is to set, or a command to open or close the switch, according to whether the type of Auxiliary Controller in the position is an APC, ALCS or HCALCS.</p> <p>For an APC the commanded state also includes the direction of energy flow.</p> <p>Up to 120 schedules may be present. The index of an individual Auxiliary Controller schedules is included as an attribute of AuxiliaryControllerSchedule</p>	ra: AuxiliaryControllerSchedule (see section 7.14.2.1.5)	None	N/A	Non-sensitive

Table 75 - Read Auxiliary Controller Configuration Data Response Body Data Items

7.14.2.1.4 AuxiliaryControllerSpecialDayDefinitions Data Items Definition

This table provides information about a set of special day definitions which may be used in Auxiliary Controller schedules in an ESME (including SAPC).

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuxiliaryControllerSpecialDayDefinition	The date (or set of dates if wildcards are used) of a special day definition. This may define a single day or repeating set of days, e.g. 25 th December or the last day of every month	ra:Date (see the similar sr:Date in Annex section 17)	None	N/A	Non-Sensitive
identifier (attribute of AuxiliaryControllerSpecialDayDefinition)	The identifier associated with one special day definition. This identifier is used in SpecialDaysApplicability of an Auxiliary Controller schedule definition	ra:range_1_20 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 20)	None	N/A	Non-Sensitive

Table 76 AuxiliaryControllerSpecialDayDefinitions Data Items

7.14.2.1.5 AuxiliaryControllerSchedule Data Items Definition

This table provides information about a single Auxiliary Controller schedule definition, defining a schedule for changing the commanded state of one of the 5 Auxiliary Controller positions in an ESME (including SAPC).

There may be up to 120 of these in a single ReadAuxiliaryControllerConfigurationDataRsp.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuxiliaryControllerAction	This specifies the Auxiliary Controller and the instruction to set the commanded state, which may be a percentage load (for an APC) or an on or off instruction (for an ALCS or HCALCS).	ra: AuxiliaryControllerAction (see section 7.14.2.1.6)	None	N/A	Non-Sensitive
identifier (attribute of SpecialDaysApplicability)	Specifies any special days on which the entry is valid by linking to the special days table, i.e. the data is an index into the AuxiliaryControllerSpecialDayDefinitions (see section 7.14.2.1.4)	ra:range_1_20 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 20)	None	N/A	Non-Sensitive
DaysOfWeekApplicability	The days of the week to which the schedule applies defined as an array of up to 7 Day IDs Valid set: <ul style="list-style-type: none"> Monday Tuesday Wednesday Thursday Friday Saturday Sunday 	ra:DayOfWeekID restriction of xs:string (Enumeration)	None	N/A	Non-Sensitive
AuxiliaryControllerSchedulePeriodAndTime	Definition of the date, or set of dates, and time of execution, of a single schedule definition	ra: ScheduleDatesAndTime (see Annex Section 17 for details of the equivalent sr: type)	None	N/A	Non-Sensitive

Table 77 AuxiliaryControllerTypeIDAndState Data Items

7.14.2.1.6 AuxiliaryControllerAction Data Items Definition

This table indicates the definition of a single action to set the commanded state of an Auxiliary Controller in an ESME (including SAPC).

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
auxiliaryControllerN (attribute of AuxiliaryControllerTypeIDAndState)	The identifier associated with the Auxiliary Controller	ra:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	None	N/A	Non-Sensitive
CommandedStateLevel	<p>The commanded state level is stored as a value between 0 and 100 inclusive and the interpretation depends on the type of Auxiliary Controller. As the type is not returned by this Service Request, the Response provides only the number, and the DCC Service User must interpret the response according to any knowledge they may have of the type of Auxiliary Controller.</p> <p>Where the Auxiliary Controller is an APC, the commanded state includes the percentage to which its commanded state level is to be set, where 0 means no energy flow.</p> <p>Where used for an Auxiliary Controller that is an ALCS or HCALCS, 100 will cause the Device to close (activate) the switch i.e. enable energy to flow, and any number other than 100 will cause the Device to open (deactivate) the switch i.e. prevent energy flow.</p> <p>Valid set: Integer in the range 0 to 100</p>	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	None	N/A	Non-Sensitive
InputFromControlledLoad	<p>This element is only relevant to an APC, and will not be present where the Auxiliary Controller is not an APC.</p> <p>If present, this element indicates that the direction of energy flow in the commanded state of an APC is to input energy from the controlled load Device.</p> <p>If the InputFromControlledLoad element is not present for an APC, that indicates that the direction of energy flow in the commanded state of an APC is to output energy to the controlled load Device</p>	ra:NoType (see Annex 17)	No	None	N/A

Table 78 AuxiliaryControllerAction Data Items

7.14.2.1.7 ScheduleDatesAndTime Data Items Definition

This table provides information about a date or set of dates, and time of execution, of a single schedule definition. The definition allows a single date or a range of dates to be specified.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SwitchTime	The time of day trigger point in the calendar.	xs:time	None	N/A	Non-Sensitive
StartDate	Start of the date period in which the entry is valid.	ra:Date (see the similar sr:Date in Annex section 17)	None	N/A	Non-Sensitive
EndDate	End of the date period in which the entry is valid.	ra:Date (see the similar sr:Date in Annex section 17)	None	N/A	Non-Sensitive

Table 79 ScheduleDatesAndTime Data Items

7.14.2.1.8 Sample Response

The following sample shows configuration of an ESME (including SAPC) with an ALCS and an APC, with one schedule for the ALCS and one for the APC.

```

<ra:ReadAuxiliaryControllerConfigurationDataRsp MessageSuccess="true">
  <ra:AuxiliaryControllerDescription auxiliaryControllerN="1">
    <ra:AuxiliaryControlDescription>Description1</ra:AuxiliaryControlDescription>
  </ra:AuxiliaryControllerDescription>
  <ra:AuxiliaryControllerDescription auxiliaryControllerN="2">
    <ra:AuxiliaryControlDescription>Description2</ra:AuxiliaryControlDescription>
  </ra:AuxiliaryControllerDescription>
  <ra:AuxiliaryControllerSpecialDayDefinitions>
    <ra:AuxiliaryControllerSpecialDayDefinition identifier="1">
      <ra:Year>
        <ra:SpecifiedYear>2021</ra:SpecifiedYear>
      </ra:Year>
      <ra:Month>
        <ra:SpecifiedMonth>6</ra:SpecifiedMonth>
      </ra:Month>
      <ra:DayOfMonth>
        <ra:SpecifiedDayOfMonth>16</ra:SpecifiedDayOfMonth>
      </ra:DayOfMonth>
      <ra:DayOfWeek>
        <ra:SpecifiedDayOfWeek>4</ra:SpecifiedDayOfWeek>
      </ra:DayOfWeek>
    </ra:AuxiliaryControllerSpecialDayDefinition>
    <ra:AuxiliaryControllerSpecialDayDefinition identifier="2">
      <ra:Year>
        <ra:SpecifiedYear>2021</ra:SpecifiedYear>
      </ra:Year>
      <ra:Month>
        <ra:SpecifiedMonth>7</ra:SpecifiedMonth>
      </ra:Month>
      <ra:DayOfMonth>
        <ra:SpecifiedDayOfMonth>12</ra:SpecifiedDayOfMonth>
      </ra:DayOfMonth>
      <ra:DayOfWeek>
        <ra:SpecifiedDayOfWeek>5</ra:SpecifiedDayOfWeek>
      </ra:DayOfWeek>
    </ra:AuxiliaryControllerSpecialDayDefinition>
  </ra:AuxiliaryControllerSpecialDayDefinitions>
  <ra:AuxiliaryControllerSchedule>
    <ra:AuxiliaryControllerAction auxiliaryControllerN="1">
      <ra:CommandedStateLevel>100</ra:CommandedStateLevel>
      <ra:InputFromControlledLoad/>
    </ra:AuxiliaryControllerAction>
    <ra:SpecialDaysApplicability identifier="1"/>
    <ra:SpecialDaysApplicability identifier="2"/>
    <ra:DaysOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Monday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Tuesday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
    </ra:DaysOfWeekApplicability>
    <ra:AuxiliaryControllerSchedulePeriodAndTime>
      <ra:SwitchTime>06:00:00.00</ra:SwitchTime>
      <ra:StartDate>
        <ra:Year><ra:NonSpecifiedYear/></ra:Year>
        <ra:Month><ra:SpecifiedMonth>01</ra:SpecifiedMonth></ra:Month>
        <ra:DayOfMonth><ra:SpecifiedDayOfMonth>01</ra:SpecifiedDayOfMonth></ra:DayOfMonth>
        <ra:DayOfWeek><ra:NonSpecifiedDayOfWeek/></ra:DayOfWeek>
      </ra:StartDate>
      <ra:EndDate>
        <ra:Year><ra:NonSpecifiedYear/></ra:Year>
        <ra:Month><ra:SpecifiedMonth>03</ra:SpecifiedMonth></ra:Month>
        <ra:DayOfMonth><ra:SpecifiedDayOfMonth>31</ra:SpecifiedDayOfMonth></ra:DayOfMonth>
        <ra:DayOfWeek><ra:NonSpecifiedDayOfWeek/></ra:DayOfWeek>
      </ra:EndDate>
    </ra:AuxiliaryControllerSchedulePeriodAndTime>
  </ra:AuxiliaryControllerSchedule>
  <ra:AuxiliaryControllerSchedule>
    <ra:AuxiliaryControllerAction auxiliaryControllerN="2">
      <ra:CommandedStateLevel>50</ra:CommandedStateLevel>
    </ra:AuxiliaryControllerAction>
    <ra:SpecialDaysApplicability identifier="3"/>
    <ra:DaysOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Saturday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
      <ra:DayOfWeekApplicability>
        <ra:DayOfWeekID>Sunday</ra:DayOfWeekID>
      </ra:DayOfWeekApplicability>
    </ra:DaysOfWeekApplicability>
    <ra:AuxiliaryControllerSchedulePeriodAndTime>
      <ra:SwitchTime>06:00:00.00</ra:SwitchTime>
    </ra:AuxiliaryControllerSchedulePeriodAndTime>
  </ra:AuxiliaryControllerSchedule>
</ra:ReadAuxiliaryControllerConfigurationDataRsp>

```

```
<ra:StartDate>
  <ra:Year><ra:NonSpecifiedYear/></ra:Year>
  <ra:Month><ra:SpecifiedMonth>04</ra:SpecifiedMonth></ra:Month>
  <ra:DayOfMonth><ra:SpecifiedDayOfMonth>01</ra:SpecifiedDayOfMonth></ra:DayOfMonth>
  <ra:DayOfWeek><ra:NonSpecifiedDayOfWeek/> </ra:DayOfWeek>
</ra:StartDate>
<ra:EndDate>
  <ra:Year><ra:NonSpecifiedYear/></ra:Year>
  <ra:Month><ra:SpecifiedMonth>04</ra:SpecifiedMonth></ra:Month>
  <ra:DayOfMonth><ra:SpecifiedDayOfMonth>30</ra:SpecifiedDayOfMonth></ra:DayOfMonth>
  <ra:DayOfWeek><ra:NonSpecifiedDayOfWeek/></ra:DayOfWeek>
</ra:EndDate>
</ra:AuxiliaryControllerSchedulePeriodAndTime>
</ra:AuxiliaryControllerSchedule>
</ra:ReadAuxiliaryControllerConfigurationDataRsp>
```

Figure 44 - Read Auxiliary Controller Configuration Data Response Sample

7.15 Read Auxiliary Controller Operational Data (7.15)

Service Request Name	ReadAuxiliaryControllerOperationalData
Service Reference	7.15
Service Request Variant Name	ReadAuxiliaryControllerOperationalData
Service Reference Variant	7.15
Service Request Objective	To enable a DCC Service User to read the operational data of all the Auxiliary Controllers on a Device. Each Auxiliary Controller may be an Auxiliary Proportional Controller (APC) or Auxiliary Load Control Switch (ALCS) within a specified ESME (including SAPC) or associated with a specified HAN connected Auxiliary Load Control Switch (HCALCS).
Business Context Statement	The DCC Service User wishes to check whether an Auxiliary Controller (APC, ALCS or HCALCS) is present in each position of an ESME (including SAPC), and the type and the current state of the controller where present.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Network Operator (ENO) Other User (OU)
Security Classification	Non-critical and non-sensitive: <i>GBCS XREF: SME.C.NC</i>

Service Request Narrative	<ol style="list-style-type: none"> 1. This Service Request is applicable only to ESME Devices with GBCS v4.0 or later. Service Request 7.7 returns corresponding operational data for Devices with GBCS versions prior to v4.0. 2. This Service Request reads the values of the <i>Auxiliary Controller [n] Type</i> and <i>Auxiliary Controller [n] State</i> as defined by SMETS. Each Auxiliary Controller (where present) may be an APC, ALCS or HCALCS. The state of an Auxiliary Controller is expressed as the percentage to which its commanded state level is to be set. Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow). 3. Date returned by the Device for an Auxiliary Controller may include associated information, which is an optional additional stream of binary data. 4. This Service Request reads: <ul style="list-style-type: none"> • The Type (empty, APC, ALCS or HCALCS) and Device ID (HCALCS only) • A value between 0 and 100 inclusive, reflecting the percentage to which its commanded state level is currently set; this should be interpreted by the recipient according to the type of Auxiliary Controller • Where applicable, an indication that the direction of energy flow is to input energy from the controlled load device (for APCs only) • Optionally, additional information returned by the Device 5. This Service Request is applicable to an ESME (including SAPC) connected to APC, ALCS and / or HCALCS Auxiliary Controllers. The Business Target ID = ESME Device ID. 6. An ESME (including SAPC) can be connected to a maximum of 5 switches, each of which (where present) can be APC, ALCS or HCALCS. 7. The ESME (including SAPC) also includes an Auxiliary Controller Event Log, which is read via Service Request 6.13 (see Annex section 6.13). Note that the log is also known in DUIS using the older terminology ALCS Event Log, since the structure of the GBCS command which returns the log is the same, though there will be differences in the data returned. 8. This Service Request will return data from all the Auxiliary Controllers connected to the ESME (including SAPC) 9. Please note, if the Auxiliary Controller type being read refers to an HCALCS then the value of the state has no meaning (since an ESME cannot be certain of the status of an HCALCS) 		
GBCS Cross Reference	<table> <tr> <td>Electricity</td><td>Gas</td></tr> </table>	Electricity	Gas
Electricity	Gas		

GBCS prior to v4.0	N/A – feature not supported by Device	N/A
GBCS v4.0 Message Code	0x011D	N/A
GBCS v4.0 Use Case	ECS61e	N/A
GBCS v4.0 Use Case Name	Read Auxiliary Controller Operational Data	N/A
SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	Response Code - E57	ECS61e

Table 80 Read Auxiliary Controller Operational Data Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.15.1 Service Request

7.15.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadAuxiliaryControllerOperationalData XML element defines this Service Request and, for Future Dated Requests, it contains the Execution Date and Time.

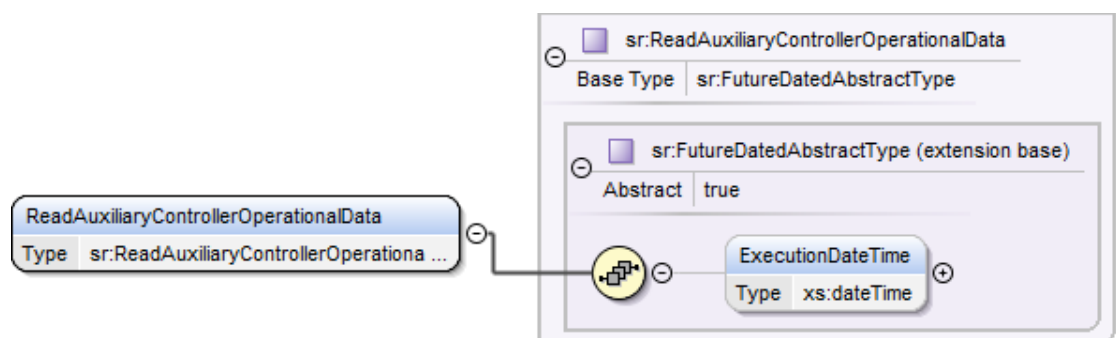


Figure 45 Read Auxiliary Controller Operational Data Service Request Structure

7.15.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 81 Read Auxiliary Controller Operational Data Service Request Data Items

7.15.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	DSP	No

Table 82 Read Auxiliary Controller Operational Data Modes of Operation

7.15.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 83 Read Auxiliary Controller Operational Data Command Variant Values

7.15.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

7.15.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadAuxiliaryControllerOperationalData/>

Figure 46 Read Auxiliary Controller Operational Data Service Request (Body) Format

7.15.2 Responses

The Service Response messages for a "Read Auxiliary Controller Operational Data" Request follow the generic format for all "Device" response messages. The generic responses applicable to this Service Request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

7.15.2.1 Parse Output Format

7.15.2.1.1 Format - ReadAuxiliaryControllerOperationalDataRsp

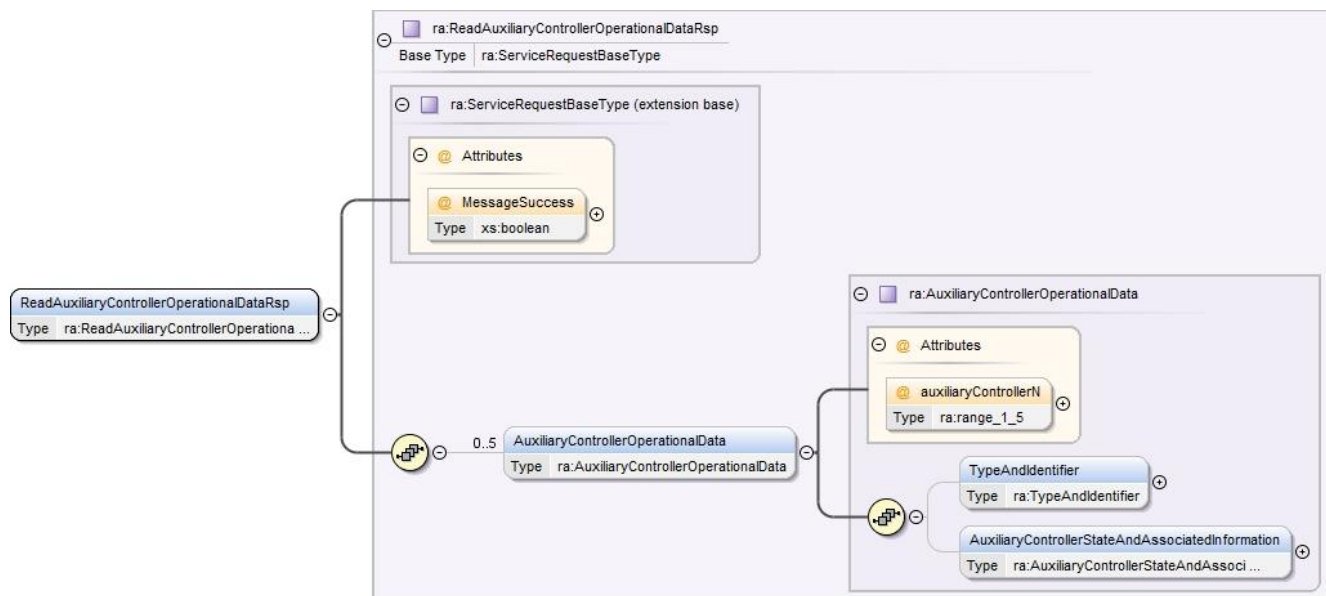


Figure 47 – Read Auxiliary Controller Operational Data Response Structure

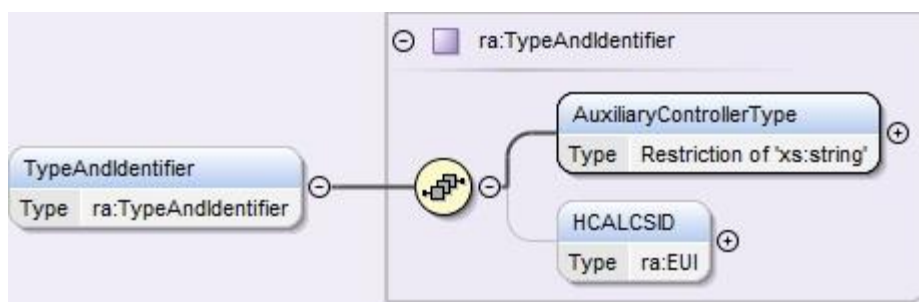


Figure 48 – TypeAndIdentifier Structure

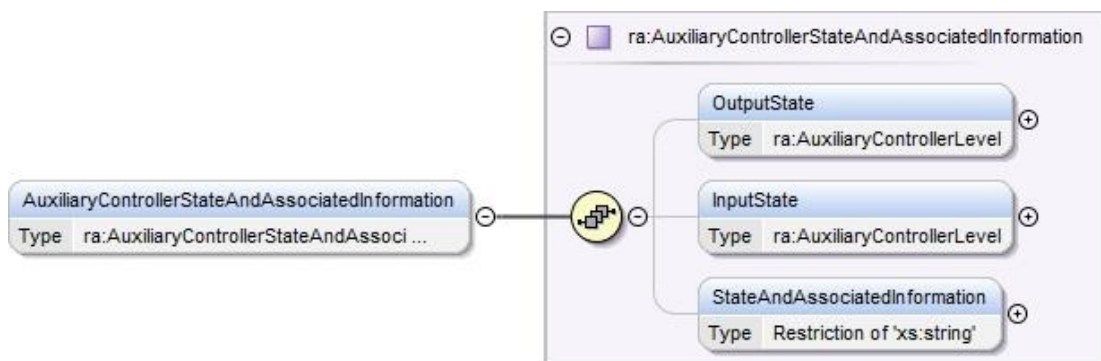


Figure 49 – AuxiliaryControllerTypeIDAndState Structure

7.15.2.1.2 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0x011D
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS61e</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read Auxiliary Controller Operational Data</i>
SupplementaryRemotePartyID	Present where originator is a URP
SupplementaryRemotePartyCounter	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 84 – Read Auxiliary Controller Operational Data Response Header Data Items

7.15.2.1.3 Specific Body Data Items

The main XML sub-elements under the XML element ReadAuxiliaryControllerOperationalDataRsp are listed in this table.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuxiliaryControllerOperationalData	Information about each of the 5 Auxiliary Controller positions in an ESME, each of which may control an APC, ALCS or HCALCS type of controller or may be empty.	ra: AuxiliaryControllerTypeIDAndState (see section 7.15.2.1.4)	None	N/A	Non-sensitive

Table 85 - Read Auxiliary Controller Operational Data Response Body Data Items

7.15.2.1.4 AuxiliaryControllerTypeIDAndState Data Items Definition

This table provides information about a single one of the 5 Auxiliary Controller positions in an ESME, including identifying the type and state of each Auxiliary Controller where present.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
auxiliaryControllerN (attribute of AuxiliaryControllerOperationalData)	The identifier associated with the Auxiliary Controller	ra:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	None	N/A	Non-Sensitive
TypeAndIdentifier	The type of an Auxiliary Controller, and device ID if associated with an HCALCS	ra:TypeAndIdentifier (see section 7.15.2.1.5)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuxiliaryControllerState	The state of an Auxiliary Controller and associated information	ra: AuxiliaryControllerState AndAssociatedInformation (see section 7.15.2.1.6)	None	N/A	Non-Sensitive

Table 86 AuxiliaryControllerOperationalData Data Items

7.15.2.1.5 TypeAndIdentifier Data Items Definition

This table indicates the type of a single one of the 5 Auxiliary Controller positions in an ESME.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuxiliaryControllerType	The type of Auxiliary Controller in one position of an ESME, or an indication that there is no Auxiliary Controller present in that position. Valid set: <ul style="list-style-type: none"> APC ALCS HCALCS None 	ra: AuxiliaryControllerType restriction of xs:string (Enumeration)	None	N/A	Non-Sensitive
HCALCSID	Where the type of a specific Auxiliary Controller position is HCALCS, this indicates the Device ID. For GBCS v4.0 devices, this information will be recorded when the HCALCS is joined to the ESME using SR8.7.1	ra:EUI	None	N/A	Non-Sensitive

Table 87 TypeAndIdentifier Data Items

7.15.2.1.6 AuxiliaryControllerStateAndAssociatedInformation Data Items Definition

This table provides the state of a single one of the 5 Auxiliary Controller positions in an ESME. The state consists of the energy flow level and any optional associated information provided by the Auxiliary Controller.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
OutputState	<p>An integer indicating the output level of an Auxiliary Controller. This value is applicable to output energy, i.e. where the direction of energy flow is from the meter to the controlled load.</p> <p>Where the Auxiliary Controller is an APC, the number reflects the enabled percentage level of energy flow.</p> <p>Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow).</p> <p>Valid set: Integer in the range 0 to 100</p>	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	None	N/A	Non-Sensitive
InputState	<p>An integer indicating the input level of an Auxiliary Controller. This value is applicable to input energy, i.e. where the direction of energy flow is from the controlled load to the meter.</p> <p>This value is only applicable to an Auxiliary Controller that is an APC, and is not applicable to an ALCS or HCALCS. The number reflects the enabled percentage level of energy flow.</p> <p>Valid set: Integer in the range 0 to 100</p>	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	None	N/A	Non-Sensitive
StateAndAssociatedInformation	<p>Information from the Auxiliary Controller which is in JavaScript Object Notation (JSON) as defined by IETF RFC8259.</p> <p>This provides associated information and incorporates the input and output state, which are also identified separately above.</p> <p>It is limited in length so that the Response can fit within a maximum of 63 GBT Messages each containing 1,149 octets.</p>	xs:string (maxLength=72000)	None	N/A	Non-Sensitive

Table 88 AuxiliaryControllerStateAndAssociatedInformation Data Items

7.15.2.1.7 Sample Response

```
<ra:ReadAuxiliaryControllerOperationalDataRsp MessageSuccess="true">
  <ra:AuxiliaryControllerOperationalData auxiliaryControllerN="1">
    <ra:TypeAndIdentifier>
      <ra:AuxiliaryControllerType>ALCS</ra:AuxiliaryControllerType>
    </ra:TypeAndIdentifier>
    <ra:AuxiliaryControllerStateAndAssociatedInformation>
      <ra:OutputState>100</ra:OutputState>
      <ra:InputState>0</ra:InputState>
    </ra:AuxiliaryControllerStateAndAssociatedInformation>
  </ra:AuxiliaryControllerOperationalData>
  <ra:AuxiliaryControllerOperationalData auxiliaryControllerN="2">
    <ra:TypeAndIdentifier>
      <ra:AuxiliaryControllerType>HCALCS</ra:AuxiliaryControllerType>
      <ra:HCALCSID>00-00-00-00-00-00-00-00</ra:HCALCSID>
    </ra:TypeAndIdentifier>
    <ra:AuxiliaryControllerStateAndAssociatedInformation>
      <ra:OutputState>100</ra:OutputState>
      <ra:InputState>0</ra:InputState>
    </ra:AuxiliaryControllerStateAndAssociatedInformation>
  </ra:AuxiliaryControllerOperationalData>
  <ra:AuxiliaryControllerOperationalData auxiliaryControllerN="3">
    <ra:TypeAndIdentifier>
      <ra:AuxiliaryControllerType>APC</ra:AuxiliaryControllerType>
    </ra:TypeAndIdentifier>
    <ra:AuxiliaryControllerStateAndAssociatedInformation>
      <ra:OutputState>50</ra:OutputState>
      <ra:InputState>75</ra:InputState>
      <ra:StateAndAssociatedInformation>{"outputState": 50, "inputState": 75 other-data }</ra:StateAndAssociatedInformation>
    </ra:AuxiliaryControllerStateAndAssociatedInformation>
  </ra:AuxiliaryControllerOperationalData>
  <ra:AuxiliaryControllerOperationalData auxiliaryControllerN="4">
    <ra:TypeAndIdentifier>
      <ra:AuxiliaryControllerType>None</ra:AuxiliaryControllerType>
    </ra:TypeAndIdentifier>
  </ra:AuxiliaryControllerOperationalData >
  <ra:AuxiliaryControllerOperationalData auxiliaryControllerN="5">
    <ra:TypeAndIdentifier>
      <ra:AuxiliaryControllerType>None</ra:AuxiliaryControllerType>
    </ra:TypeAndIdentifier>
  </ra:AuxiliaryControllerOperationalData>
</ra:ReadAuxiliaryControllerOperationalDataRsp>
```

Figure 50 - Read Auxiliary Controller Operational Data Response Sample

7.16 Limit APC Level (7.16)

Service Request Name	LimitAPCLevel
Service Reference	7.16
Service Request Variant Name	LimitAPCLevel

Service Reference Variant	7.16
Service Request Objective	To enable a DCC Service User acting as a Load Controller to limit the maximum input or output level of an Auxiliary Proportional Controller (APC) within a specified ESME (including SAPC).
Business Context Statement	<p>The DCC Service User requires that the input or output level of an APC is limited to a maximum level, to limit the energy input from or output to a controlled load, as a percentage of the maximum input or output level of the Device.</p> <p>This Service Request is relevant to a DCC Service User which is the Load Controller of the Device, i.e. it has SMKI Organisation Certificates in the Load Controller Trust Anchor Cells of the Device. However, note that this Service Request cannot be successful until suitable SMKI Organisation Certificates with the Load Controller SMKI Remote Party Role are made available to the industry.</p>
User Role Access	<p>None.</p> <p>No User Role will be able to use this Service Request until regulation is agreed regarding the use of Load Controller certificates.</p>
Security Classification	<p>Critical and non-sensitive:</p> <p><i>GBCS XREF: SME.C.C</i></p>

Service Request Narrative	1. This Service Request is applicable only to ESME Devices (including SAPCs) with GBCS v4.0 or later, and is relevant only to an Auxiliary Controller which is an APC. The Business Target ID = ESME Device ID.	
	2. An ESME (including SAPC), can be connected to a maximum of 5 Auxiliary Controllers, each of which can be APC, ALCS or HCALCS. This Service Request will apply to one of the 5 Auxiliary Controllers as specified by the auxiliaryControllerN attribute in the request, which must be an APC for the request to be successful.	
	3. This Service Request creates an <i>APC [n] Limit Period</i> , as defined by SMETS, for a single APC during which the APC's level is limited to a specified maximum value. During this period the level limit that is specified in this Service Request will take precedence over the configuration defined in the Auxiliary Controller Calendar.	
	4. An APC limit period applies only to one energy direction. The level is expressed as the percentage of energy flow, where 0 means no energy flow, and will mean a percentage of either the input or output level, according to the energy direction specified in the request.	
	5. If a setting period, defined by use of Service Request 7.13, is in force for the same APC and energy direction at the time that the APC limit period starts, then the setting period will be immediately ended, and will not be resumed.	
	6. A request where the specified APC limit period has a duration of more than 24 hours shall be rejected.	
	7. If the Device applies the Limit APC Level Command successfully then the Device shall generate Device Alert 0x8F86 when the Command is processed, and Device Alert 0x8F87 when the period ends, for sending to the originator of the Service Request.	
	8. Only one limit period may be defined for an APC at any one time	
GBCS Cross Reference	Electricity	Gas
GBCS prior to v4.0	N/A – feature not supported by Device	N/A
GBCS v4.0 or later	Response Code – E2	N/A
SMETS1 Availability	No	N/A
GBCS Commands - Versioning Details		
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations		
Device Type	ESME	

DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.0	GBCS v4.0 or later
DEFAULT - No specific XML criteria	Response Code - E57	Response Code - E2

Table 89 Limit APC Level Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

7.16.1 Service Request

7.16.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema - document 3 of this documentation set) defines the structure of all the Service Requests. Its LimitAPCLevel XML element defines this Service Request and contains the index, using the attribute auxiliaryControllerN, of the specific Auxiliary Controller to which the Service Request shall apply.

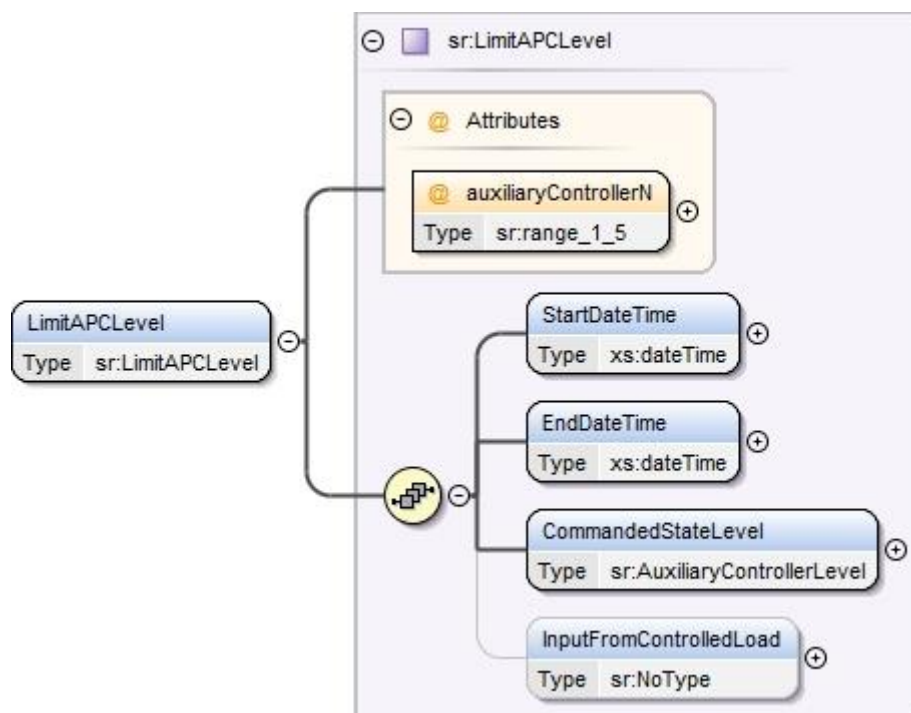


Figure 51 Limit APC Level Service Request Structure

7.16.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
auxiliaryControllerN (Attribute of LimitAPCLevel)	The value of this attribute indicates which one of the Auxiliary Controllers on the Device is to have the level limit applied. An ESME (including SAPC) supports up to 5 Auxiliary Controllers, of which any may be APCs.	sr:range_1_5 (xs:positiveInteger from 1 to 5)	Yes	None	N/A	Non-Sensitive
StartDateTime	The UTC date and time at which the DCC Service User requires the Device to start the APC limit period, in order to execute the level limit of the specified APC.	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
EndDateTime	The UTC date and time at which the DCC Service User requires the Device to the end the APC limit period. As stated in SMETS, a Command where the specified APC limit period has a duration of more than 24 hours will not be accepted by the Device.	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
CommandedStateLevel	An integer indicating the required maximum level of the APC. The number reflects the percentage to which its maximum input or output level is to be set. The maximum level applies to either output to or input from the controlled load, where the direction of energy flow is specified by the presence or absence in the Service Request of the element InputFromControlledLoad. Valid set: <ul style="list-style-type: none"> Integer in the range 0 to 100 	sr:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	Yes	None	N/A	Non-Sensitive
InputFromControlledLoad	If present, this element specifies that the direction of energy flow to which the level limit applies shall be that of input of energy from the controlled load device. If the InputFromControlledLoad element is not present, then the limit level shall apply to output of energy to the controlled load.	sr:NoType (see Annex 17)	No	None	N/A	Non-Sensitive

Table 90 Limit APC Level Service Request Data Items

7.16.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
Yes	Yes	No	No	No

Table 91 Limit APC Level Modes of Operation

7.16.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	Yes	Yes	Yes	Yes	No

Table 92 Limit APC Level Command Variant Values

7.16.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

7.16.1.6 Sample Request

There are two versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<LimitAPCLevel auxiliaryControllerN="3">
  <StartDateTime>2021-12-01T17:00:00.00Z</StartDateTime>
  <EndDateTime>2021-12-01T18:59:59.00Z</EndDateTime>
  <CommandedStateLevel>20</CommandedStateLevel>
  <InputFromControlledLoad/>
</LimitAPCLevel>
```

Figure 52 Limit APC Level Transform Request (Body) Format

7.16.2 Responses

The Service Response messages for a Limit APC Level Request follow the generic format for all "Device" response messages. The generic responses applicable to this Service Request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

Sample responses are given in Annex Introduction Appendix 1; response specific information details are given below.

7.16.2.1 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is LimitAPCLevelRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

7.16.2.1.1 Specific Header Data Items

Data Item	Electricity Response
GBCSHexadecimalMessageCode	0x011F

Data Item	Electricity Response
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS47e</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Limit APC [n] Level</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 93 – Limit APC Level Parse Response Header Data Items

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 8 – Device Estate Management Service

Author: DCC
Version: v5.2a
Date: June 2023

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8 Device Estate Management Service (8 – DEMS)

This section sets out the full content of the DCC Device Estate Management Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	DeviceEstateManagement	Service Id	8
Service Objective	To allow a DCC Service User to manage a device within the DCC estate		
Business Context Statement	The DCC Service User requires a device to be commissioned, decommissioned, joined, un-joined, moved in or out of the DCC estate or to confirm information held within the DCC for a specific device		
User Roles	<p>The following user roles have access to the list of service requests which make up the Device Estate Management Service:</p> <ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU) 		

Table 1 Overview of Device Estate Management Service

The mapping between the Device Estate Management Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
8.1	8.1.1	Commission Device	ESME GSME
8.2	8.2	Read Inventory	DSP Access Control Broker
8.3	8.3	Decommission Device	DSP Access Control Broker
8.4	8.4	Update Inventory	DSP Access Control Broker
8.5	8.5	Service Opt Out	ESME GSME HCALCS PPMID
8.6	8.6	Service Opt In	DSP Access Control Broker

Service Reference	Service Reference Variant	Name	Business Target ID
8.7	8.7.1	Join Service (Critical)	ESME GSME HCALCS (N/A to SMETS1)
8.7	8.7.2	Join Service (Non-Critical)	ESME GSME GPF PPMID
8.8	8.8.1	Unjoin Service (Critical)	ESME GSME HCALCS (N/A to SMETS1)
8.8	8.8.2	Unjoin Service (Non-Critical)	ESME GSME GPF PPMID
8.9	8.9	Read Device Log	SMETS2 or later: ESME GSME CHF GPF HCALCS PPMID SMETS1: CHF
8.11	8.11	Update HAN Device Log	CHF
8.12	8.12.1	Restore HAN Device Log	CHF
8.12	8.12.2	Restore Gas Proxy Function Device Log	GPF
8.13	8.13	Return Local Command Response	DSP Access Control Broker
8.14	8.14.1	Communications Hub Status Update- Install Success	DSP Access Control Broker
8.14	8.14.2	Communications Hub Status Update - Install No SM WAN	DSP Access Control Broker
8.14	8.14.3	Communications Hub Status Update. – Fault Return	DSP Access Control Broker

Service Reference	Service Reference Variant	Name	Business Target ID
8.14	8.14.4	Communications Hub Status Update – No Fault Return	DSP Access Control Broker

Table 2 DEMS - Service Requests / Devices

For each of the DEMS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema - document 3 of this documentation set).

8.1 Commission Device (8.1)

This Service Request maps to one Electricity and one Gas GBCS Use Case.

8.1.1 Commission Device (8.1.1)

Service Request Name	CommissionDevice
Service Reference	8.1
Service Request Variant Name	CommissionDevice(SynchroniseClock)
Service Reference Variant	8.1.1
Service Request Objective	To activate and configure a Meter for use with the DCC
Business Context Statement	The DCC Service User requires a specified Meter to be immediately commissioned and configured, e.g. following the installation of a new smart meter.
User Role Access	<ul style="list-style-type: none">Electricity Import Supplier (EIS)Gas Import Supplier (GIS)
Security Classification	Critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.C

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. This Service Request has to be sent before any other post-Installation Service Requests. A successful Device Response triggers the change of Device status to Commissioned in the Smart Metering Inventory. The Meter functionality is identical to that provided by the GBCS UC mapping to Service Reference 6.11 – Synchronise Clock (see Annex section 6.11) 2. This Service Request includes the Supplier's current date-time and a tolerance in seconds. The setting of these data item has to take into account: <ul style="list-style-type: none"> • The fact that, because it is Critical, this Service Request requires the Service User to sign the Pre-command • The Target Response Time for the Service Request • For GSME, the fact that the Gas Smart Meter is 'Sleepy', i.e. its HAN radio will not be active most of the time and therefore the tolerance provided by the Supplier needs to reflect the extended latency. Note – this could be up to 1,799 seconds before the next wake up 3. A successful completion of this Service Request results in the ESME / GSME Device Status being set to 'Commissioned' in the Smart Metering Inventory (this action is carried out before the Service Response is generated). DCC Data Systems check the "MessageSuccess" attribute in the Response to determine "successful completion" and not the individual ElecClockTimeStatus or GasClockTimeStatus values received from the device within the GBCS response. 4. For Gas a Command response indicates successful execution of the Command 5. Pre Condition - The Device Status of the CHF which Device Log contains the Meter ID must be 'Commissioned'. 6. Post Condition – The DCC Service Users should also send Service Request 6.20.1 – Set Device Configuration (Import MPxN) and / or Service Request 6.20.2 – Set Device Configuration (Export MPAN) as appropriate upon successful commissioning of an ESME or GSME to set the MPxN value for display purposes on the Device. See Section 6.20. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0062	0x007F
GBCS Use Case	ECS70	GCS28
GBCS Use Case Name	Set Clock on ESME	Set Clock on GSME
SMETS1 Applicability	Yes	Yes

Service Request Narrative (SMETS1)

The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:

1. Service Request 6.20.1 and Service Request 6.20.2 are not supported for SMETS1 Devices

Table 3 Commission Device Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.1.1.1 Service Request

8.1.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its CommissionDeviceSynchroniseClock XML element defines this Service Request and it contains the Supplier Current Date Time and the Tolerance Period in seconds.

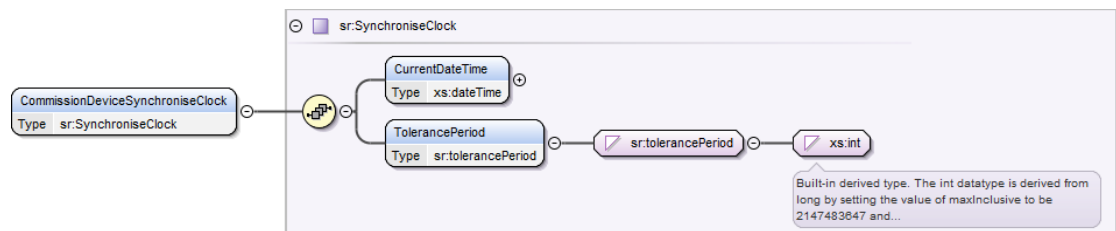


Figure 1 Commission Device Service Request Structure

8.1.1.1.2 Specific Data Items Definition

See Annex section 6.11.1.2 for details.

8.1.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 4 Commission Device Modes of Operation

8.1.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	No	No	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 5 Commission Device Command Variant Values

8.1.1.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

8.1.1.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request.
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<CommissionDeviceSynchroniseClock>  
  <CurrentDateTime>2014-06-03T07:09:12.00Z</CurrentDateTime>  
  <TolerancePeriod>50</TolerancePeriod>  
</CommissionDeviceSynchroniseClock>
```

Figure 2 Commission Device Transform Service Request (Body) Format

8.1.1.2 Responses

- The response messages for a “Commission Device” request follow the generic format for all “Device” response messages. The generic responses applicable to this request are;
 - Pre-command
 - Acknowledgement
 - Service Response (from Device) - GBCSPayload. Service Response Specific Payload
 - Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.1.1.2.1 Parse Output / SMETS1 Response Format

8.1.1.2.1.1 Format - CommissionDeviceSynchroniseClockRsp

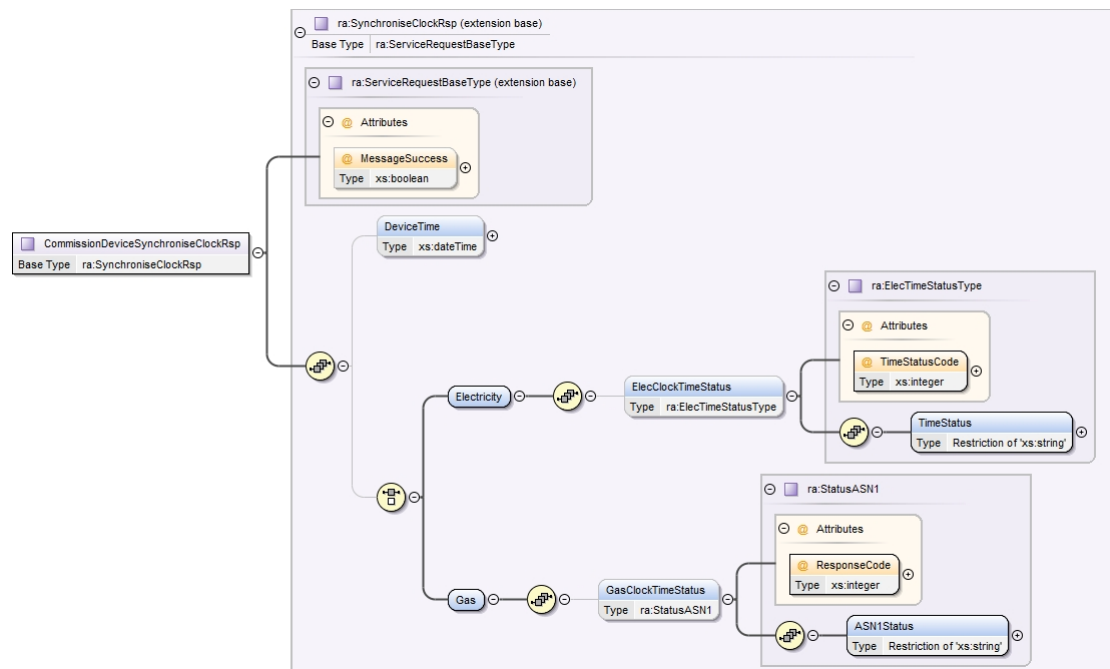


Figure 3 - Commission Device Parse Response / SMETS1 Response Format

8.1.1.2.1.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0062	007F
GBCS Use Case Number (for information only - not in header)	ECS70	GCS28
GBCS Use Case Name (for information only - not in header)	Set Clock on ESME	Set Clock on GSME
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not present	Not present

Table 6 - Commission Device Parse/SMETS1 Response Header Data Items

8.1.1.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceTime	The resulting time on the metering device.	xs:dateTime	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ElecClockTimeStatus	The resulting time status, one of: <ul style="list-style-type: none"> "reliable" (TimeStatusCode 0) "invalid" (TimeStatusCode 1) "unreliable" (TimeStatusCode 2) 	ra:TimeStatusType, which wraps an xs:string (maxLength = 25) with TimeStatusCode as an attribute	None	N/A	Non-Sensitive
GasClockTimeStatus	The resulting time status, one of: <ul style="list-style-type: none"> "reliable" (ASN1Status0) "invalid" (ASN1Status1) "unreliable" (ASN1Status2) (Please see ASN1 Response Code definitions in Annex section 18.6.4.1)	ra:StatusASN1	None	N/A	Non-Sensitive

Table 7 - Commission Device Parse Response / SMETS1 Response Body Data Items

8.1.1.2.1.4 Sample Response

```
<ra:CommissionDeviceSynchroniseClockRsp MessageSuccess="true">
  <ra:DeviceTime>2006-05-04T18:13:51.00</ra:DeviceTime>
  <ra:Electricity>
    <ra:ElecClockTimeStatus TimeStatusCode = "0">
      <ra:TimeStatus>reliable</ra:TimeStatus>
    </ra:ElecClockTimeStatus>
  </ra:Electricity>
</ra:CommissionDeviceSynchroniseClockRsp>
```

Figure 4 – Commission Device Parse Response Sample

8.1.2 Section 8.1.2

This section has been intentionally left blank as there is no Service Reference 8.1.2.

8.2 Read Inventory (8.2)

Service Request Name	ReadInventory
Service Reference	8.2
Service Request Variant Name	ReadInventory
Service Reference Variant	8.2
Service Request Objective	To confirm the data held within the DCC Smart Metering Inventory for a specified Device Id
Business Context Statement	The DCC Service User requires a set of data for a specified Smart Metering System (based on a UPRN / End Point Id / Device ID / Property Filter) from the DCC Smart Metering Inventory.

User Role Access	<ul style="list-style-type: none"> • Electricity Import Supplier (EIS) • Electricity Export Supplier (EES) • Gas Import Supplier (GIS) • Supplier Nominated Agent (SNA) • Electricity Network Operator (ENO) • Gas Network Operator (GNO) • Other User (OU)
Security Classification	<p>Non-critical and non-sensitive: GBCS XREF: Not applicable</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. This Service Request reads Smart Metering Inventory data for the premises or Device identified by the search criteria. The response will contain all the Devices associated to the premises or Device. Note that Devices in a 'Pending' Status won't be associated to anything, except for the CHF and GPF which will always be associated to each other. 2. A Device is associated / disassociated with a property (premises) via the relationship established between ESME / GSME and their MPxN(s) in SR 8.11 – Update HAN Device Log (see section 8.11) or because of the use of SR 8.14.2 Communications Hub Status Update - Install No SM WAN. 3. Note that in cases where address details are returned, but the Smart Metering Inventory does not hold direct, distinct address data for the type of Device in question: <ol style="list-style-type: none"> a. For Communications Hubs where separate address information is held for the Communications Hub Function and the Gas Proxy Function, if the address fields differ, both will be displayed. The address for the Communications Hub Function will be determined from the first Electricity Smart Meter (or Gas Smart Meter if no Electricity Smart Meter is present), and the address for the Gas proxy Function will be determined from the Gas Smart Meter (or first Electricity Smart Meter if no Gas Smart Meter is present). b. For Devices for which address data is not held, the address data shown will be that of the first Electricity Smart Meter for the Smart Metering System of which the Device in question is a member or the Gas Smart Meter if no Electricity Smart Meter is present. c. Note that the first Electricity Smart Meter is that with the earliest Commissioned Date and the address to be displayed is that of its associated Primary Import MPAN. 4. From DUIS Version 2.0 onwards, this Service Request returns <ol style="list-style-type: none"> a. The Device GBCS Version, wherever the Device Type, Device Manufacturer and Firmware Version are included in the Certified Products List b. The HAN Variant of Device Type CHF

	<p>5. New combinations of ESME Variant were introduced to the DUIS schema in DUIS v4.0. If a Service Request 8.2 is sent using an earlier version of DUIS where the Device has an ESME Variant introduced in DUIS v4.0 and GBCS v4.0, the ESME Variant cannot be returned as it will not be present in a DUIS schema older than DUIS v4.0. In this case any parts of the ESME Variant not in the XML schema will be omitted from the Service Response, e.g. if the combination in the Inventory is "AG" and the Service Request was formed using DUIS v3.0, then just "A" will be returned since G will not be recognised in the DUIS v3.0 XML schema.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes for ESME, GSME, CHF, GPF, PPMID, IHD and CAD	
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> Valid Device Types: ESME, GSME, CHF, GPF, PPMID, IHD, CAD From DUIS Version 3.0 onwards, where applicable, this Service Request returns the SMETS1 Service Provider associated with the Device ESME Variants F and G and associated combinations, which were introduced in DUIS v4.0, are not applicable to SMETS1. 	

Table 8 Read Inventory Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.2.1 Service Request

8.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadInventory XML element defines this Service Request and contains the UPRN, an MPxN or a Property Filter that identifies the Device or Property (premises) or a Device ID that identifies the Device for which details are required.

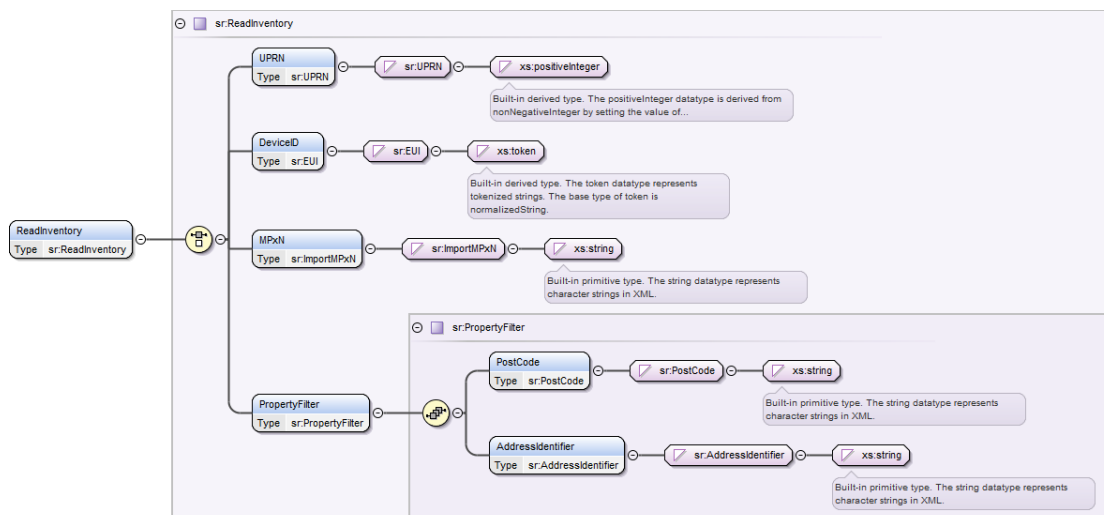


Figure 5 Read Inventory Service Request Structure

8.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
UPRN	Unique Property Reference Number	sr:UPRN (Restriction of xs:positiveInteger (totalDigits = 12))	No	None	N/A	Non-Sensitive
DeviceID	Device ID of a Device in the Smart Metering Inventory	sr:EUI (see Annex section 17)	No	None	N/A	Non-Sensitive
MPxN	MPAN or MPRN associated to a Device in the premises	ImportMPxN (Restriction of xs:string (minLength = 1 maxLength = 13))	No	None	N/A	Non-Sensitive
PropertyFilter	PostCode and Address Identifier that uniquely identify an address	sr:PropertyFilter (see section 8.2.1.3)	No	None	N/A	Non-Sensitive

Table 9 Read Inventory Service Request Data Items

¹ The Request is a Choice of one of these Data Items

8.2.1.3 PropertyFilter Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
PostCode	Postcode of Metering Point This search criteria is case insensitive	sr:PostCode (Restriction of xs:string (minLength = 6 maxLength = 8))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AddressIdentifier	Address Identifier (house number or house name), that combined with the Postcode, allows the identification of the premises This search criteria is case insensitive	sr:AddressIdentifier (Restriction of xs:string (maxLength = 30))	Yes	None	N/A	Non-Sensitive

Table 10 Read Inventory Service Request – PropertyFilter Data Items

8.2.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 11 Read Inventory Modes of Operation

8.2.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 12 Read Inventory Command Variant Values

8.2.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Device ID existence validation):

Validation Check	Process	Response Code
Does the Service Request identify a single Premise?	If the Service Request doesn't include a Device ID, check that it identifies a single Premise	E080201
Is there at least one Device associated with the Premises?	If the Service Request doesn't include a Device ID, check that the identified Premises are associated with at least one Device	E080202

Table 13 Read Inventory Service Request Validation

Note that this Service Request is available on the basis of Eligible User Role (rather than a User's status as an Eligible User in respect of a particular Smart Metering System or Device). In other words, the generic authorisation check associated to E4 is N/A. The generic authorisation check associated to E5 is N/A either. See Main Document of this documentation set section 7.4

8.2.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReadInventory>  
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>  
</ReadInventory>
```

Figure 6 Read Inventory Service Request (Body) Format

8.2.2 Responses

The response messages for a "Read Inventory" request follow the generic format for all "DCC Only" responses that include specific data in the response.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.2.2.1 Service Response (from DCC)

Applicable to cases where the "Read Inventory" Request is successfully read and its details returned to the DCC Service User.

8.2.2.1.1 Format

This Service Request synchronous response is defined in the XSD ResponseMessage DSPInventory XML element, which contains the DSP Inventory details applicable to a single premises or Device.

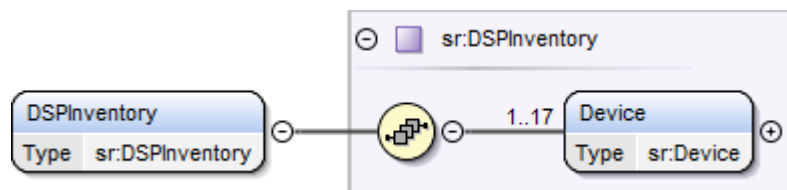


Figure 7 Read Inventory Service Response (from DCC) Structure

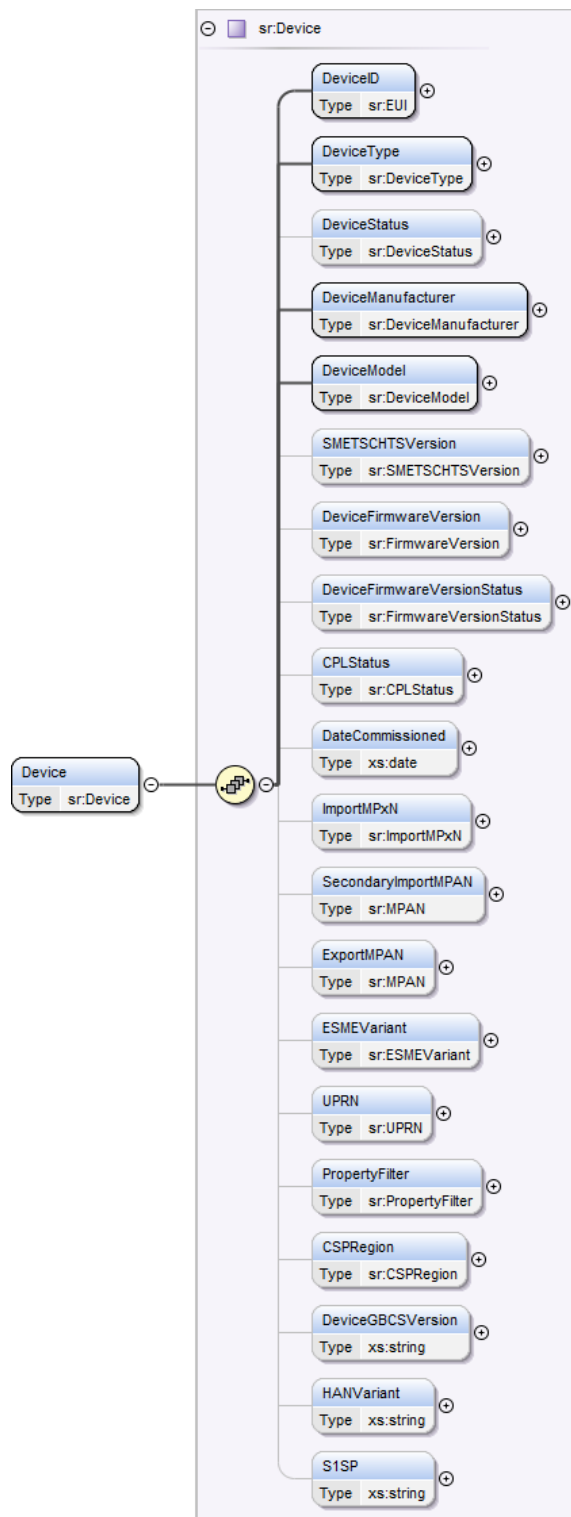


Figure 8 Read Inventory Service Response (from DCC) – Device Structure

8.2.2.1.2 Specific Data Items

Returned if the DCC Data Items successfully read the Inventory in the Request.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Device		sr:Device	Yes ¹	None	N/A	Non-Sensitive
Per Device (complex type sr:Device) found :						
DeviceID	Device ID of a Device in the Smart Metering Inventory	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceType	The Type of device Valid set: <ul style="list-style-type: none"> ESME GSME GPF CHF HCALCS¹¹ PPMID IHD CAD 	sr:DeviceType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
DeviceStatus ²	An indicator giving the status of the device Valid set: <ul style="list-style-type: none"> Pending Whitelisted³ InstalledNotCommissioned Commissioned Decommissioned Withdrawn¹¹ Suspended Recovery¹¹ Recovered¹¹ 	sr:DeviceStatus (Restriction of xs:string (Enumeration))	Device Type = IHD, CAD: N/A Otherwise: Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceManufacturer	<p>The name of the Device's manufacturer</p> <p>With the exception of IHD and CAD:</p> <ul style="list-style-type: none"> The Device Manufacturer is the <device_model_manufacturer_identifier> from the CPL and presented in the format XXXX where each X is one of the characters 0 to 9 or A to F This data item matches the value on the CPL (excluding the colon separator between octet values) <p>For IHD and CAD this data item is free text</p>	<p>sr:DeviceManufacturer (Restriction of xs:string (maxLength = 30))</p>	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceModel	<p>The specific model of the device, as used by the manufacturer</p> <p>With the exception of IHD and CAD:</p> <ul style="list-style-type: none"> The Device Model is the concatenation of <device_model.model_identifier><device_model.hardware_version.version><device_model.hardware_version.revision> from the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F <p>Where:</p> <ul style="list-style-type: none"> the first 4 characters are the model identifier the next 2 characters are the hardware version.version the final 2 characters are the hardware version.revision This data item matches the value on the CPL (excluding the colon separator between octet values) <p>For IHD and CAD this data item is free text</p>	sr:DeviceModel (Restriction of xs:string (maxLength = 30))	Yes	None	N/A	Non-Sensitive
SMETSCHTSVersion	<p>The version of SMETS or CHTS that the Device complies with. This should align with the CPL version, for Device Types recorded on the CPL</p>	sr:SMETSCHTSVersion (Restriction of xs:string (minLength = 1, maxLength = 20))	Device Type = CAD: N/A Otherwise: Yes	None	N/A	Non-Sensitive
DeviceFirmwareVersion	<p>The operational version of Firmware of the Device.</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This data item matches the value on the CPL (excluding the colon separator between octet values)</p>	Restriction of xs:string (minLength = 1, maxLength = 8)	Device includes Firmware ⁹ : Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceFirmwareVersionStatus ⁸	The status of the Firmware Version. Valid set: <ul style="list-style-type: none"> Active Cancelled Expired Withdrawn 	sr:FirmwareVersionStatus (Restriction of xs:string Enumeration))	Device includes Firmware ⁹ : Yes Otherwise: N/A	None	N/A	Non-Sensitive
CPLStatus ⁸	The CPL Assurance Certificate Status. Valid set: <ul style="list-style-type: none"> Active Cancelled Expired Withdrawn 	sr:CPLStatus (Restriction of xs:string Enumeration))	Device includes Firmware ⁹ : Yes Otherwise: N/A	None	N/A	Non-Sensitive
DateCommissioned	Where applicable, the date when the Device was commissioned	xs:date	Device Type = IHD, CAD: N/A Device has been commissioned: Yes Otherwise: No	None	UTC Date	Non-Sensitive
ImportMPxN	<i>The reference number identifying an Import electricity or a gas metering point</i>	sr:ImportMPxN (Restriction of xs:string (minLength = 1, maxLength = 13))	Device Type = ESME, GSME: No ⁶ Otherwise: N/A	None	N/A	Non-Sensitive
SecondaryImportMPAN ¹¹	The reference number identifying a Twin Element Import electricity secondary metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Device Type = ESME and ESME Variant = B: No ⁶ Otherwise: N/A	None	N/A	Non-Sensitive
ExportMPAN	The reference number identifying an Export electricity metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Device Type = ESME includes Export capability: No ⁶ Otherwise: N/A	None	N/A	Non-Sensitive
ESMEVariant	Electricity Smart Metering Equipment Variant. Valid set:	sr:ESMEVariant Restriction of xs:string (Enumeration)	DeviceType = ESME: Yes Otherwise:	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
	<ul style="list-style-type: none"> A. Single Element B. Twin Element¹¹ C. Polyphase¹¹ AD. Single Element with ALCS¹¹ BD. Twin Element with ALCS¹¹ CD. Polyphase with ALCS¹¹ ADE. Single Element with ALCS and Boost Function¹¹ BDE. Twin Element with ALCS and Boost Function¹¹ CDE. Polyphase with ALCS and Boost Function¹¹ ADF. Single Element with ALCS and APC^{11, 13, 14} BDF. Twin Element with ALCS and APC^{11, 13, 14} CDF. Polyphase with ALCS and APC^{11, 13, 14} ADEF. Single Element with ALCS, Boost Function and APC^{11, 13, 14} BDEF. Twin Element with ALCS, Boost Function and APC^{11, 13, 14} CDEF. Polyphase with ALCS, Boost Function and APC^{11, 13, 14} ADG Single Element with ALCS and SAPC^{11, 13, 14} ADEG. Single Element with ALCS, Boost Function and SAPC^{11, 13, 14} AF. Single Element with APC^{11, 13, 14} BF. Twin Element with APC^{11, 13, 14} CF. Polyphase with APC^{11, 13, 14} 		N/A			

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
	<ul style="list-style-type: none"> AEF. Single Element with Boost Function and APC^{11, 13, 14} BEF. Twin Element with Boost Function and APC^{11, 13, 14} CEF. Polyphase with Boost Function and APC^{11, 13, 14} AG. Single Element with SAPC^{11, 13, 14} AEG. Single Element with Boost Function and SAPC^{11, 13, 14} 					
UPRN	Unique Property Reference Number	sr:UPRN (Restriction of xs:positiveInteger (totalDigits = 12))	No	None	N/A	Non-Sensitive
PropertyFilter	PostCode and Address Identifier that uniquely identify an address	sr:PropertyFilter (see section 8.2.1.3)	No	None	N/A	Non-Sensitive
CSPRegion	<p>The CSP Region the Smart Metering System is associated with. "SMETS1" is used where the HAN is based on a SMETS1 CHF.</p> <p>Valid set:</p> <ul style="list-style-type: none"> North Central South Unknown⁷ SMETS1 	sr:CSPRegion (Restriction of xs:string (Enumeration))	No	None	N/A	Non-Sensitive
DeviceGBCSVersion	<p>The operational version of GBCS of the Device.</p> <p>The version number format will align with the CPL, For example 1.0, 2.0. Note that the version number for a SMETS1 Device is 0.0</p> <p>DeviceGBCSVersion is introduced in DUIS Version 2.0</p>	xs:string	Device includes Firmware ⁹ : Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
HANVariant ¹⁰	The Device's HAN Variant. Valid Set: <ul style="list-style-type: none"> Single Band (2.4GHz only) ¹¹ Dual Band (868MHz and 2.4GHz) ¹¹ Unknown HAN Variant HANVariant is introduced in DUIS Version 2.0	xs:string	DeviceType = CHF: Yes Otherwise: N/A	None	N/A	Non-Sensitive
S1SP ¹²	Identifier of the SMETS1 Service Provider the Smart Metering System is associated with S1SP is introduced in DUIS Version 3.0 and it is only applicable to SMETS1 Smart Metering Systems Valid set: <ul style="list-style-type: none"> 1SP (Instant Energy) 2SP (Trilliant) 3SP (Secure Meters) 	xs:string	No	None	N/A	Non-Sensitive

Table 14 Read Inventory Service Request Response Data Items

¹ Minimum 1 and maximum 17 Devices

² Device Status is not applicable to Type 2 Devices, i.e. IHD and CAD

³ Not applicable to Communications Hub Function or Gas Proxy Function

⁶ MPxN is applicable to the Device Type, but the association doesn't yet exist, e.g. because the Device Status is 'Pending' or the ESME Secondary Element or Export capability is not being used

⁷ Applicable to a Pre-Notified Device that hasn't yet been assigned to an MPxN

⁸ The status displayed in DeviceFirmwareVersionStatus and CPLStatus maps to the status on the Certified Product List as follows:

Certified Product List Status	DUGIDS Status
Current	Active
Removed	Cancelled
N/A	Expired (not currently used)
N/A	Withdrawn (not currently used)

Table 15 Certified Product List / DUGIDS Status mapping

⁹ Firmware is included in ESME, GSME, CHF, GPF, PPMID and HCALCS and not included in IHD and CAD

¹⁰ The CPL CHF Device Manufacturer and Device Model define its HAN Variant and the DCC Data Systems hold this relationship. When a CH is pre-notified to the DCC, its CHF HAN Variant is set based on its Device Manufacturer and Device Model

¹¹ N/A to SMETS1 Devices

¹² N/A to SMETS2 or later Devices

¹³ N/A to Devices prior to GBCS v4.0

¹⁴ Combination introduced in DUIS v4.0. This combination cannot be included in a response for a version of DUIS prior to DUIS v4.0, and in such cases invalid items will be omitted, e.g. if the combination in the Inventory is "AG" and the Service Request was formed using DUIS v3.0, then just "A" will be returned since G will not be recognised in the DUIS v3.0 XML schema

8.2.2.1.3 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```
<ResponseMessage>
  <ServiceReference>8.2</ServiceReference>
  <ServiceReferenceVariant>8.2</ServiceReferenceVariant>
  <DSPInventory>
    <Device>
      <DeviceID>99-00-AA-BB-CC-DD-EE-AA</DeviceID>
      <DeviceType>CHF</DeviceType>
      <DeviceStatus>Commissioned</DeviceStatus>
      <DeviceManufacturer>CD04</DeviceManufacturer>
      <DeviceModel>B74F5E32</DeviceModel>
      <SMETSCHTSVersion>V1.46</SMETSCHTSVersion>
      <DeviceFirmwareVersion>1100EEFF</DeviceFirmwareVersion>
      <DeviceFirmwareVersionStatus>Active</DeviceFirmwareVersionStatus>
      <CPLStatus>Active</CPLStatus>
      <DateCommissioned>2014-08-10</DateCommissioned>
      <PropertyFilter>
        <PostCode>KT22 7LP</PostCode>
        <AddressIdentifier>17</AddressIdentifier>
      </PropertyFilter>
      <CSPRegion>South</CSPRegion>
      <DeviceGBCSVersion>2.0</DeviceGBCSVersion>
      <HANVariant>Dual Band (868MHz and 2.4GHz)</HANVariant>
    </Device>
    <Device>
      <DeviceID>99-00-AA-BB-CC-DD-EE-BB</DeviceID>
      <DeviceType>GPF</DeviceType>
      <DeviceStatus>InstalledNotCommissioned</DeviceStatus>
      <DeviceManufacturer>CD04</DeviceManufacturer>
      <DeviceModel>B74F5E32</DeviceModel>
      <SMETSCHTSVersion>V1.46</SMETSCHTSVersion>
      <DeviceFirmwareVersion>1100EEFF</DeviceFirmwareVersion>
      <DeviceFirmwareVersionStatus>Active</DeviceFirmwareVersionStatus>
      <CPLStatus>Active</CPLStatus>
      <PropertyFilter>
        <PostCode>KT22 7LP</PostCode>
        <AddressIdentifier>17</AddressIdentifier>
      </PropertyFilter>
      <CSPRegion>South</CSPRegion>
      <DeviceGBCSVersion>2.0</DeviceGBCSVersion>
    </Device>
    <Device>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceType>ESME</DeviceType>
      <DeviceStatus>Commissioned</DeviceStatus>
      <DeviceManufacturer>AB02</DeviceManufacturer>
      <DeviceModel>D7A50E04</DeviceModel>
      <SMETSCHTSVersion>V1.58</SMETSCHTSVersion>
      <DeviceFirmwareVersion>1100EEAB</DeviceFirmwareVersion>
      <DeviceFirmwareVersionStatus>Active</DeviceFirmwareVersionStatus>
      <CPLStatus>Active</CPLStatus>
      <DateCommissioned>2014-08-12</DateCommissioned>
      <ImportMPxN>1234567890123</ImportMPxN>
      <ESMEVariant>A</ESMEVariant>
      <PropertyFilter>
        <PostCode>KT22 7LP</PostCode>
        <AddressIdentifier>17</AddressIdentifier>
      </PropertyFilter>
      <CSPRegion>South</CSPRegion>
      <DeviceGBCSVersion>2.0</DeviceGBCSVersion>
    </Device>
  </DSPInventory>
</ResponseMessage>
```

Figure 9 Sample Read Inventory Service Response (from DCC) Format

8.2.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080201	Failed Validation – No Premises identified	Error	The request doesn't uniquely identify a Premises
E080202	Failed Validation – No Devices identified	Error	The Premises don't contain any Devices

Table 16 Failed Read Inventory Service Request Response Codes

8.3 Decommission Device (8.3)

Service Request Name	DecommissionDevice
Service Reference	8.3
Service Request Variant Name	DecommissionDevice
Service Reference Variant	8.3
Service Request Objective	To update the status of a specified Device within the DCC Smart Metering Inventory to "Decommissioned" to reflect the status of the Device at the consumer premises.
Business Context Statement	The DCC Service User requires that a specified Device is recorded as decommissioned within the Smart Metering Inventory, e.g. to support physical removal of the Device.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive GBCS XREF: Not applicable
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service Request doesn't apply to: <ol style="list-style-type: none"> Type 2 (IHD and CAD) Devices, because Device Status doesn't apply to them GPF, because when decommissioning a CHF, the associated GPF is automatically also decommissioned For those Devices to which Device Status applies, this Service Request can be used to set the Device Status to 'Decommissioned' in all cases except if its current Status is one of the following: <ol style="list-style-type: none"> 'Decommissioned' 'Pending' 'Withdrawn' <p>Note that this does mean that if a Device Status is 'Recovery' and the SMKI Recovery Process cannot be completed, then it is possible to decommission that Device via this Service Request</p>

3. For all Device Types except CHF, on successful completion of the Service Request
 - a. All active DSP Schedules on that Device will be automatically deleted by the DCC Data Systems. For each deleted DSP Schedule a DCC Alert N6 will be sent to the DSP Schedule owner.
 - b. All Future Dated (DSP) requests for that Device not yet sent to the Device will be automatically deleted by the DCC Data Systems. For each cancelled request a DCC Alert N33 will be sent to the sender of the Future Dated request.
 - c. For Device Type ESME,
 - i. Disassociate the Device from any MPAN with which it is associated in the Smart Metering Inventory.
 - ii. Send DCC Alert N1 to the registered ENO and, if applicable, registered EES.
 - d. For Device Type GSME,
 - i. Disassociate the Device from any MPRN with which it is associated in the Smart Metering Inventory.
 - ii. Send DCC Alert N2 to the registered GNO.
4. For Device Type CHF, on successful completion of the Service Request
 - a. All active DSP Schedules on the associated GPF will be automatically deleted by the DCC Data Systems. For each deleted DSP Schedule a DCC Alert N6 will be sent to the DSP Schedule owner.
 - b. All Future Dated (DSP) requests for that CHF and its associated GPF not yet sent to the Device will be automatically deleted by the DCC Data Systems. For each cancelled request a DCC Alert N34 will be sent to the sender of the Future Dated request.
 - c. Set the Device Status of the associated GPF to 'Decommissioned' in the Smart Metering Inventory.
 - d. Send DCC Alert N9 to
 - All Responsible Import Suppliers for that CH function, other than the Responsible EIS / GIS that instigated the Decommissioning
 - Registered ENO
 - Registered GNO
5. A Device Status update of the Smart Metering Inventory is carried out before the Service Response is generated. The other actions detailed in points 3 and 4 above are post-processing steps after the Service Response has been sent to the User.

	<p>6. Guidance note: DCC recommends that Suppliers decommission Devices as soon as possible after physical removal. After associating a Device with an MPxN, it is only possible to decommission the Device while the Supplier is still the registered Supplier for that MPxN, even if the Device is no longer physically present in the property relating to the MPxN. If the Supplier does not decommission the Device and there is a subsequent Change of Supplier for that MPxN, then the original Supplier will no longer be able to decommission the Device and resend the SR12.2 Pre-Notification Service Request in order to re-use the Device.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes for ESME, GSME, CHF/GPF and PPMID	
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. The Service Request will be forwarded to the relevant S1SP. If the S1SP rejects the request because of a validation condition then it will generate an S1SP Alert for sending to the Supplier; Note that if the Service Request has been accepted by the DCC Data Systems the Device Status in the SMI will be changed to Decommissioned, regardless of whether or not an S1SP validation error arises. 	

Table 17 Decommission Device Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.3.1 Service Request

8.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its DecommissionDevice XML element defines this Service Request and contains the Device ID of the Device to be decommissioned.

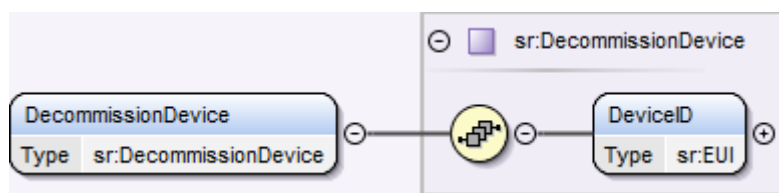


Figure 10 Decommission Device Service Request Structure

8.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	Device ID of the Device to be decommissioned	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 18 Decommission Device Service Request Data Items

8.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 19 Decommission Device Modes of Operation

8.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 20 Decommission Device Command Variant Values

8.3.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Device ID existence validation):

Validation Check	Process	Response Code
Is the Device's current Status valid?	Check that the Device Status is not one of: <ul style="list-style-type: none"> 'Decommissioned' 'Pending' 'Withdrawn' 	E080301
Is the Device Type valid?	Check that the Device Type is not GPF, IHD or CAD	E080302

Table 21 Decommission Device Service Request Validation

Note that the authorisation check associated with error code E4 is not carried out in the case where the Device Type is CHF and there is no associated Smart Meter.

8.3.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<DecommissionDevice>  
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>  
</DecommissionDevice>
```

Figure 11 Decommission Device Service Request (Body) Format

8.3.2 Responses

The response messages for a “Decommission Device” request follow the generic format for all “DCC Only” responses that don’t include specific data in the response, the generic responses applicable to this request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.3.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080301	Failed Validation – Invalid Device Status	Error	The Device Status is invalid
E080302	Failed Validation – Invalid Device Type	Error	The Device Type is invalid

Table 22 Failed Decommission Device Service Request Response Codes

8.4 Update Inventory (8.4)

Service Request Name	UpdateInventory
Service Reference	8.4
Service Request Variant Name	UpdateInventory
Service Reference Variant	8.4
Service Request Objective	To notify DCC of a change in the details of a Device held within the Smart Metering Inventory
Business Context Statement	The DCC Service User requires that a specified Device is recorded in the DCC Smart Metering Inventory with changes to details or update the status of a Device to a new status.

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU)
Security Classification	<p>Non-critical and non-sensitive</p> <p>:</p> <p>GBCS XREF: Not applicable</p>
Service Request Narrative	<p>This Service Request can be used by DCC Service Users to perform the following four functions;</p> <ol style="list-style-type: none"> Update Device details within the Smart Metering Inventory provided via Pre-Notification <ol style="list-style-type: none"> This functionality of the Service Request is available to all the Eligible User Roles associated with this Service Request. Only the DCC Service User who Pre-notified the Device details may update these device details whilst the Device has a status of 'Pending'. For Devices with Device Type ESME, the ESME Variant can be updated by the Registered Supplier Party for the MPAN associated with the Device if the Device has a status of 'Whitelisted', 'Installed Not Commissioned' or 'Commissioned'. The ESME Variant and other Device details can be updated by the User who originally added the Device to the Smart Metering Inventory whilst the Device has a status of 'Pending'. For all other Devices that have Device Status values, only Devices in a status of 'Pending' can be updated. Type 2 (IHD and CAD) Devices can be updated at any time. Update most of the Device details that were initially provided to the DCC via Service Request 12.2 – Device Pre-notification (see Annex 12.2) It isn't possible to update a Device ID (including the GPF Device ID associated to a CHF). If it has been entered in error it has to be deleted via this Service Request and re-added via Service Request 12.2 – Device Pre-notification (see Annex 12.2). It isn't possible to update a Device Type. If it has been entered in error it has to be deleted via this Service Request and re-added via Service Request 12.2 – Device Pre-notification (see Annex 12.2). Any updates to the details shared between a CHF and a GPF will be applied to both. The Device ID in the Service Request has to be that of the CHF. Delete Device details from the Smart Metering Inventory provided via Pre-Notification which have not been installed. <ol style="list-style-type: none"> This functionality of the Service Request is available to all the Eligible User Roles associated with this Service Request.

- b. Only the DCC Service User who Pre-notified the Device details may delete these device details.
 - c. For Devices that have Device Status values, only Devices in a status of 'Pending' can be deleted.
 - d. Type 2 (IHD and CAD) Devices can be deleted at any time.
 - e. Deleting a CHF will also delete its associated GPF.
- 3. Update Device Status within the Smart Metering Inventory
 - a. This functionality of the Service Request is ONLY available to the Eligible User Roles of Electricity Import Supplier and Gas Import Supplier who are the Registered Supplier to the Device being updated.
 - b. Different options exist for which device Status values can be updated by DCC Service Users depending on Device type. Functionality allows,
 - i. Update the Device status for all Device Types, other than the CHF and the GPF and where the old and new status apply to the Device Type
 - 1. From 'Pending' to 'Installed Not Commissioned'
 - 2. From 'Whitelisted' to 'Pending'
 - c. Update the Device status for a CHF (and its associated GPF)
 - i. To support the Install & Leave process and / or Install & Commission after Decommissioning or Withdrawal:
 - 1. From 'Pending' to 'Installed Not Commissioned' (GPF from 'Pending' to 'Installed' Not Commissioned')
 - 2. From 'Installed Not Commissioned' to 'Commissioned' (GPF no status transition)
 - 3. From 'Pending' to 'Commissioned' (GPF from 'Pending' to 'Installed' Not Commissioned')
 - ii. From 'Commissioned' to 'Withdrawn' (GPF from 'Commissioned' to 'Withdrawn' or from 'Installed Not Commissioned' to 'Withdrawn'). This is the equivalent of Service Request 8.5 – Service Opt Out (see section 8.5) for other Device Types. On successful completion of the Service Request, the DCC Data Systems will:
 - 1. automatically delete all active DSP Schedules on all Devices in the CHF Whitelist. For each deleted DSP Schedule a DCC Alert N37 will be sent to the DCC Service User that owned it.
 - 2. automatically cancel all Future Dated (DSP) requests not yet sent to the Device for that CHF and all the Devices in its Whitelist. For each cancelled request a

DCC Alert N36 will be sent to the sender of the Future Dated request.

4. Update MPxN associated with the Device within the Smart Metering Inventory
 - a. This functionality allows the registered Electricity or Gas Supplier to:
 - i. Update the MPxN associated with that Device (initially set as part of the SR8.11 Service Request processing). The registered Supplier can only update the MPxN value to another for which they are also the registered Supplier.
 - ii. Associate an MPxN with an ESME or GSME in a status of "Whitelisted", "Installed Not Commissioned" or "Commissioned" if such an association doesn't exist. The Supplier can only add the association to an MPxN value for which they are the registered Supplier
 - b. The new MPxN must be consistent with the type of Device, for example if the Secondary MPAN is updated then the device must be a twin element ESME.
 - c. ONLY a single MPxN association can be changed / added per Service Request call.
 - d. If the MPxN is successfully updated in the Smart Metering Inventory, then a DCC Alert N16 is sent to the Meter's Registered Network Operator.
5. Updates to the Smart Metering Inventory are carried out before the Service Response is generated. The other actions detailed above are post-processing steps after the Service Response has been sent to the User.
6. New combinations of ESME Variant were introduced to the DUIS schema in DUIS v4.0. If a Service Request 8.4 is sent using an earlier version of DUIS where the Device has an ESME Variant introduced in DUIS v4.0 and GBCS v4.0, the ESME Variant cannot be included as it will not be present in a DUIS schema older than DUIS v4.0.

Additional Information

1. Where a DCC Service User wishes to decommission an ESME or GSME Device and re-use the ESME/GSME Device at another premise then the DCC Service User must not use the Update Inventory Service Request to perform this activity. Instead, a Service Request 8.3 Decommission Device (see section 8.3) should be used to update the Device Status to 'Decommissioned', the ESME/GSME Device then needs to be returned to a triage facility, followed by a subsequent Service Request 12.2 Device Pre-notification (see section 12.2) to update the Device Status to 'Pending'. The ESME/GSME Device can then be commissioned as per normal process.

GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes for ESME, GSME, CHF/GPF, PPMID, IHD and CAD	
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. Device Status 'Withdrawn' and 'Recovered' do not apply to SMETS1 Devices. 2. The ability to update ESMEVariant for a Device with Device Status other than Pending is not supported for SMETS1 Devices. 	

Table 23 Update Inventory Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.4.1 Service Request

8.4.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateInventory XML element defines this Service Request and contains the Device ID and a choice of the Device Status to be updated, details to be updated, Device to be deleted or MPxN to be updated.

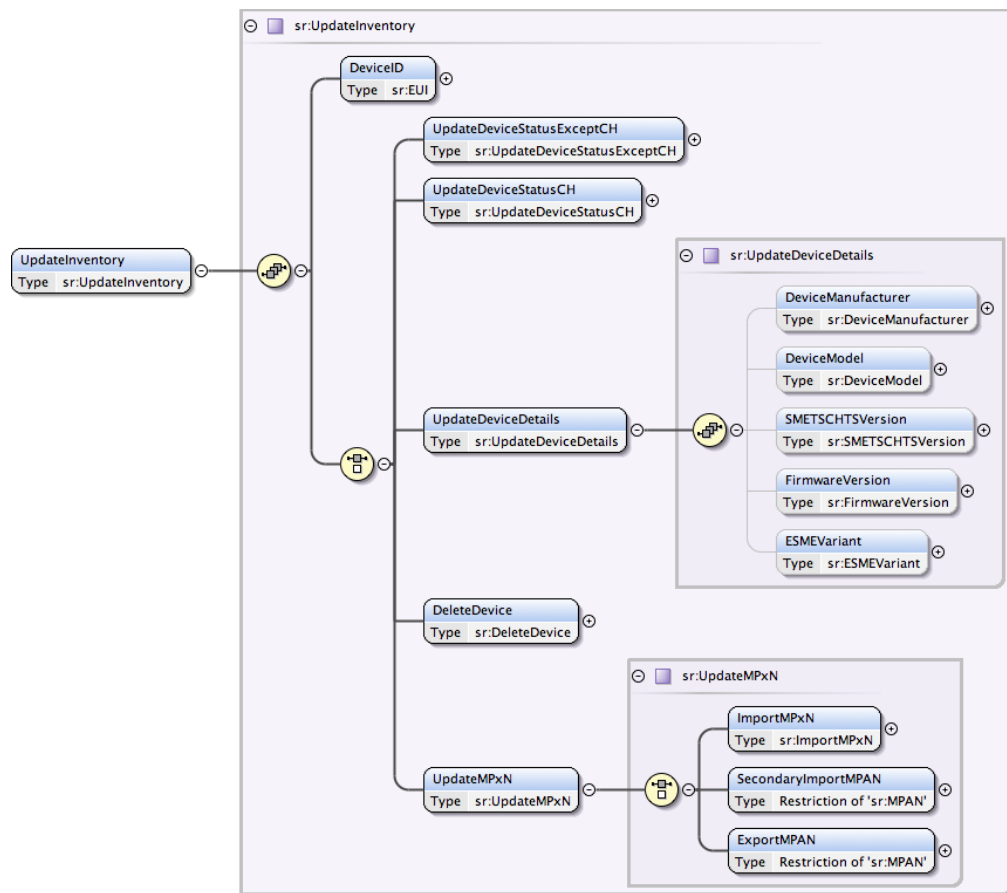


Figure 12 Update Inventory Service Request Structure

8.4.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	Device ID of the Device to be updated (status or details) or deleted	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
UpdateDeviceStatusExceptCH ¹	An indicator giving the status to be recorded for the Device Valid set: <ul style="list-style-type: none"> Pending InstalledNotCommissioned 	sr:UpdateDeviceStatusExceptCH (Restriction of xs:string (Enumeration))	No ³	None	N/A	Non-Sensitive
UpdateDeviceStatusCH ⁴	An indicator giving the status to be recorded for the CHF and its associated GPF Valid set: <ul style="list-style-type: none"> Commissioned InstalledNotCommissioned Withdrawn⁵ 	sr:UpdateDeviceStatusCH (Restriction of xs:string (Enumeration))	No ³	None	N/A	Non-Sensitive
UpdateDeviceDetails	Details to be updated for a Device	sr:UpdateDeviceDetails (see section 8.4.1.3)	No ³	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeleteDevice	Device, in a status of 'Pending, is to be deleted	N/A	No ³	None	N/A	Non-Sensitive
UpdateMPxN	The MPxN to be associated with the device within the Smart Metering Inventory to be updated	sr:UpdateMPxN (see section 8.4.1.4)	No ³	None	N/A	Non-Sensitive

Table 24 Update Inventory Service Request Data Items

¹ Not applicable to CHF, GPF or Type 2 Devices

³ Choice, so one of these 5 elements is mandatory

⁴ Only applicable to CHF (and indirectly to associated GPF)

⁵ SMETS1 Devices are not expected to include this ESME variant

8.4.1.3 UpdateDeviceDetails Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
DeviceManufacturer	<p>The name of the Device's manufacturer</p> <p>With the exception of IHD and CAD:</p> <ul style="list-style-type: none"> The Device Manufacturer is the <device_model_manufacturer_identifier> from the CPL and presented in the format XXXX where each X is one of the characters 0 to 9 or A to F This data item must match the value on the CPL (excluding the colon separator between octet values) otherwise a validation error is raised, see E080409. <p>For IHD and CAD this data item is free text</p>	sr:DeviceManufacturer (Restriction of xs:string (maxLength = 30))	No	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
DeviceModel	<p>The specific model of the device, as used by the manufacturer</p> <p>With the exception of IHD and CAD:</p> <ul style="list-style-type: none"> The Device Model is the concatenation of <device_model.model_identifier><device_model.hardware_version.version><device_model.hardware_version.revision> from the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F <p>Where:</p> <ul style="list-style-type: none"> the first 4 characters are the model identifier the next 2 characters are the hardware version.version the final 2 characters are the hardware version.revision This data item must match the value on the CPL (excluding the colon separator between octet values) otherwise a validation error is raised, see E080409. <p>For IHD and CAD this data item is free text</p>	sr:DeviceModel (Restriction of xs:string (maxLength = 30))	No	None	N/A	Non-Sensitive
SMETSCHTSVersion	The version of SMETS or CHTS that the Device complies with. This should align with the CPL version	sr:SMETSCHTSVersion (Restriction of xs:string (minLength = 1, maxLength = 20))	No	None	N/A	Non-Sensitive
FirmwareVersion	<p>The operational version of Firmware of the Device.</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This data item must match the value on the CPL (excluding the colon separator between octet values) otherwise a validation error is raised, see E080409.</p>	Restriction of xs:string (minLength = 1, maxLength = 8)	No	None	N/A	Non-Sensitive
ESMEVariant	<p>Electricity Smart Metering Equipment Variant.</p> <p>Valid set:</p> <ul style="list-style-type: none"> A. Single Element B. Twin Element² C. Polyphase² AD. Single Element with ALCS² BD. Twin Element with ALCS² CD. Polyphase with ALCS² 	sr:ESMEVariant Restriction of xs:string (Enumeration)	No	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
	<ul style="list-style-type: none"> ADE. Single Element with ALCS and Boost Function² BDE. Twin Element with ALCS and Boost Function² CDE. Polyphase with ALCS and Boost Function² ADF. Single Element with ALCS and APC^{2, 3, 4} BDF. Twin Element with ALCS and APC^{2, 3, 4} CDF. Polyphase with ALCS and APC^{2, 3, 4} ADEF. Single Element with ALCS, Boost Function and APC^{2, 3, 4} BDEF. Twin Element with ALCS, Boost Function and APC^{2, 3, 4} CDEF. Polyphase with ALCS, Boost Function and APC^{2, 3, 4} ADG Single Element with ALCS and SAPC^{11, 13, 14} ADEG. Single Element with ALCS, Boost Function and SAPC^{11, 13, 14} AF. Single Element with APC^{2, 3, 4} BF. Twin Element with APC^{2, 3, 4} CF. Polyphase with APC^{2, 3, 4} AEF. Single Element with Boost Function and APC^{2, 3, 4} BEF. Twin Element with Boost Function and APC^{2, 3, 4} CEF. Polyphase with Boost Function and APC^{2, 3, 4} AG. Single Element with SAPC^{2, 3, 4} AEG. Single Element with Boost Function and SAPC^{2, 3, 4} <p>See Annex 12 Table 12 for mapping between XML enumerated values and CPL values</p>					

Table 25 Update Inventory Service Request – UpdateDeviceDetails Data Items

¹ The UpdateDeviceDetails element must contain at least one data item

² N/A to SMETS1 Devices

³ N/A to Devices prior to GBCS v4.0

⁴ Combination introduced in DUIS v4.0. This combination cannot be included in a request using a version of DUIS prior to DUIS v4.0

8.4.1.4 UpdateMPxN Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
ImportMPxN	The Primary MPAN or MPRN for the device	sr:ImportMPxN (restriction on xs:String, minimum length = 1, maximum length = 13)	No	None	N/A	Non-Sensitive
SecondaryImportMPAN ²	The Secondary MPAN for the device (only applicable to twin element meters)	sr:MPAN (restriction on xs:String, minimum length = 13, maximum length = 13)	No	None	N/A	Non-Sensitive
ExportMPAN	The Export MPAN for the device	sr:MPAN (restriction on xs:String, minimum length = 13, maximum length = 13)	No	None	N/A	Non-Sensitive

Table 26 Update Inventory Service Request – UpdateMPxN Data Items

¹ The UpdateMPxN element is a choice so it must contain one of these 3 elements

² N/A to SMETS1 Devices

8.4.1.5 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 27 Update Inventory Modes of Operation

8.4.1.6 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 28 Update Inventory Command Variant Values

8.4.1.7 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Device ID existence validation):

Validation Check	Process	Response Code
Is the Device Status applicable to the Device Type?	Check that if the Request is to update the "Device Status Except CH", this Status is applicable to the Device Type	E080405

Validation Check	Process	Response Code
Is the Device Status transition for a non CHF Device valid?	Check that if the Request is to update the "Device Status Except CH", the Device Status transition is one of: <ul style="list-style-type: none"> 'Pending' to 'Installed Not Commissioned' 'Whitelisted'⁴ to 'Pending' 	E080406
Does the Device exist in the Smart Metering Inventory and does it have a valid status? ¹	Check that if the Request is for Device to be deleted, the Device ID does exist in the Smart Metering Inventory and its status is 'Pending' (SMETS2 only) Check that if the Request is for Device to be updated, the Device ID does exist in the Smart Metering Inventory and its status is 'Pending', 'Whitelisted', 'Installed Not Commissioned' or 'Commissioned' (SMETS2 only) Check that if the Request is for Device to be updated, and its status is 'Whitelisted', 'Installed Not Commissioned' or 'Commissioned', only the ESME Variant is being updated. (SMETS1 only) Check that if the Request is for Device to be updated, the Device ID does exist in the Smart Metering Inventory and its status is 'Pending'	E080407
Does the Request include details to be updated?	Check that if the Request is for Device to be updated at least one of the data items to be updated is included in the Request.	E080408
Is the Device valid as per the Certified Product List?	Check that if the Request is for Device to be updated, the Device Type (and first character of ESME Variant for ESME) / Manufacturer / Model / Firmware Version data resulting from the changes specified by the DCC User matches the DCC's list of equipment that has been approved for use (Certified Products List - CPL), if validation against certified products list is required for this Device Type	E080409
Is the DCC Service User authorised to execute the Service Request? ²	Check that: <ul style="list-style-type: none"> If the Request is to Delete the Device, check that the DCC Service User ID is the same that had added it to the DCC Data Systems If the Request is to Update Details and the Device is a Type 2 Device, check that the DCC Service User ID is the same that had added it to the DCC Data Systems. If the Request is to Update Details and the Device status is 'Pending', check that the DCC Service User ID is the same that had added it to the DCC Data Systems. (SMETS2 only) If the Request is to Update Details and the Device status is 'Whitelisted', 'Installed Not Commissioned' or 'Commissioned', check that the DCC Service User ID is the Responsible Supplier. If the Request is to Update the Device Status, check that the DCC Service User Role is EIS or GIS If the Request is to Update MPxN, check the DCC Service User is the Registered Supplier for the MPxN (currently associated with the Device where an association exists) which is to be updated³ 	E080410
Is the Request to update Device Status applicable to the Device Type?	Check that <ul style="list-style-type: none"> If the Request is to update the "Device Status Except CH", the Device Type is not CHF or GPF If the Request is to update the "Device Status CH", the Device Type is CHF 	E080411

Validation Check	Process	Response Code
Is the Device Status transition for a CHF Device valid?	Check that if the Request is to update the "Device Status CH", the Device Status transition is one of: <ul style="list-style-type: none"> 'Pending' to 'Commissioned' 'Pending' to 'InstalledNotCommissioned' 'InstalledNotCommissioned' to 'Commissioned' 'Commissioned' to 'Withdrawn' (only permitted for SMETS2 or later; not permitted for SMETS1 Devices) 	E080412
Is the MPxN appropriate for the device type?	Check that if the Import MPxN is to be updated, that the device is as ESME or GSME. Check that if the Secondary Import MPAN is to be updated, that the device is a twin element ESME. Check that if the Export MPAN is to be updated, that the device is an ESME.	E080413
Does the Device have the appropriate status to allow an MPxN update?	Check that the device has a status of "Whitelisted" ⁴ , "Installed Not Commissioned" or "Commissioned".	E080414
Is the DCC Service User the Registered Supplier for the new MPxN?	If the Request is to Update MPxN, check that the DCC Service User is the Registered Supplier for the new MPxN specified within the Service Request to be associated with the Device	E080415

Table 29 Update Inventory Service Request Validation

¹ Check not applicable to Type 2 (IHD and CAD) Devices, because they don't have a Status

² This check replaces the generic authorisation check associated to E4. See Main Document of this documentation set section 7.4

³ If updating the Import MPxN then the DCC Service User must be the Registered Supplier for that Import MPxN. If updating the Secondary Import MPAN then the DCC Service User must be the Registered Supplier for that Secondary Import MPAN. If updating the Export MPAN then the DCC Service User must be the Registered Supplier for that Export MPAN.

⁴ N/A to SMETS1 Devices

8.4.1.8 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateInventory>
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
<UpdateDeviceStatusExceptCH>Pending</UpdateDeviceStatusExceptCH>
</UpdateInventory>
```

Figure 13 Update Inventory Service Request (Body) Format – Update Device Status Except CH

```
<UpdateInventory>
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
<UpdateDeviceStatusCH>Withdrawn</UpdateDeviceStatusCH>
</UpdateInventory>
```

Figure 14 Update Inventory Service Request (Body) Format – Update Device Status CH

```
<UpdateInventory>
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
<UpdateDeviceDetails>
<FirmwareVersion>1100EEFF</FirmwareVersion>
</UpdateDeviceDetails>
</UpdateInventory>
```

Figure 15 Update Inventory Service Request (Body) Format – Update Device Details

```
<UpdateInventory>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
  <DeleteDevice/>
</UpdateInventory>
```

Figure 16 Update Inventory Service Request (Body) Format – Delete Device

```
<UpdateInventory>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
  <UpdateMPxN>
    <ImportMPxN>1234567890123</ImportMPxN>
  </UpdateMPxN>
</UpdateInventory>
```

Figure 17 Update Inventory Service Request (Body) Format – Update MPxN

8.4.2 Responses

The response messages for an “Update Inventory” request follow the generic format for all “DCC Only” response message, the generic responses applicable to this request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.4.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080405	Failed Validation – Invalid Device Status for Device Type	Error	The Device Status is not applicable to the Device Type
E080406	Failed Validation – Invalid Device Status Transition for non CHF Device	Error	The Device Status transition is not valid
E080407	Failed Validation – Invalid Device ID or Status	Error	The Device ID doesn't exist in the Smart Metering Inventory or its status is not valid for the requested update
E080408	Failed Validation – Empty Update Details Request	Error	The Request doesn't include any details to be updated
E080409	Failed Validation – Invalid Request	Error	The Device Type / Manufacturer / Model / Firmware Version data resulting from the changes specified by the DCC User does not match the DCC's list of equipment that has been approved for use
E080410	Failed Authorisation – Invalid DCC Service User ID	Error	The DCC Service User ID is not authorised to run this Service Request for this Device
E080411	Failed Validation – Update Device Status option / Device Type mismatch	Error	Request to update Device Status not applicable to the Device Type
E080412	Failed Validation – Invalid Device Status Transition for CHF Device	Error	The Device Status transition is not valid
E080413	Failed Validation – Invalid MPxN type for device	Error	The requested MPxN update isn't suitable for that Device.

Response Code	Response Code Name	Response Code Type	Description
E080414	Failed Validation – Device Status not compatible with update	Error	The Device Status does not allow the MPxN to be updated.
E080415	Failed Validation – DCC Service User is not the Registered Supplier for the new MPxN	Error	The DCC Service User is not the Registered Supplier for the new MPxN specified within the Service Request.

Table 30 Failed Update Inventory Service Request Response Codes

8.5 Service Opt Out (8.5)

Service Request Name	ServiceOptOut
Service Reference	8.5
Service Request Variant Name	ServiceOptOut
Service Reference Variant	8.5
Service Request Objective	To replace the DCC Security Credentials (DSP Access Control Broker Certificates) held on the Device with the Security Credentials contained within the Service Request and Withdraw the Device from DCC Services.
Business Context Statement	The DCC Service User requires that a specified device is removed from DCC services and transferred to another Service provider as nominated by the DCC Service User, e.g. as a result of changes to the communications service provider for a non-domestic meter.
User Role Access	This Service Request is no longer available to any User Roles.
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.C (the GBCS Command is Critical, but it is cryptographically protected by the DSP Access Control Broker, so the Service Request interaction between the DCC Service Users and the DCC is Non-Critical)
Service Request Narrative	<ol style="list-style-type: none"> 1. This Service Request is only applicable to Premises associated to a non-domestic MPxN. 2. The Device to be Opted Out is the Business Target ID of this Service Request. 3. The Credentials being replaced on the Device are those of the Access Control Broker (ACB), which can only be replaced by the ACB and this role is held by the DSP Access Control Broker. This means that: <ol style="list-style-type: none"> a. This Service Request is Non-critical. b. Even though the DCC Service User is a KRP to the Device (except in the case of PPMID), the Command will be submitted to the Device by the

	<p>DSP Access Control Broker using the URP interaction type.</p>
	<p>4. This Service Request applies to the following Device Types:</p> <ul style="list-style-type: none">a. ESMEb. GSMEc. HCALCSd. PPMID
	<p>5. This Service Request includes data item ApplyTimeBasedCPVChecks to instruct the Device to apply (true) or not apply (false) time based checks as part of Certification Path Validation. It should only be set to false in exceptional circumstances (e.g. credentials on the Device have expired without replacement for unforeseen reasons).</p>
	<p>6. On successful completion of the Service Request, the DCC Data Systems will</p> <ul style="list-style-type: none">a. set the Device Status to 'Withdrawn' in the Smart Metering Inventoryb. automatically delete all active DSP Schedules on that Device (and for GSME also those on the corresponding GPF). For each deleted DSP Schedule a DCC Alert N5 will be sent to the DCC Service User that owned it.c. automatically cancel all Future Dated (DSP) requests for that Device not yet sent to the Device (and for GSME also those on the corresponding GPF). For each cancelled request a DCC Alert N35 will be sent to the sender of the Future Dated request.d. For Device Types ESME and GSME, update the Registration Systems to set the Service Status of the MPxN(s) associated to that Meter to "Withdrawn"e. For Device Type ESME, send DCC Alert N1 to the registered ENO and, if applicable, registered EESf. For Device Type GSME, send DCC Alert N2 to the registered GNO
	<p>7. When opting out of DCC Services, the DCC Service User is expected to use Service Request 8.4 – Update Inventory (see section 8.4) to set the CHF and its associated GPF to be Opted Out and hence set to 'Withdrawn'</p>
	<p>8. Upon successful processing of this Service Request to replace Security Credentials related to the Remote Party Access Control Broker Role, the specified target Device will reset the Immediate Execution Counters on the Device to the Remote Party (ACB) Floor Sequence Number specified within this Service Request</p>
	<p>9. For each certificate specified in a Response or Alert from the Device as being successfully updated by the Update Security Credentials Command, the DCC Data Systems</p>

	<p>shall update the Smart Metering Inventory with the new certificate identifier as a record of the certificate held in the relevant Trust Anchor Cell on that Device</p> <p>10. Updates to the Smart Metering Inventory are carried out before the Service Response is generated. The other actions detailed above are post-processing steps after the Service Response has been sent to the User.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code (for each CredentialsReplacementMode)	accessControlBrokerByACB – 0x0104	
GBCS Use Case	CS02b	CS02b
GBCS Use Case Name	Update Security Credentials	Update Security Credentials
SMETS1 Applicability	No	No

Table 31 Service Opt Out Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.5.1 Service Request

8.5.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ServiceOptOut XML element defines this Service Request and contains the Access Control Broker Public Security Credentials to be updated on the Device and the Execution Date and Time (Opt Out Effective Date).

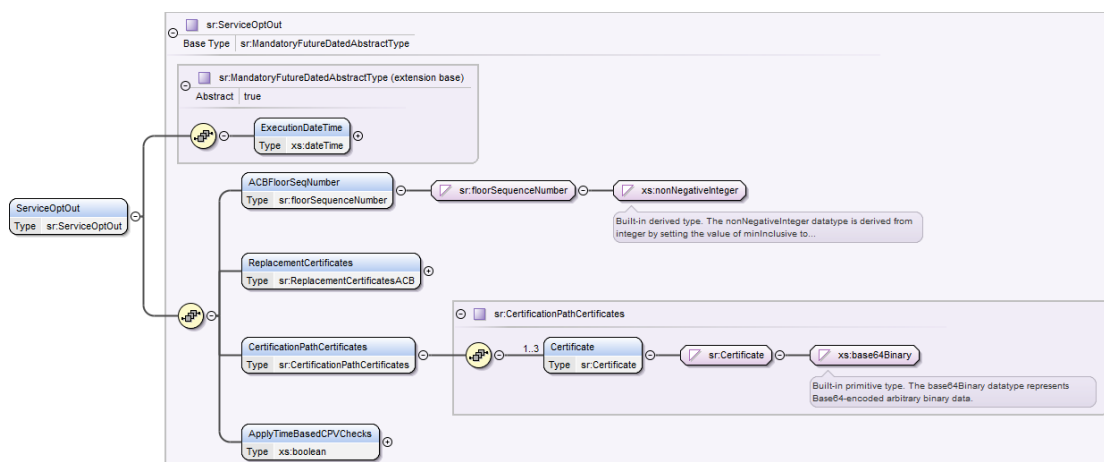


Figure 18 Service Opt Out Service Request Structure

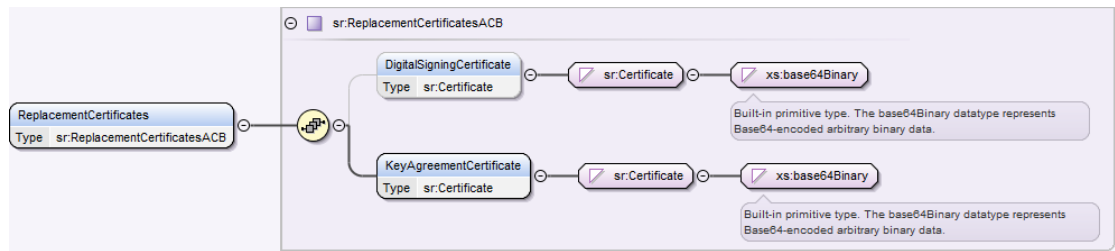


Figure 19 Service Opt Out Service Request – ReplacementCertificatesACB Structure

8.5.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID, i.e. the date from which Device is to be opted out from DCC services Valid set: <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
ACBFloorSeqNumber	Originator Counter (floor value) for the new ACB Remote Party. This value will be used to prevent replay of Update Security Credentials Commands, and other Commands, for the new controlling Remote Party. Valid set: <ul style="list-style-type: none"> Value ≥ 0 and \leq Originator Counter of the first Command to be Device from the New ACB 	sr:floorSequenceNumber (Restriction of xs:nonNegativeInteger minInclusive = 0, maxInclusive = 9223372036854775807)	Yes	None	N/A	Non-Sensitive
ReplacementCertificates	This structure provides a list of the replacements. Each replacement contains a replacement Certificate.	sr:ReplacementCertificatesACB (see section 8.5.1.3)	Yes	None	N/A	Non-Sensitive
CertificationPathCertificates	This structure provides the Certificates needed to undertake Certification Path Validation of the new end entity Certificate against the root public key held on the Device. The number of these may be less than the number of replacement certificates (e.g. a Supplier may replace all of its certificates but may only need to supply one Certification Authority Certificate to link them all back to root)	sr:Certificate (xs:base64Binary minOccurs = "1", maxOccurs = "3")	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ApplyTimeBasedCPVChecks	Device to apply (true) or not apply (false) time based checks as part of Certification Path Validation. It should only be set to false in exceptional circumstances (e.g. root credentials on the Device have expired without replacement for unforeseen reasons)	xs:boolean	Yes	None	N/A	Non-Sensitive

Table 32 Service Opt Out Service Request Data Items

8.5.1.3 ReplacementCertificatesACB Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DigitalSigningCertificate	The digital signing credentials to be placed by the Supplier (or Supplier's SMSO) in the 'Access Control Broker' Remote Party Role, Key Usage digitalSignature on the Device so that communications via the DCC are no longer possible	sr:Certificate (xs:base64Binary)	DeviceType = PPMID: Yes Otherwise: N/A	None	N/A	Non-Sensitive
KeyAgreementCertificate	The key agreement credentials to be placed by the Supplier (or Supplier's SMSO) in the 'Access Control Broker' Remote Party Role Key Usage keyAgreement on the Device so that communications via the DCC are no longer possible	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive

Table 33 Service Opt Out Service Request – ReplacementCertificatesACB Data Items

8.5.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	No	DSP	No

Table 34 Service Opt Out Modes of Operation

8.5.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	No ¹	No ¹	No	No	No	No	No

Table 35 Service Opt Out Command Variant Values

¹ Technical reason for this CV not being available: The Device doesn't support Future Dating for this Command and Remote Party Role

8.5.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time and Public Security Credentials validation):

Validation Check	Process	Response Code
Is the Device associated to a Non-Domestic MPxN?	Check that the Device is associated to a Non-Domestic MPxN	E080501
Is the Device status correct?	Check that the Device Status is not "Withdrawn" ¹	E080502
Is the Certificate type applicable to the Device type?	Check that if the Digital Signing Certificate is included in the Request, the Device Type is PPMID	E080503

Table 36 Service Opt Out Service Request Validation

¹ Please note that this particular check and Response Code is not expected to be reached in this DUIS version, as the generic Authorisation Check associated to Response Code E5 will fail prior to this check being carried out

8.5.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ServiceOptOut>
  <ExecutionDateTime>2014-10-03T00:00:00.00Z</ExecutionDateTime>
  <ACBFloorSeqNumber>1234567</ACBFloorSeqNumber>
  <ReplacementCertificates>
    <KeyAgreementCertificate>ZGVmYXVsdA==</KeyAgreementCertificate>
  </ReplacementCertificates>
  <CertificationPathCertificates>
    <Certificate>ZGVmYXVsdA==</Certificate>
  </CertificationPathCertificates>
  <ApplyTimeBasedCPVChecks>true</ApplyTimeBasedCPVChecks>
</ServiceOptOut>
```

Figure 20 Service Opt Out Service Request (Body) Format

8.5.2 Responses

The response messages for a "Service Opt Out" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.5.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080501	Failed Validation – Device ID / MPxN type mismatch	Error	The Device is not associated to a non-Domestic MPxN
E080502	Failed Validation – Invalid Device Status	Error	The Device Status is "Withdrawn"
E080503	Failed Validation – Invalid Certificate Type	Error	The Certificate type is not applicable to the Device type

Table 37 Failed Service Opt Out Service Request Response Codes

8.5.2.2 Parse Output Format

8.5.2.2.1 Format - ServiceOptOutRsp

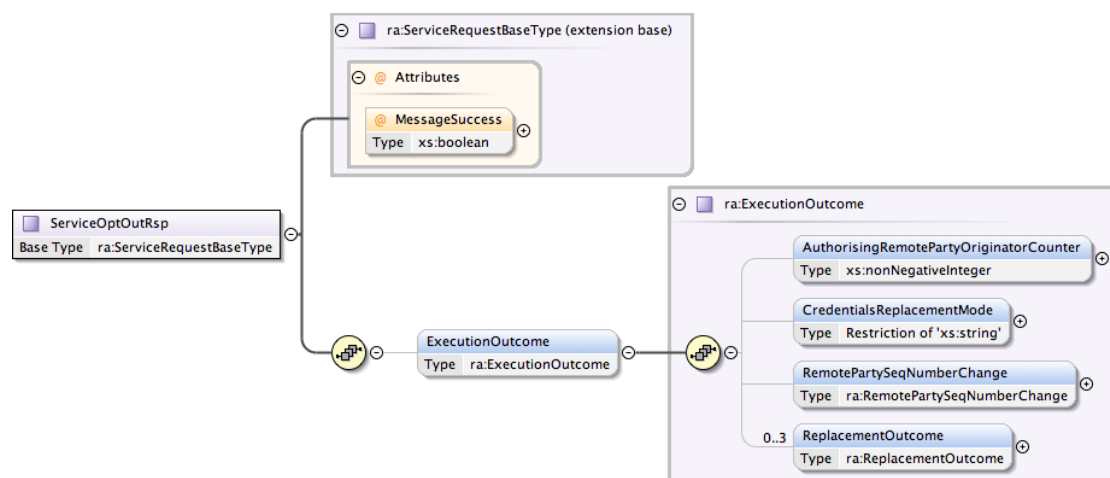


Figure 21 - Service Opt Out Parse Response Structure

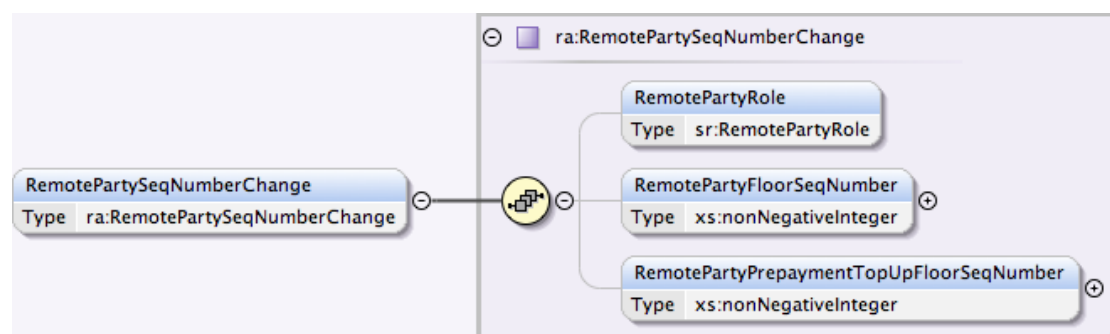


Figure 22 - Service Opt Out - Remote Party Sequence Number Change Structure

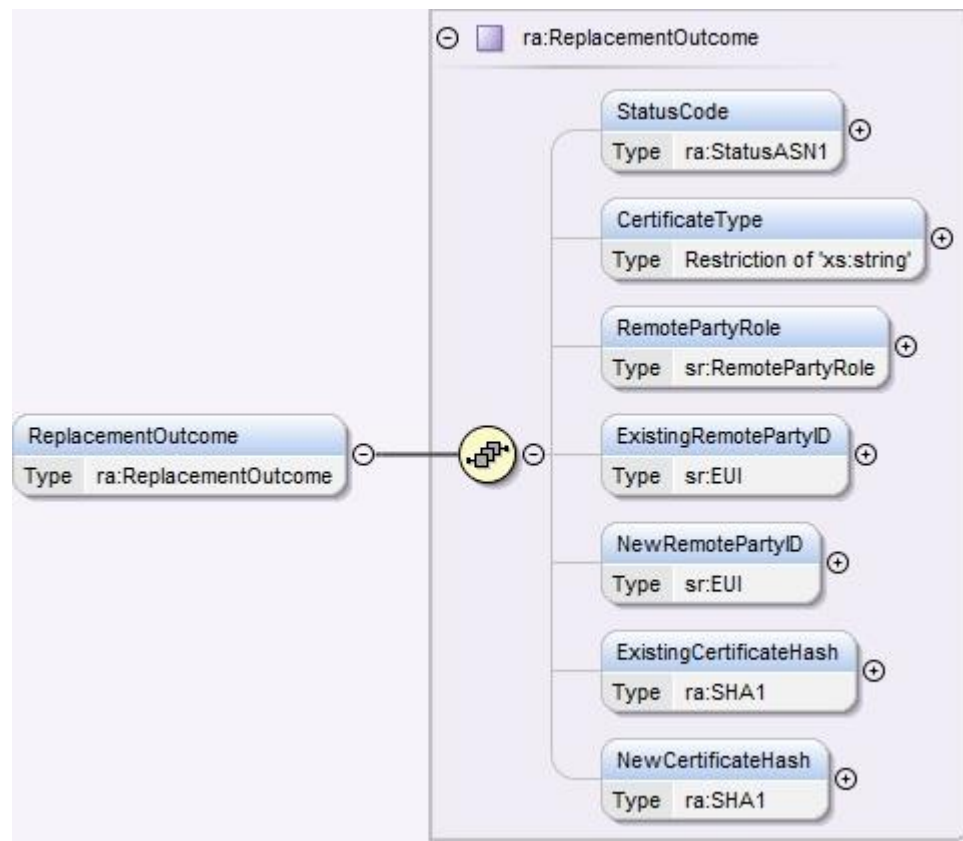


Figure 23 - Service Opt Out - Replacement Outcome Structure

8.5.2.2.2 Specific Header Data Items

Data Item	Response
GBCSHexadecimalMessageCode	0104
GBCS Use Case Number (for information only - not in header)	CS02b
GBCS Use Case Name (for information only - not in header)	Update Security Credentials
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Present

Table 38 - Service Opt Out Parse Response Header Data Items

8.5.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
AuthorisingRemotePartyOriginatorCounter	Originating counter passed in the request, allows alerts to be matched to the request	xs:nonNegativeInteger	None	N/A	Non-Sensitive
CredentialsReplacementMode	Only a value of 'ACBByACB' is valid for this response	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RemotePartySeqNumberChange	The resulting changes to any replay counters held on the Device	ra:RemotePartySeqNumberChange – see below	None	N/A	Non-Sensitive
ReplacementOutcome	For each replacement in the request, detail the outcome and impacted parties	ra:ReplacementOutcome – see below	None	N/A	Non-Sensitive

Table 39 - Service Opt Out Parse Response Body Data Items

8.5.2.2.3.1 RemotePartySeqNumberChange Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RemotePartyRole	Remote Party Role for which the Credentials have been updated Valid Set: <ul style="list-style-type: none"> Access Control Broker 	Restriction base xs:token (Enumeration)	None	N/A	Non-Sensitive
RemotePartyFloorSeqNumber	The corresponding counter value	xs: nonNegativeInteger	None	N/A	Non-Sensitive
RemotePartyTopUpFloorSeqNumber	Only present where Remote Party Role is Supplier, therefore not used by this service request.	xs: nonNegativeInteger	None	N/A	Non-Sensitive

Table 40 - RemotePartySeqNumberChange Data Items

8.5.2.2.3.2 ReplacementOutcome Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
StatusCode	Outcome of the request for each replacement. Valid Set: <ul style="list-style-type: none"> success badCertificate noTrustAnchor insufficientMemory resourcesBusy other 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
CertificateType	To what use can the public key in this replacement be put. Only applicable to Device Type PPMID Valid Set: <ul style="list-style-type: none"> DigitalSigning KeyAgreement 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
ExistingRemotePartyId	Identifies the existing subject unique identifier equating to Entity Identifier (64 bit value), i.e. the DSP Broker ID	sr:EUI (see Annex section 17)	None	N/A	Non-Sensitive
NewRemotePartyId	Identifies the replacement subject unique identifier equating to Entity Identifier (64 bit value). i.e. the ID of the new ACB	sr:EUI (see Annex section 17)	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ExistingCertificateHash	Identifies the existing subject key identifier, a SHA-1 hash, i.e. of the certificate	xs:base64binary	None	N/A	Non-Sensitive
NewCertificateHash	Identifies the replacement subject key identifier, a SHA-1 hash, i.e. of the certificate	xs:base64binary	None	N/A	Non-Sensitive

Table 41 - ReplacementOutcome Data Items

8.5.2.2.4 Sample Response

```
<ra:ServiceOptOutRsp MessageSuccess="true">
  <ra:ExecutionOutcome>
    <ra:AuthorisingRemotePartyOriginatorCounter>123</ra:AuthorisingRemotePartyOriginatorCounter>
    <ra:CredentialsReplacementMode>ACBByACB</ra:CredentialsReplacementMode>
    <ra:RemotePartySeqNumberChange>
      <ra:RemotePartyRole>ACB</ra:RemotePartyRole>
      <ra:RemotePartyFloorSeqNumber>1234</ra:RemotePartyFloorSeqNumber>
    </ra:RemotePartySeqNumberChange>
    <ra:ReplacementOutcome>
      <ra:StatusCode ResponseCode="0">
        <ra:ASN1Status>success</ra:ASN1Status>
      </ra:StatusCode>
      <ra:CertificateType>DigitalSigning</ra:CertificateType>
      <ra:RemotePartyRole>ACB</ra:RemotePartyRole>
      <ra:ExistingRemotePartyID>10-00-00-00-00-00-00</ra:ExistingRemotePartyID>
      <ra:NewRemotePartyID>11-00-00-00-00-00-00</ra:NewRemotePartyID>
      <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
      <ra:NewCertificateHash>ZGVmYXVsdA==</ra:NewCertificateHash>
    </ra:ReplacementOutcome>
  </ra:ExecutionOutcome>
</ra:ServiceOptOutRsp>
```

Figure 24 - Service Opt Out Parse Response Sample

8.6 Service Opt In (8.6)

Service Request Name	ServiceOptIn
Service Reference	8.6
Service Request Variant Name	ServiceOptIn
Service Reference Variant	8.6
Service Request Objective	<p>To provide the DCC Security Credentials to the requestor so that the existing operator of the Device may change the security credentials to those of the DCC and enable the DCC to take control of the specified Devices once the security credential change has been successful.</p> <p>To opt in Smart Metering Devices to the DCC services for a specified Device ID</p>

Business Context Statement	The DCC Service User requires that a specified device is opted in to DCC services, e.g. as a result of changes to the communications service provider for a non-domestic meter.
User Role Access	This Service Request is no longer available to any User Roles.
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request includes: <ol style="list-style-type: none"> Device ID of Device to be Opted In. One per Request Device Type of Device to be Opted In. One per Request. Used by the DCC Data Systems to validate the Device ID and the Device Type match MPxN(s) the Device would be associated with once Opted In Estimated Opt In Date This Service Request is a notification to the DCC Data Systems of the wish to Opt In the Device to the DCC Services. The Device Status is not updated. To complete the Device Opt In, associate it to MPxN(s), etc. the Device will have to follow the Install and Commission process as if it had been newly added to the Smart Metering Inventory. Devices being Opted In: <ol style="list-style-type: none"> Must already exist in the Smart Metering Inventory and be in a status of 'Pending'. A previously Opted Out Device Status will have to be set to 'Pending' via Service Request 12.2 – Device Pre-notification (see Annex section 12.2). If any of the Device details needs updating, e.g. Firmware Version, the update should be done via Service Request 8.4 – Update Inventory (see section 8.4) at the same time the Device is being Pre-notified. Valid Device Types: <ol style="list-style-type: none"> ESME GSME HCALCS PPMID CHF GPF This Service Request returns the DCC (DSP Access Control Broker) Credentials to be placed on a previously Opted Out Device that is to be Opted In to DCC Services. Note this completes the Service Request. When opting in to DCC Services, the DCC Service User is expected to use Service Request 8.4 – Update Inventory (see section 8.4) to set the CHF and its associated GPF to be opted

	in and hence set to 'Commissioned' whenever an existing DCC Communication Hub is reused. This is because the Commissioning Alert from the CHF will not be regenerated as part of this opt in process to automatically update the CHF device status within the Smart Metering Inventory.	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 42 Service Opt In Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.6.1 Service Request

8.6.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ServiceOptIn XML element defines this Service Request and contains the Device ID, Device Type, MPxNs the Device would be associated with and the estimated Opt In Date.

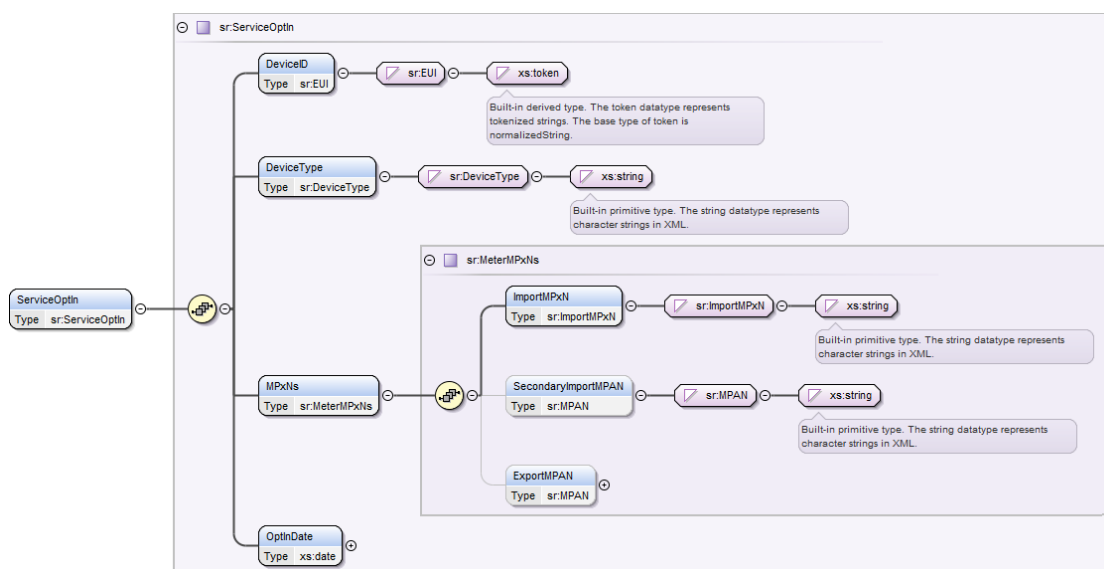


Figure 25 Service Opt In Service Request Structure

8.6.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	A unique ID for the device	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceType	The Type of device Valid set: <ul style="list-style-type: none"> ESME GSME HCALCS PPMID CHF GPF 	sr:DeviceType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
MPxNs	MPxNs to be associated to the Device once Opted In	sr:MeterMPxNs (see section 8.6.1.3)	Yes	None	N/A	Non-Sensitive
OptInDate	UTC Date from which the Device is planned to enter into DCC services Valid Set: <ul style="list-style-type: none"> Date in the future 	xs:date	Yes	None	UTC Date	Non-Sensitive

Table 43 Service Opt In Service Request Data Items

8.6.1.3 MeterMPxNs Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ImportMPxN	The reference number identifying an Import electricity or a gas metering point	sr:ImportMPxN (Restriction of xs:string (minLength = 1, maxLength = 13))	Yes	None	N/A	Non-Sensitive
SecondaryImportMPAN	The reference number identifying a Twin Element Import electricity secondary metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Twin Element Electricity Smart Meter: No Otherwise: N/A	None	N/A	Non-Sensitive
ExportMPAN	The reference number identifying an Export electricity metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Export Electricity Smart Meter: No Otherwise: N/A	None	N/A	Non-Sensitive

Table 44 Service Opt In Service Request – MeterMPxNs Data Items

8.6.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 45 Service Opt In Modes of Operation

8.6.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 46 Service Opt In Command Variant Values

8.6.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Device ID existence validation):

Validation Check	Process	Response Code
Is the OptInDate a future date?	Check that the OptInDate is a date in the future	E080601
Is the DeviceType valid for the DeviceID?	Check that the Device Type is the correct one for Device ID	E080602
Is the Device status correct?	Check that the Device Status is "Pending"	E080604
Is the Device Type valid?	Check that the Device Type is one of: <ul style="list-style-type: none"> ESME GSME HCALCS PPMID CHF GPF 	E080606
Does the Service Request include correct MPxNs? ¹	If the Service Request is Opting In an ESME, GSME or HCALCS, check that: <ul style="list-style-type: none"> For ESME / HCALCS. The Service Request includes an Import MPxN (Primary Import MPAN) and optionally a Secondary Import MPAN and / or an Export MPAN and the sender's identity matches the organisation registered against the Primary Import MPAN For GSME. The Service Request includes an MPRN and the sender's identity matches the organisation registered against the Import MPxN (MPRN) 	E080607

Table 47 Service Opt In Service Request Validation

¹ This check replaces the generic authorisation check associated to E4. See Main Document of this documentation set section 7.4

8.6.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ServiceOptIn>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
  <DeviceType>ESME</DeviceType>
  <MPxNs>
    <ImportMPxN>1234567890123</ImportMPxN>
  </MPxNs>
  <OptInDate>2014-11-04Z</OptInDate>
</ServiceOptIn>
```

Figure 26 Service Opt In Service Request (Body) Format

8.6.2 Responses

The response messages for a “Service Opt In” request follow the generic format for all “DCC Only” responses that include specific data in the response.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.6.2.1 Service Response (from DCC)

Applicable to cases where the Request is successful and the Device Security Credentials for the DSP Broker User Role are returned to the DCC Service User.

8.6.2.1.1 Format

This Service Request synchronous response is defined in the XSD DSPOptIn XML element, which contains the DSP Broker Security Credentials to be placed in the ‘Access Control Broker’ Remote Party Role on the Device so that communications via the DCC are possible.

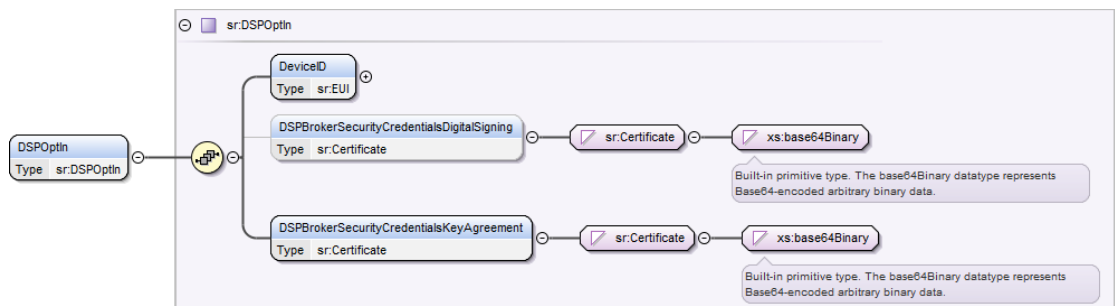


Figure 27 Service Opt In Service Response (from DCC) Structure

8.6.2.1.2 Specific Data Items

Returned if the DCC Data Items successfully processed the Request.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	A unique ID for the Device	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPSecurityCredentialsDigitalSigning	The digital signing credentials to be placed by the Supplier (or Supplier's SMSO) in the 'ACB' Remote Party Role, Key Usage digitalSignature on the Device so that communications via the DCC are possible	sr:Certificate (xs:base64Binary)	DeviceType = PPMID, CHF: Yes Otherwise: N/A	None	N/A	Non-Sensitive
DSPSecurityCredentialsKeyAgreement	The key agreement credentials to be placed by the Supplier (or Supplier's SMSO) in the 'ACB' Remote Party Role Key Usage keyAgreement on the Device so that communications via the DCC are possible	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive

Table 48 Service Opt In Service Request Response Data Items

8.6.2.1.3 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```
<ResponseMessage>
  <ServiceReference>8.6</ServiceReference>
  <ServiceReferenceVariant>8.6</ServiceReferenceVariant>
  <DSPOptIn>
    <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
    <DSPBrokerSecurityCredentialsKeyAgreement>ZGVmYXVsdA==</DSPBrokerSecurityCredentialsKeyAgreement>
  </DSPOptIn>
</ResponseMessage>
```

Figure 28 Sample Service Opt In Service Response (from DCC) Format

8.6.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080601	Failed Validation – Opt In Date not in the future	Error	The Opt In Date is not a date in the future
E080602	Failed Validation – Device ID / Device Type mismatch	Error	The Device Type is not correct
E080604	Failed Validation – Invalid Device Status	Error	The Device Status is not "Pending"
E080606	Failed Validation – Invalid Device Type	Error	The Device Type is invalid
E080607	Failed Authorisation –DCC Service User / MPxN mismatch	Error	The DCC Service User is not the registered organisation of any of the MPxNs in the Service Request

Table 49 Failed Service Opt In Service Request Response Codes

8.7 Join Service (8.7)

SMETS2 or later

This Service Request maps to four GBCS Use Cases and each Use Case requires its own Request ID and some of the Use Cases are Critical and others Non-Critical.

Therefore the 8.7 Service Request has been broken into two parts: 8.7.1 (Join Service (Critical)) and 8.7.2 (Join Service (Non-Critical)).

SMETS1

This Service Request maps to Service Reference Variant 8.7.1 (Join Service (Critical)) and 8.7.2 (Join Service (Non-Critical))

The following table summarises which Join Service Request Variant applies to which User Roles and Devices:

Service Request Variant	Critical / Non-Critical	User Role	Target Device Type	Join to Device Type	Two Step Join	Step No.
8.7.1 ¹	Critical	EIS	ESME	HCALCS	Yes	2
8.7.1	Critical	EIS	ESME	PPMID	Yes	2
8.7.1 ¹	Critical	EIS	HCALCS	ESME	Yes	1
8.7.1	Critical	GIS	GSME	PPMID	Yes	1 or 2
8.7.2	Non-Critical	EIS	ESME	Type 2 (IHD or CAD)	No	1
8.7.2	Non-Critical	EIS	PPMID	ESME	Yes	1
8.7.2	Non-Critical	GIS	GPF	PPMID	No	1
8.7.2	Non-Critical	GIS	GPF	Type 2 (IHD or CAD)	No	1
8.7.2	Non-Critical	GIS / EIS	GSME	GPF	No	1
8.7.2	Non-Critical	GIS	PPMID	GSME	Yes	1 or 2
8.7.2	Non-Critical	OU	ESME	Type 2 (CAD)	No	1
8.7.2	Non-Critical	OU	GPF	Type 2 (CAD)	No	1

Table 50 Join Service Request Variants / Devices

¹ Row N/A to SMETS1 Services

8.7.1 Join Service (Critical) (8.7.1)

Service Request Name	JoinService
Service Reference	8.7
Service Request Variant Name	JoinService (Critical)

Service Reference Variant	8.7.1
Service Request Objective	To authorise specified Devices to communicate with each other via the Home Area Network (HAN)
Business Context Statement	To enable authorised Data transfer between Devices connected on the HAN e.g. Data from the Electricity Gas Metering Equipment to be shared with the PPMID for data display purposes to the consumer.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.C</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> For two Devices in a HAN to be able to communicate with each other they have to be paired (joined). There are two join types: <ul style="list-style-type: none"> In the first one, each of the Devices is capable of providing information to the other and it requires each of the Devices to hold details in its Device Log of the 'joined' Device. Two Service Requests are needed to complete the Join. See Table 50 where "Two Step Join" is Yes In the second type only one of the Devices can provide information to the other, which can only read information from its joined Device. Only one Service Request to the Device that can provide information is needed to complete the Join. See Table 50 where "Two Step Join" is No This Service Request triggers a Command to the Business Target ID (Device ID) to add the details of the 'Other Device' in the Service Request to the Business Target ID Device Log <ul style="list-style-type: none"> For the two Devices to be able to communicate, each of them has to have successfully processed a Join Service Command The DCC Service User is a KRP of the Business Target ID (Device ID), so the Device Response will be addressed to them The Device Type is not included in the Service Request, because the DCC Data Systems can identify it from the Device ID. This Service Request is applicable to the following Target Device Types: <ol style="list-style-type: none"> Electricity Smart Meter. As a pre-requisite, the other Device must have already been joined to the Electricity Smart Meter. To join it to one of: <ol style="list-style-type: none"> HICALCS. Successful completion results in the HICALCS Device Status being set to 'Commissioned' in the Smart Metering Inventory if the status of the ESME it is being joined to is 'Commissioned' PPMID. Successful completion results in the PPMID Device Status being set to 'Commissioned' in the

	<p>Smart Metering Inventory, unless this was already its Device Status and provided that the status of the ESME it is being joined to is 'Commissioned'</p> <p>10. Gas Smart Meter. To join it to:</p> <p>11. PPMID. Successful completion results in the PPMID Device Status being set to 'Commissioned' in the Smart Metering Inventory, unless this was already its Device Status and provided that the status of the GSME it is being joined to is 'Commissioned'</p> <p>12. HCALCS. To join it to:</p> <p>13. Electricity Smart Meter. This is a pre-requisite to joining the Electricity Smart Meter to the HCALCS</p> <p>6. On successful completion of this Service Request, the DCC Data Systems will be updated to reflect its outcome (this action is carried out before the Service Response is generated)</p> <p>7. Any Device id specified within this Service Request must have been pre notified to the DCC via Service Request 12.2</p> <p>8. Where a GSME is joined to a PPMID then the DCC shall add the Key Agreement Certificate currently in use by the other Device (PPMID) to the returned Pre-Command to the DCC Service User as this is required in the GBCS use Case. This shall be retrieved by the DCC from the Public Key Repository where the "In Use" flag is set</p> <p>9. There are some failure cases where the Device command has not resulted in a successful join but the target Device's Device log retains the ID of the other Device. In such cases the SMI will record that the two Devices are joined, but other post-processing activities associated with the successful completion of a join command (for example, changing the status of a GPF, HCALCS or PPMID to Commissioned) will only be carried out if the Device returns a success response to the join command</p>		
GBCS Cross Reference	ESME Join to HCALCS or PPMID	HCALCS Join to ESME	GSME Join to PPMID
GBCS Message Code	0x000D	0x00AB	0x00AF
GBCS Use Case	CS03A1	CS03A2	CS03C
GBCS Use Case Name	Method A Join (Meter)	Method A Join (non Meter)	Method C Join
SMETS1 Applicability	Yes (ESME Join to PPMID)	N/A	Yes
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. HCALCS is not a valid SMETS1 Device Type. 2. Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document, which is 		

primarily to confirm that the Devices are associated with the same SMETS1 CHF Device Log.

3. Item 8 is not applicable to SMETS1 Devices.
4. Item 9 is not applicable to SMETS1 Devices.

Table 51 Join Service (Critical) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.7.1.1 Service Request

8.7.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its JoinServiceCritical XML element defines this Service Request and it contains the Device ID of the 'Other Device' the Business Target ID Device is to be joined with.

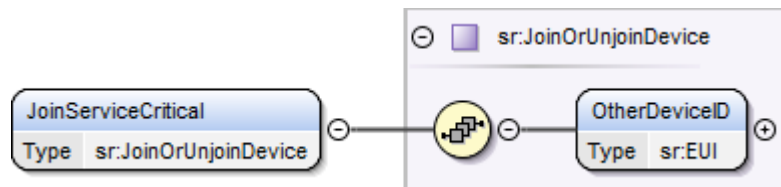


Figure 29 Join Service (Critical) Service Request Structure

8.7.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OtherDeviceID	Device ID of the device to be joined to (paired with) the Business Target ID Device	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 52 Join Service (Critical) Service Request Data Items

8.7.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 53 Join Service (Critical) Modes of Operation

8.7.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 54 Join Service (Critical) Command Variant Values

8.7.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Other Device ID existence validation):

Validation Check	Process	Response Code
Is the 'Other Device' Type valid?	Check that if the Business Target ID Device Type is: <ul style="list-style-type: none"> Electricity Smart Meter. The 'Other Device' Type is HCALCS or PPMID Gas Smart Meter. The 'Other Device' Type is PPMID HCALCS. The 'Other Device' Type is Electricity Smart Meter 	E080702

Table 55 Join Service (Critical) Service Request Validation

¹ This check is N/A if the "Other Device" is a CAD

8.7.1.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<JoinServiceCritical>
  <OtherDeviceID>99-22-AA-BB-CC-DD-EE-FF</OtherDeviceID>
</JoinServiceCritical>
```

Figure 30 Join Service (Critical) Transform Service Request (Body) Format

8.7.1.2 Responses

The response messages for a "Join Service (Critical)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.7.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080702	Failed Validation – Invalid Device Type	Error	The 'Other Device' Type is not valid

Table 56 Failed Join Service (Critical) Service Request Response Codes

8.7.1.2.2 Parse Output / SMETS1 Response Format

8.7.1.2.2.1 Format - JoinServiceCriticalRsp

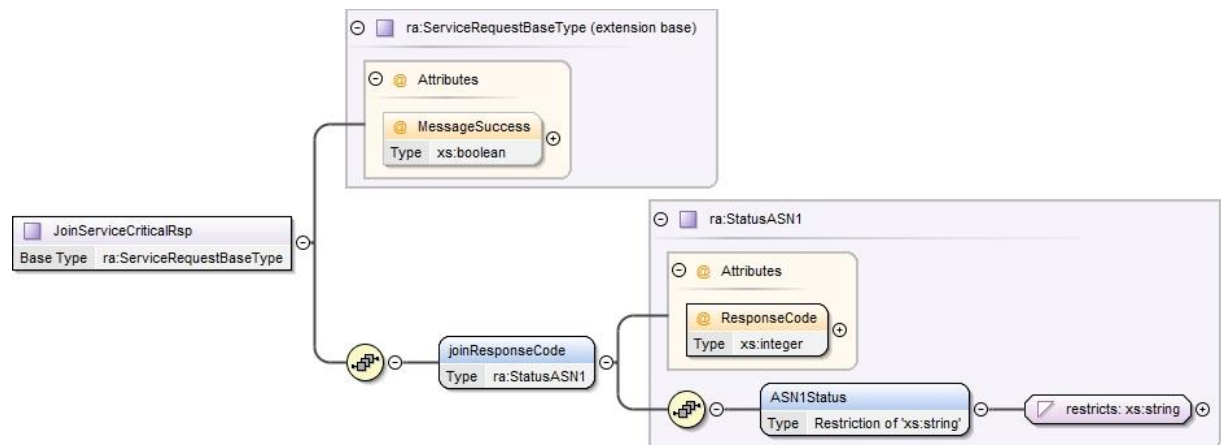


Figure 31 – Join Service (Critical) Parse Response Structure

8.7.1.2.2.2 Specific Header Data Items

Data Item	ESME join to HCALCS ¹ or PPMID Response	HCALCS join to ESME Response ¹	GSME join to PPMID Response
GBCSHexadecimalMessageCode	000D	00AB	00AF
GBCS Use Case Number (for information only - not in header)	CS03A1	CS03A2	CS03C
GBCS Use Case Name (for information only - not in header)	Method A Join (Meter)	Method A Join (non Meter)	Method C Join
SupplementaryRemotePartyID	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 57 - Join Service (Critical) Parse/SMETS1 Response Specific Header Data Items

¹ N/A to SMETS1

8.7.1.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
joinResponseCode	<p>Outcome of the request.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> • success • invalidMessageCodeForJoinMethodAndRole • invalidJoinMethodAndRole • incompatibleWithExistingEntry • deviceLogFull • writeFailure • keyAgreementNoResources • keyAgreementUnknownIssuer • keyAgreementUnsupportedSuite • keyAgreementBadMessage • keyAgreementBadKeyConfirm • invalidOrMissingCertificate • noPartnerLinkKeyReceived (only supported on Devices with a Firmware version certified to GBCS v2.0 or later) • noCBKEResponse (only supported on Devices with a Firmware version certified to GBCS v2.0 or later) 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

Table 58 - Join Service (Critical) Parse Response / SMETS1 Response Body Data Items

8.7.1.2.2.4 Sample Response body

```
<ra:JoinServiceCriticalRsp MessageSuccess="false">
  <ra:joinResponseCode ResponseCode="2">
    <ra:ASN1Status>invalidJoinMethodAndRole</ra:ASN1Status>
  </ra:joinResponseCode>
</ra:JoinServiceCriticalRsp>
```

Figure 32 - Join Service (Critical) Parse Response Sample

8.7.2 Join Service (Non-Critical) (8.7.2)

Service Request Name	JoinService
Service Reference	8.7
Service Request Variant Name	JoinService (Non-Critical)
Service Reference Variant	8.7.2

Service Request Objective	To authorise specified Devices to communicate with each other via the Home Area Network (HAN)
Business Context Statement	To enable authorised Data transfer between Devices connected on the HAN e.g. Data from the Electricity Gas Metering Equipment to be shared with the IHD for data display purposes to the consumer.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Other User (OU) (Type 2 CAD Only)
Security Classification	<p>Non-critical and non-sensitive: <i>SMETS2 or later:</i></p> <p><i>Target Device Type = All except PPMID: GBCS XREF: SME.C.NC</i></p> <p><i>Target Device Type = PPMID: GBCS XREF: SME.C.C</i> (the GBCS Command is Critical, but it is cryptographically protected by the DSP Access Control Broker, so the Service Request interaction between the DCC Service Users and the DCC is Non-Critical)</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> For two Devices in a HAN to be able to communicate with each other they have to be paired (joined). There are two join types: <ul style="list-style-type: none"> In the first one, each of the Devices is capable of providing information to the other and it requires each of the Devices to hold details in its Device Log of the 'joined' Device. Two Service Requests are needed to complete the Join. See Table 50 where "Two Step Join" is Yes In the second type only one of the Devices can provide information to the other, which can only read information from its joined Device. Only one Service Request to the Device that can provide information is needed to complete the Join. See Table 50 where "Two Step Join" is No This Service Request triggers a Command to the Business Target ID (Device ID) to add the details of the 'Other Device' in the Service Request to the Business Target ID Device Log The Device Type is not included in the Service Request, because the DCC Data Systems can identify it from the Device ID. This Service Request is applicable to the following Target Device Types: <ul style="list-style-type: none"> Electricity Smart Meter. To join it to a Type 2 Device (IHD or CAD) Gas Smart Meter. To join it to a Gas Proxy Function. <ul style="list-style-type: none"> Successful completion results in the GPF Device Status being set to 'Commissioned' in the Smart Metering Inventory if the status of the GSME it is being joined to is 'Commissioned'

	<ul style="list-style-type: none"> This join is available to the EIS to support the Restore Gas Proxy Function Device Log scenario (see section 8.12.2) Gas Proxy Function. To join it to one of: <ul style="list-style-type: none"> PPMID Type 2 Device (IHD or CAD) PPMID. To join it to one of: <ul style="list-style-type: none"> Electricity Smart Meter. This is a prerequisite to joining the Electricity Smart Meter to the PPMID Gas Smart Meter 				
	5. On successful completion of this Service Request, the DCC Data Systems will be updated to reflect its outcome (this action is carried out before the Service Response is generated)				
	6. Any Device id specified within this Service Request must have been pre notified to the DCC via Service Request 12.2				
	7. Where a PPMID is joined to a GSME then the DCC shall add the Key Agreement Certificate currently in use by the other Device (GSME) to the Command as this is required in the GBCS use Case. This shall be retrieved by the DCC from the Public Key Repository where the "In Use" flag is set				
	8. There are some failure cases where the Device command has not resulted in a successful join but the target Device's Device log retains the ID of the other Device. In such cases the SMI will record that the two Devices are joined, but other post-processing activities associated with the successful completion of a join command (for example, changing the status of a GPF, HCALCS or PPMID to Commissioned) will only be carried out if the Device returns a success response to the join command				
GBCS Cross Reference	ESME Join to Type 2 Device	GSME Join to GPF	PPMID Join to ESME	PPMID Join to GSME	GPF Join to PPMID or Type 2 Device
GBCS Message Code	0x000E	0x000E	0x00AB	0x00AF	0x000E
GBCS Use Case	CS03B	CS03B	CS03A2	CS03C	CS03B
GBCS Use Case Name	Method B Join	Method B Join	Method A Join (non Meter)	Method C Join	Method B Join
SMETS1 Applicability	Yes	Yes	Yes	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:				

1. Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document, which is primarily to confirm that the Devices are associated with the same SMETS1 CHF Device Log.
2. Item 7 is not applicable to SMETS1 Devices.
3. Item 8 is not applicable to SMETS1 Devices.

Table 59 Join Service (Non-Critical) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.7.2.1 Service Request

8.7.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its JoinServiceNonCritical XML element defines this Service Request and it contains the Device ID of the 'Other Device' the Business Target ID Device is to be joined with.

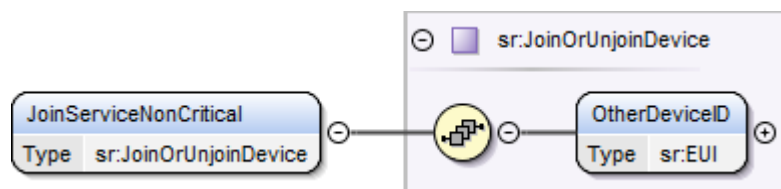


Figure 33 Join Service (Non-Critical) Service Request Structure

8.7.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OtherDeviceID	Device ID of the device to be joined to (paired with) the Business Target ID Device	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 60 Join Service (Non-Critical) Service Request Data Items

8.7.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 61 Join Service (Non-Critical) Modes of Operation

8.7.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 62 Join Service (Non-Critical) Command Variant Values

8.7.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Other Device ID existence validation):

Validation Check	Process	Response Code
Is the 'Other Device' Type valid?	Check that if the Business Target ID Device Type is: <ul style="list-style-type: none"> Electricity Smart Meter. The 'Other Device' Type is IHD or CAD Gas Smart Meter. The 'Other Device' Type is Gas Proxy Function Gas Proxy Function. The 'Other Device' Type is PPMID, IHD or CAD PPMID. The 'Other Device Type' is Electricity Smart Meter or Gas Smart Meter 	E080721
Is the DCC Service User authorised to Join the Device?	If the DCC Service User Role is 'OU', check that the 'Other Device' Device Type is CAD	E080722
Is the EIS authorised to Join the Devices? ¹	If the DCC Service User Role is 'EIS', the Business Target ID Type is GSME and the 'Other Device' Type is GPF check that the DCC Service User is the registered Import Supplier to the Primary MPAN in the CHF ID Whitelist associated to the GPF ID	E080723

Table 63 Join Service (Non-Critical) Service Request Validation

¹ This check replaces the generic authorisation registration check (E4) for this combination of Service User Role, Business Target ID Device Type and 'Other Device' Type

² This check is N/A if the "Other Device" is a CAD

Note that for Command Variant 2 (Command for Local Delivery) the authorisation registration check (E4) is not applicable to this Service Request

8.7.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<JoinServiceNonCritical>
  <OtherDeviceID>99-11-AA-BB-CC-DD-EE-FF</OtherDeviceID>
</JoinServiceNonCritical>
```

Figure 34 Join Service (Non-Critical) Service Request (Body) Format

8.7.2.2 Responses

- The response messages for a "Join Service (Non-Critical)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;
 - Acknowledgement

- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.7.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080721	Failed Validation – Invalid Device Type	Error	The 'Other Device' Type is not valid
E080722	Failed Authorisation – Invalid Service User Role for Device Type	Error	The DCC Service User Role is not authorised to Join this Device Type
E080723	Failed Authorisation – Invalid DCC Service User for Join Type	Error	The DCC Service User is not authorised to Join these GSME / GPF

Table 64 Failed Join Service (Non-Critical) Service Request Response Codes

8.7.2.2.2 Parse Output / SMETS1 Response Format

8.7.2.2.2.1 Format - JoinServiceNonCriticalRsp

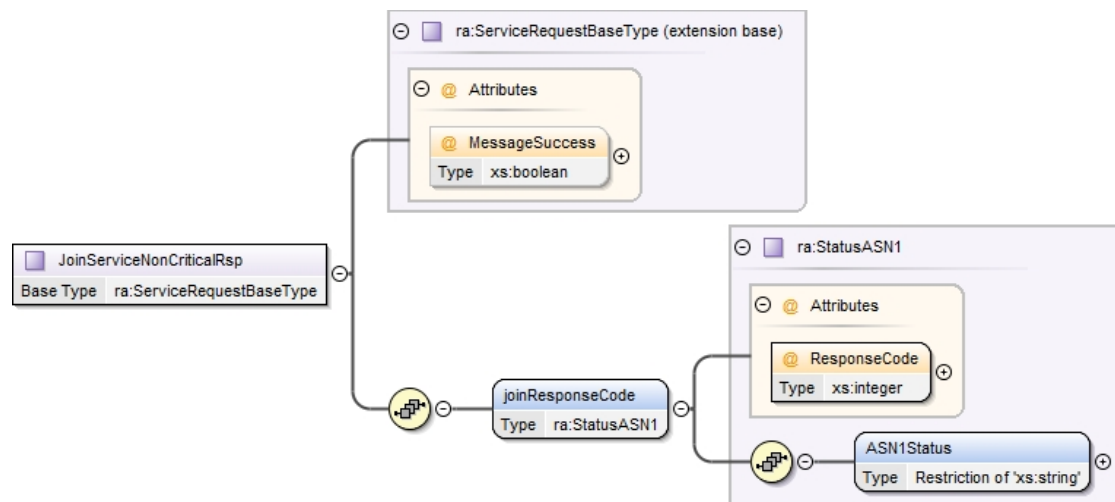


Figure 35 – Join Service (Non-Critical) Parse Response / SMETS1 Response Structure

8.7.2.2.2.2 Specific Header Data Items

Data Item	ESME join to Type 2 Device Response	GSME join to GPF Response	PPMID join to ESME Response
GBCSHexadecimalMessageCode	000E	000E	00AB
GBCS Use Case Number (for information only - not in header)	CS03B	CS03B	CS03A2

Data Item	ESME join to Type 2 Device Response	GSME join to GPF Response	PPMID join to ESME Response
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Method B Join</i>	<i>Method B Join</i>	<i>Method A Join (non Meter)</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP	Present
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP	Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 65 - Join Service (Non-Critical) Parse/SMETS1 Response Header Data Items

Data Item	PPMID join to GSME Response	GPF join to PPMID or Type 2 Device Response
GBCSHexadecimalMessageCode	00AF	000E
GBCSUseCaseNumber	CS03C	CS03B
GBCSUseCaseName	Method C Join	Method B Join
SupplementaryRemotePartyID	Present	Present where originator is a URP
SupplementaryRemotePartyCounter	Present	Present where originator is a URP
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 66 - Join Service (Non-Critical) Parse/SMETS1 Response Header Data Items (continued)

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

8.7.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
joinResponseCode	<p>Outcome of the request.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> • success • invalidMessageCodeForJoinMethodAndRole • invalidJoinMethodAndRole • incompatibleWithExistingEntry • deviceLogFull • writeFailure • keyAgreementNoResources • keyAgreementUnknownIssuer • keyAgreementUnsupportedSuite • keyAgreementBadMessage • keyAgreementBadKeyConfirm • invalidOrMissingCertificate • noPartnerLinkKeyReceived (only supported on Devices with a Firmware version certified to GBCS v2.0 or later) • noCBKEResponse (only supported on Devices with a Firmware version certified to GBCS v2.0 or later) 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

Table 67 - Join Service (Non-Critical) Parse Response / SMETS1 Response Body Data Items

8.7.2.2.4 Sample Response body

```
<ra:JoinServiceNonCriticalRsp MessageSuccess="false">
  <ra:joinResponseCode ResponseCode="3">
    <ra:ASN1Status>incompatibleWithExistingEntry</ra:ASN1Status>
  </ra:joinResponseCode>
</ra:JoinServiceNonCriticalRsp>
```

Figure 36 - Join Service (Non-Critical) Parse Response Sample

8.8 Unjoin Service (8.8)

SMETS2 or later

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID and one of the Use Cases is Critical and other Non-Critical.

Therefore the 8.8 Service Request has been broken into two parts: 8.8.1 (Unjoin Service (Critical)) and 8.8.2 (Unjoin Service (Non-Critical)).

SMETS1

This Service Request maps to Service Reference Variant 8.8.1 (Unjoin Service (Critical)) and 8.8.2 (Unjoin Service (Non-Critical)).

The following table summarises which Unjoin Service Request Variant applies to which User Roles and Devices:

Service Request Variant	Critical / Non-Critical	User Role	Target Device Type	UnJoin from Device Type
8.8.1 ¹	Critical	EIS	ESME	HCALCS
8.8.1	Critical	EIS	ESME	PPMID
8.8.1 ¹	Critical	EIS	HCALCS	ESME
8.8.1	Critical	GIS	GSME	PPMID
8.8.2	Non-Critical	EIS	ESME	Type 2 (IHD or CAD)
8.8.2	Non-Critical	EIS	PPMID	ESME
8.8.2	Non-Critical	GIS	GPF	PPMID
8.8.2	Non-Critical	GIS	GPF	Type 2 (IHD or CAD)
8.8.2	Non-Critical	GIS / EIS	GSME	GPF
8.8.2	Non-Critical	GIS	PPMID	GSME
8.8.2	Non-Critical	OU	ESME	Type 2 (CAD)
8.8.2	Non-Critical	OU	GPF	Type 2 (CAD)

Table 68 Unjoin Service Request Variants / Devices

¹ Row N/A to SMETS1 Services

8.8.1 Unjoin Service (Critical) (8.8.1)

Service Request Name	UnjoinService
Service Reference	8.8
Service Request Variant Name	UnjoinService (Critical)
Service Reference Variant	8.8.1
Service Request Objective	To instruct specified Devices to cease communicating with each other via the Home Area Network (HAN)
Business Context Statement	The DCC Service User no longer wishes two Devices to communicate with each other (e.g. because it wishes to remove one of them from the HAN). It needs to instruct all non-Type 2 Devices paired with it accordingly

User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	<p>Critical and non-sensitive: SMETS2 or later: <i>GBCS XREF: SME.C.C</i></p>	
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> If two Devices in a HAN are paired (joined) and they no longer need to communicate with each other, e.g. because one of them is to be removed from the HAN, the join has to be removed. The mechanism to remove the join depends on the join type, of which there are two: <ul style="list-style-type: none"> In the first one, each of the Devices holds details in its Device Log of the 'joined' Device. Two Service Requests are needed to completely remove the Join information, but as soon as the details for one of the Devices are removed from the Device Log of the other, they'll no longer be able to communicate with each other. See Table 50 where "Two Step Join" is Yes In the second type, only one of the Devices can provide information to the other, which can only read information from its joined Device. Only one Service Request to the Device that can provide information is needed to completely Unjoin them. See Table 50 where "Two Step Join" is No This Service Request triggers a Command to the Business Target ID (Device ID) to remove the details of the 'Other Device' in the Service Request from the Business Target ID Device Log <ul style="list-style-type: none"> If this Command is successful, the two Devices will no longer be able to communicate via the HAN The DCC Service User is a KRP of the Business Target ID (Device ID), so the Device Response will be addressed to them The Device Type is not included in the Service Request, because the DCC Data Systems can identify it from the Device ID. This Service Request is applicable to the following Target Device Types: <ul style="list-style-type: none"> Electricity Smart Meter. To unjoin it from one of: <ol style="list-style-type: none"> HCALCS PPMID Gas Smart Meter. To unjoin it from: <ol style="list-style-type: none"> PPMID HCALCS. To unjoin it from: <ol style="list-style-type: none"> Electricity Smart Meter On successful completion of this Service Request, the DCC Data Systems will be updated to reflect its outcome 	
GBCS Cross Reference	Electricity	Gas

GBCS Message Code	0x000F	0x000F
GBCS Use Case	CS04AC	CS04AC
GBCS Use Case Name	Method A or C Unjoin	Method A or C Unjoin
SMETS1 Applicability	Yes (ESME Unjoin from PPMID)	Yes (GSME Unjoin from PPMID)
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. HCALCS is not a valid SMETS1 Device Type. 2. Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document, which is simply to confirm success. 	

Table 69 Unjoin Service (Critical) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.8.1.1 Service Request

8.8.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UnjoinServiceCritical XML element defines this Service Request and it contains the Device ID of the 'Other Device' the Business Target ID Device is to be unjoined from.

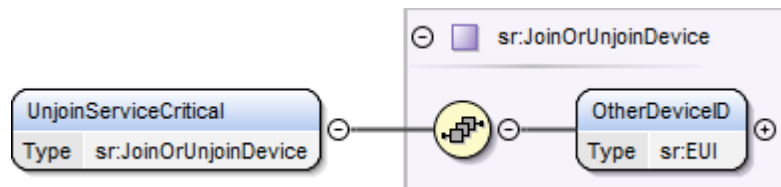


Figure 37 Unjoin Service (Critical) Service Request Structure

8.8.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OtherDeviceID	Device ID of the device for which the details have to be removed from the Business Target ID Device Log	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 70 Unjoin Service (Critical) Service Request Data Items

8.8.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 71 Unjoin Service (Critical) Modes of Operation

8.8.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 72 Unjoin Service (Critical) Command Variant Values

8.8.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Other Device ID existence validation):

Validation Check	Process	Response Code
Is the 'Other Device' valid?	Check that according to the DCC Data Systems the 'Other Device' is joined to the Business Target ID Device	E080801

Table 73 Unjoin Service (Critical) Service Request Validation

8.8.1.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UnjoinServiceCritical>
  <OtherDeviceID>99-22-AA-BB-CC-DD-EE-FF</OtherDeviceID>
</UnjoinServiceCritical>
```

Figure 38 Unjoin Service (Critical) Transform Service Request (Body) Format

8.8.1.2 Responses

The response messages for an "Unjoin Service (Critical)" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload

- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.8.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080801	Failed Validation – Invalid Device ID	Error	According to the DCC Data Systems the 'Other Device' is not joined to the Business Target ID Device

Table 74 Failed Unjoin Service (Critical) Service Request Response Codes

8.8.1.2.2 Parse Output Format / SMETS1 Response

8.8.1.2.2.1 Format - UnjoinServiceCriticalResp

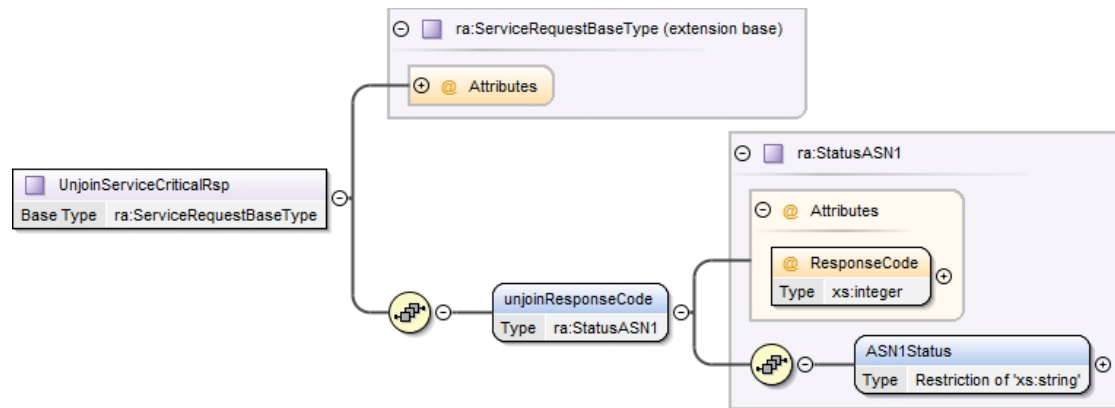


Figure 39 – Unjoin Service (Critical) Parse Response / SMETS1 Response Structure

8.8.1.2.2.2 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	000F	000F
GBCS Use Case Number (for information only - not in header)	CS04AC	CS04AC
GBCS Use Case Name (for information only - not in header)	Method A or C Unjoin	Method A or C Unjoin
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 75 - Unjoin Service (Critical) Parse/SMETS1 Response Header Data Items

8.8.1.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
unjoinResponseCode	<p>Outcome of the request.</p> <p>Valid Set (SMETS2 or later):</p> <ul style="list-style-type: none"> success otherDeviceNotInDeviceLog otherFailure <p>Valid Set (SMETS1):</p> <ul style="list-style-type: none"> success 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

Table 76 - Unjoin Service (Critical) Parse Response / SMETS1 Response Body Data Items

8.8.1.2.2.4 Sample Response body

```
<ra:UnjoinServiceCriticalRsp MessageSuccess="false">
  <ra:unjoinResponseCode ResponseCode="1">
    <ra:ASN1Status>otherDeviceNotInDeviceLog</ra:ASN1Status>
  </ra:unjoinResponseCode>
</ra:UnjoinServiceCriticalRsp>
```

Figure 40 - Unjoin Service (Critical) Parse Response Sample

8.8.2 Unjoin Service (Non-Critical) (8.8.2)

Service Request Name	UnjoinService
Service Reference	8.8
Service Request Variant Name	UnjoinService (Non-Critical)
Service Reference Variant	8.8.2
Service Request Objective	To instruct specified Devices to cease communicating with each other via the Home Area Network (HAN)
Business Context Statement	The DCC Service User no longer wishes two Devices to communicate with each other (e.g. because it wishes to remove one of them from the HAN). It needs to instruct all non-Type 2 Devices paired with it accordingly
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Other User (OU) (Type 2 CAD Only)

Security Classification	<p>Non-critical and non-sensitive:</p> <p>SMETS2 or later:</p> <p><i>Target Device Type = All except PPMID: GBCS XREF: SME.C.NC</i></p> <p><i>Target Device Type = PPMID: GBCS XREF: SME.C.C</i> (the GBCS Command is Critical, but it is cryptographically protected by the DSP Access Control Broker, so the Service Request interaction between the DCC Service Users and the DCC is Non-Critical)</p>
Service Request Narrative	<ol style="list-style-type: none"> If two Devices in a HAN are paired (joined) and they no longer need to communicate with each other, e.g. because one of them is to be removed from the HAN, the join has to be removed. The mechanism to remove the join depends on the join type, of which there are two: <ul style="list-style-type: none"> In the first one, each of the Devices holds details in its Device Log of the 'joined' Device. Two Service Requests are needed to completely remove the Join information, but as soon as the details of one of the Devices are removed from the Device Log of the other, they'll no longer be able to communicate with each other. See Table 50 where "Two Step Join" is Yes In the second type only one of the Devices can provide information to the other, which can only read information from its joined Device. Only one Service Request to the Device that can provide information is needed to completely Unjoin them. See Table 50 where "Two Step Join" is No This Service Request triggers a Command to the Business Target ID (Device ID) to remove the details of the 'Other Device' in the Service Request from the Business Target ID Device Log <ul style="list-style-type: none"> If this Command is successful, the 2 Devices will no longer be able to communicate via the HAN and the Unjoin will be completed, except in the case where the Business Target ID is a PPMID The Device Type is not included in the Service Request, because the DCC Data Systems can identify it from the Device ID. This Service Request is applicable to the following Target Device Types: <ul style="list-style-type: none"> Electricity Smart Meter. To unjoin it from a Type 2 Device (IHD or CAD) Gas Smart Meter. To unjoin it from a Gas Proxy Function <ol style="list-style-type: none"> This unjoin is available to the EIS to support the Restore Gas Proxy Function Device Log scenario (see section 8.12.2) Gas Proxy Function. To unjoin it from one of: <ol style="list-style-type: none"> PPMID Type 2 Device (IHD or CAD) PPMID. To unjoin it from one of:

	i. Electricity Smart Meter ii. Gas Smart Meter 5. On successful completion of this Service Request, the DCC Data Systems will be updated to reflect its outcome				
GBCS Cross Reference	ESME Unjoin from Type 2 Device	GSME Unjoin from GPF	PPMID Unjoin from ESME	PPMID Unjoin from GSME	GPF Unjoin from PPMID or Type 2 Device
GBCS Message Code	0x0010	0x0010	0x000F	0x000F	0x0010
GBCS Use Case	CS04B	CS04B	CS04AC	CS04AC	CS04B
GBCS Use Case Name	Method B Unjoin	Method B Unjoin	Method A or C Unjoin	Method A or C Unjoin	Method B Unjoin
SMETS1 Applicability	Yes	Yes	Yes	Yes	Yes
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: <ol style="list-style-type: none"> Processing by the relevant S1SP shall be according to the SMETS1 Supporting Requirements Document, which is simply to confirm success. 				

Table 77 Unjoin Service (Non-Critical) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.8.2.1 Service Request

8.8.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UnjoinServiceNonCritical XML element defines this Service Request and it contains the Device ID of the 'Other Device' the Business Target ID Device is to be unjoined from.

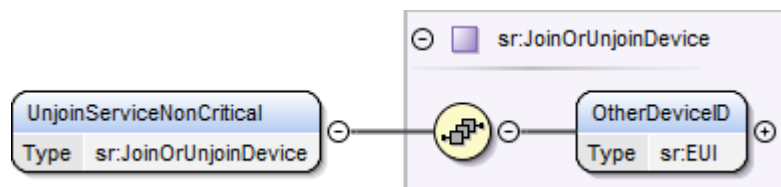


Figure 41 Unjoin Service (Non-Critical) Service Request Structure

8.8.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OtherDeviceID	Device ID of the device for which the details have to be removed from the Business Target ID Device Log	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 78 Unjoin Service (Non-Critical) Service Request Data Items

8.8.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	No	No
SMETS1	No	Yes	No	No	No

Table 79 Unjoin Service (Non-Critical) Modes of Operation

8.8.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 80 Unjoin Service (Non-Critical) Command Variant Values

8.8.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Other Device ID existence validation):

Validation Check	Process	Response Code
Is the 'Other Device' valid?	Check that according to the DCC Data Systems the 'Other Device' is joined to the Business Target ID Device	E080801
Is the DCC Service User authorised to Unjoin the Device?	If the DCC Service User Role is 'OU', check that the 'Other Device' Device Type is CAD	E080821
Is the EIS authorised to Unjoin the Devices? ¹	If the DCC Service User Role is 'EIS', the Business Target ID Type is GSME and the 'Other Device' Type is GPF check that the DCC Service User is the registered Import Supplier to the Primary MPAN in the CHF ID Whitelist associated to the GPF ID	E080822

Table 81 Unjoin Service (Non-Critical) Service Request Validation

¹ This check replaces the generic authorisation registration check (E4) for this combination of Service User Role, Business Target ID Device Type and 'Other Device' Type

8.8.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UnjoinServiceNonCritical>
  <OtherDeviceID>99-11-AA-BB-CC-DD-EE-FF</OtherDeviceID>
</UnjoinServiceNonCritical>
```

Figure 42 Unjoin Service (Non-Critical) Service Request (Body) Format

8.8.2.2 Responses

The response messages for an “Unjoin Service (Non-Critical)” request follow the generic format for all “Device” response messages. The generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.8.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E080801	Failed Validation – Invalid Device ID	Error	According to the DCC Data Systems Inventory the ‘Other Device’ is not joined to the Business Target ID Device
E080821	Failed Authorisation – Invalid Service User Role for Device Type	Error	The DCC Service User Role is not authorised to Unjoin this Device Type
E080822	Failed Authorisation – Invalid DCC Service User for Unjoin Type	Error	The DCC Service User is not authorised to Unjoin these GSME / GPF

Table 82 Failed Unjoin Service (Non-Critical) Service Request Response Codes

8.8.2.2.2 Parse Output / SMETS1 Response Format

8.8.2.2.2.1 Format - UnjoinServiceNonCriticalRsp

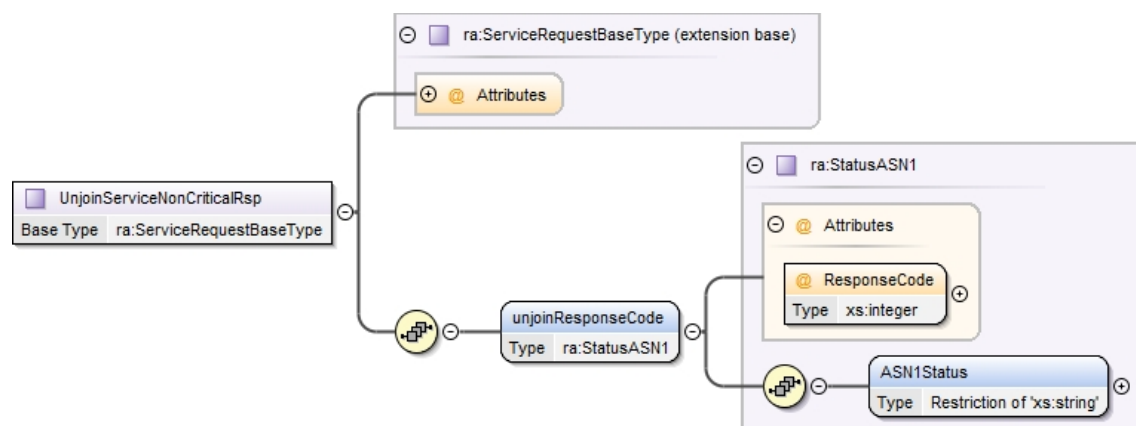


Figure 43 – Unjoin Service (Non-Critical) Parse Response / SMETS1 Response Structure

8.8.2.2.2.2 Specific Header Data Items

Data Item	ESME Unjoin from Type 2 Device	PPMID Unjoin from ESME
GBCSHexadecimalMessageCode	0010	000F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS04B</i>	<i>CS04AC</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Method B Unjoin</i>	<i>Method A or C Unjoin</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present
SupplementaryRemotePartyCounter	Present where originator is a URP	Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 83 - Unjoin Service (Non-Critical) Parse/SMETS1 Response Header Data Items – Electricity

Data Item	GSME Unjoin from GPF	GPF Unjoin from PPMID or Type 2 Device	PPMID Unjoin from GSME
GBCSHexadecimalMessageCode	0010	0010	000F
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>CS04B</i>	<i>CS04B</i>	<i>CS04AC</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Method B Unjoin</i>	<i>Method B Unjoin</i>	<i>Method A or C Unjoin</i>
SupplementaryRemotePartyID	Present where originator is a URP	Present where originator is a URP	Present
SupplementaryRemotePartyCounter	Present where originator is a URP	Present where originator is a URP	Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 84 - Unjoin Service (Non-Critical) Parse/SMETS1 Response Header Data Items – Gas

See DUGIDS main document sections 8.1.1 and section 4 for circumstances in which Users are a KRP or URP to a Device.

8.8.2.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
unjoinResponseCode	<p>Outcome of the request.</p> <p>Valid Set (SMETS2 or later):</p> <ul style="list-style-type: none"> success otherDeviceNotInDeviceLog otherFailure <p>Valid Set (SMETS1):</p> <ul style="list-style-type: none"> success 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

Table 85 - Unjoin Service (Non-Critical) Parse Response / SMETS1 Response Body Data Items

8.8.2.2.4 Sample Response body

```
<ra:UnjoinServiceNonCriticalRsp MessageSuccess="false">
  <ra:unjoinResponseCode ResponseCode="2">
    <ra:ASN1Status>otherFailure</ra:ASN1Status>
  </ra:unjoinResponseCode>
</ra:UnjoinServiceNonCriticalRsp>
```

Figure 44 - Unjoin Service (Non-Critical) Parse Response Sample

8.9 Read Device Log (8.9)

Service Request Name	ReadDeviceLog
Service Reference	8.9
Service Request Variant Name	ReadDeviceLog
Service Reference Variant	8.9
Service Request Objective	To retrieve the contents of a Device Log as defined in SMETS for a specified Device ID.
Business Context Statement	The DCC Service User wishes to understand which devices in the HAN are authorised to communicate with which other devices – e.g. Gas Meter may have a relationship with the Gas Proxy device - by reading the device IDs from the device log.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Other User (OU)
Security Classification	Non-critical and non-sensitive: SMETS2 or later: GBCS XREF: SME.C.NC

Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. If the Device Type is a Communication Hub Function, the response will contain the whitelist of all Device identifiers currently associated with the HAN created by the Communications Hub and the last date-time each of the Devices in the list communicated with the Communication Hub Function. 2. For CHF with a Firmware version certified to GBCS v2.0 or later the response will also contain details of Sub GHz signal strength, for dual band CHF using the Sub GHz frequency band interface. 3. As per the CHTS definition, the CHF shall be capable of storing the Security Credentials of a minimum of 16 Devices in the CHF Device Log. The minimum 16 Devices shall comprise a minimum of, <ul style="list-style-type: none"> • four ESME • one GSME • one GPF • seven Type 1 Devices (including a minimum of two PPMIDs) and • three Type 2 Devices 4. If the Device Type is not a Communication Hub Function, the response will contain the Device identifiers and Types of the Devices in the Request's Device ID Device Log. 5. If the Service Request Business Originator User Role is EIS and the Target Device Type is HCALCS, even though the DCC Service User is a KRP to the Device, the Command will be submitted to the Device by the DSP Access Control Broker using the URP interaction type. This is because HCALCS hold Supplier Digital Signature, but not Key Agreement Credentials. 6. For a CHF with a Firmware version certified to GBCS v3.2 or later, the current and historic CHF Device log, including the hashed link key used for connection, can be read by supplying the optional parameter 'ReadSecurityDetails' in the Request. If the parameter 'ReadSecurityDetails' is present the use case CCS07 will be invoked, otherwise the use case CCS06 will be invoked. 	
GBCS Cross Reference	Communications Hub Function	All Other Devices
GBCS v1.0 Message Code	0x0004	0x0013
GBCS v1.0 Use Case	CCS05/CCS04	CS07
GBCS v1.0 Use Case Name	Read CHF device log / Check HAN communications (by reading the CHF Communications Store)	Read Device Join Details

GBCS v2.0 Message Code	0x010F	0x0013	
GBCS v2.0 Use Case	CCS06	CS07	
GBCS v2.0 Use Case Name	Read CHF device log and check HAN communications	Read Device Join Details	
GBCS v3.2 or later Message Code	0x010F/0x00FE	0x0013	
GBCS v3.2 or later Use Case	CCS06/CCS07	CS07	
GBCS v3.2 or later Use Case Name	Read CHF device log and check HAN communications / Read CHF Device Logs	Read Device Join Details	
SMETS1 Applicability	Yes	N/A	
Service Request Narrative (SMETS1)	The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: 1. The response data shall be populated in accordance with the SMETS1 Supporting Requirements Document. 2. The only SMETS1 Device Type supported is CHF. 3. The SMETS1 limits on Device numbers may be different. 4. The parameter “ReadSecurityDetails” is not applicable to SMETS1 Devices.		
GBCS Commands - Versioning Details			
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations			
Device Type	CHF		
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.x	GBCS v3.2 or later
DEFAULT - No specific XML criteria	CCS05/CCS04	CCS06	CCS06
DUIS v4.0 – XML contains “ReadSecurityDetails”	E080902	E080902	CCS07
Device Type	ESME		

DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DEFAULT - No specific XML criteria	CS07	CS07
Device Type	GSME	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DEFAULT - No specific XML criteria	CS07	CS07
Device Type	GPF	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DEFAULT - No specific XML criteria	CS07	CS07
Device Type	HCALCS	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DEFAULT - No specific XML criteria	CS07	CS07
Device Type	PPMID	
DEVICES firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0	GBCS v2.0 or later
DEFAULT - No specific XML criteria	CS07	CS07

Table 86 Read Device Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.9.1 Service Request

8.9.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReadDeviceLog XML element defines this Service Request and it only contains the Execution Date Time for Future Dated Requests.

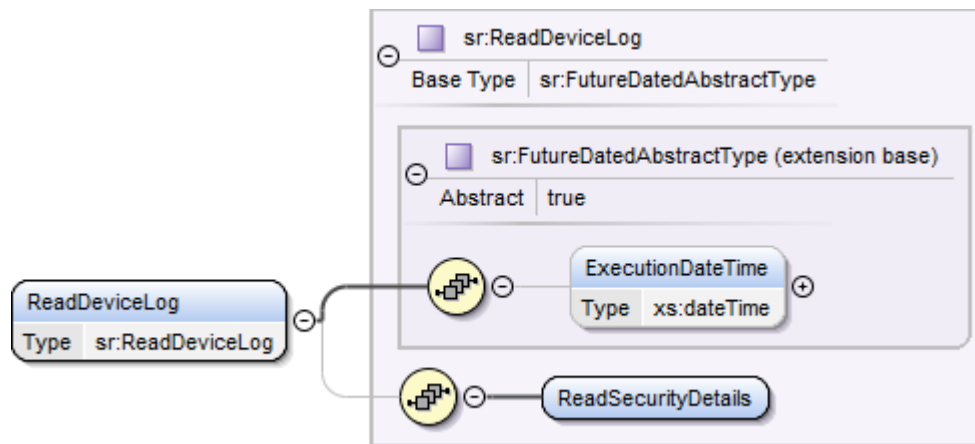


Figure 45 Read Device Log Import Service Request Structure

8.9.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
ReadSecurityDetails	This parameter is supplied if the DCC Service User wishes to receive the current and historic device log security detail information available in the CHF. Available only for a CHF with Firmware Version of GBCS v3.2 or later.	sr:ReadSecurityDetails	No	None	None	Non-Sensitive

Table 87 Read Device Log Service Request Data Items

8.9.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 88 Read Device Log Modes of Operation

8.9.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 89 Read Device Log Command Variant Values

8.9.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Other Device ID existence validation):

Validation Check	Process	Response Code
Check Device Type is CHF if Device is SMETS1	Check that if the target Device is a SMETS1 Device then the Device Type is CHF, SMETS1 does not require any other Device Logs be supported.	E080901
Check if 'ReadSecurityDetails' is supported by the Device	Check that if 'ReadSecurityDetails' is specified in the Service Request then the Device Firmware Version is at GBCS version 3.2 or later.	E080902
Check if 'ReadSecurityDetails' is supported by the Device Type	Check that if 'ReadSecurityDetails' is specified in the Service Request then the Device Type is a CHF	E080903

Table 90 Read Device Log Service Request Validation

8.9.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

8.9.1.6.1 To read CHF without security details or other Device Type

```
<ReadDeviceLog/>
```

Figure 46 Sample Read Device Log Service Request (Body) Format – CHF without security details or other Device Type

8.9.1.6.2 To read CHF Device Log current and historic security details

```
<ReadDeviceLog>
  <ReadSecurityDetails/>
</ReadDeviceLog>
```

Figure 46.1 Sample Read Device Log Service Request (Body) Format – CHF with security details

8.9.2 Responses

The response messages for a "Read Device Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement

- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.9.2.1 Unsuccessful Response

Response Code	Response Code Name	Response Code Type	Description
E080901	Failed Validation – SMETS1 Device where Device Type is not valid for this Service Request	Error	The Device is a SMETS1 Device and the Device Type is not CHF.
E080902	Failed Authorisation – GBCS Firmware Version does not support ReadSecurityDetails	Error	ReadSecurityDetails is specified in the Service Request but the Firmware Version recorded in the SMI for the Device is not at GBCS version 3.2 or later.
E080903	Failed Authorisation – Device Type does not support ReadSecurityDetails	Error	ReadSecurityDetails' is specified in the Service Request but the Device Type is not a CHF.

Table 90.1 Failed Read Device Log Service Request Response Codes

8.9.2.2 Parse Output / SMETS1 Response Format

8.9.2.2.1 Format - ReadDeviceLogResp

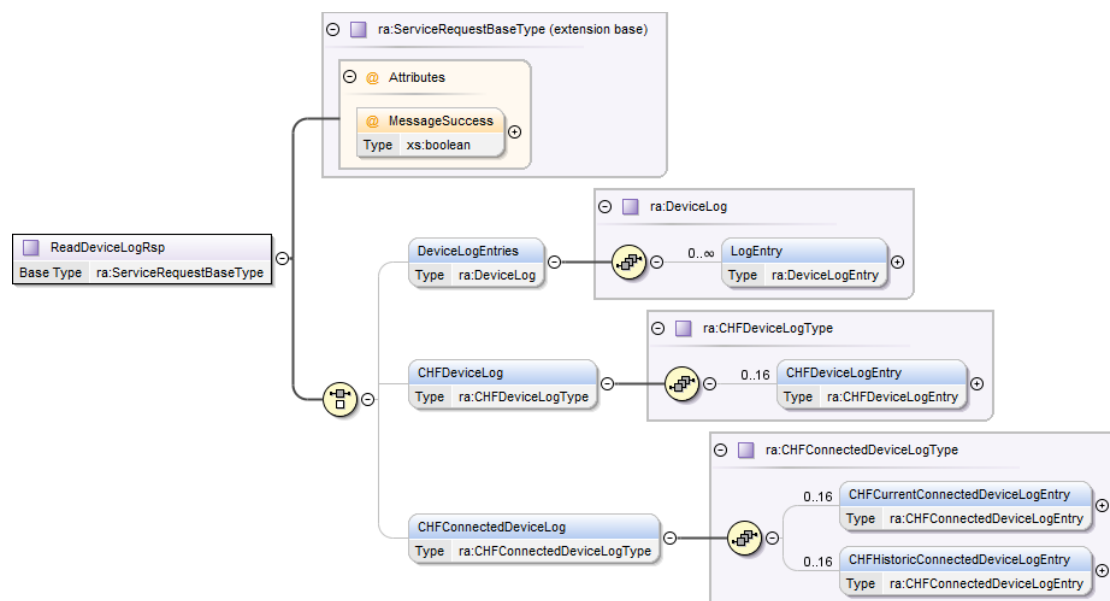


Figure 47 - Read Device Log Parse Response / SMETS1 Response Structure

8.9.2.2.2 Specific Header Data Items

The list of Devices which can respond to this Service Request is listed in this document, Section 8, Table 2. The responses from CHF Devices are made with a different GBCS message code from the responses from other valid Devices.

GBCS v1.0:

Data Item	CHF Response	Non-CHF Response
GBCSHexadecimalMessageCode	0004	0013
<i>GBCS Use Case Number (for information only - not in header)</i>	CCS05/CCS04	CS07
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Read CHF Device Log / Check HAN Communications (by reading the CHF Communications Store)</i>	<i>Read Device Join Details</i>
SupplementaryRemotePartyID	Present	Present if the originator is a URP or the target Device Type is HCALCS
SupplementaryRemotePartyCounter	Present	Present if the originator is a URP or the target Device Type is HCALCS
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 91 - Read Device Log Parse Response Header Data Items – GBCS v1.0

GBCS v2.0 & SMETS1:

Data Item	CHF Response	Non-CHF Response (N/A to SMETS1)
GBCSHexadecimalMessageCode	010F	0013
<i>GBCS Use Case Number (for information only – not in header)</i>	CCS06	CS07
<i>GBCS Use Case Name (for information only – not in header)</i>	<i>Read CHF device log and check HAN communications</i>	<i>Read Device Join Details</i>
SupplementaryRemotePartyID	Present	Present if the originator is a URP or the target Device Type is HCALCS
SupplementaryRemotePartyCounter	Present	Present if the originator is a URP or the target Device Type is HCALCS
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 92 – Read Device Log Parse Response Header Data Items – GBCS v2.0 & SMETS1

GBCS v3.2:

Data Item	CHF Response	Non-CHF Response
GBCSHexadecimalMessageCode	010F, 00FE	0013
<i>GBCS Use Case Number (for information only – not in header)</i>	CCS06, CCS07	CS07
<i>GBCS Use Case Name (for information only – not in header)</i>	<i>Read CHF device log and check HAN communications, Read CHF device log</i>	<i>Read Device Join Details</i>
SupplementaryRemotePartyID	Present	Present if the originator is a URP or the target Device Type is HCALCS
SupplementaryRemotePartyCounter	Present	Present if the originator is a URP or the target Device Type is HCALCS
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 92.1 – Read Device Log Parse Response Header Data Items – GBCS v3.2

See DUGIDS main document sections 8.1.1 and section 4 for circumstances in which Users are a KRP or URP to a Device.

8.9.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceLogEntries	This is only present if the response code indicates a successful response. The element returns a list of DeviceLogEntry items from the device, which may be empty Max 16 entries returned.	List of DeviceLogEntry – see below	None	N/A	Non-Sensitive
CHFDeviceLog	If reading the comms hub device log, this group is returned rather than DeviceLogEntries. Shows all the currently authorised devices on the ZIGBEE PAN.	List of CHFDeviceLogEntry – see below	None	N/A	Non-Sensitive
CHFConnectedDeviceLog ¹	If the request specified ReadSecurityDetails, this group is returned. This holds the current and historic devices that are/were in the Zigbee PAN.	ra:CHFConnectedDeviceLogType (see section 8.9.2.2.3.3)	None	N/A	Non-Sensitive

Table 93 - Read Device Log Parse Response / SMETS1 Response Body Data Items

¹ CHFConnectedDeviceLog is N/A to SMETS1

8.9.2.2.3.1 DeviceLogEntry Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceID	Device ID of a device	ra:EUI	None	N/A	Non-Sensitive
DeviceType	<p>The Type of device</p> <p>Valid set:</p> <ul style="list-style-type: none"> ESME GSME GPF CHF HCALCS¹ PPMID Type2 	ra:DeviceType	None	N/A	Non-Sensitive

Table 94 - DeviceLogEntry Data Items

¹ N/A to SMETS1

8.9.2.2.3.2 CHFDeviceLogEntry Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceID	The device identifier (ID).	ra:EUI	None	N/A	Non-Sensitive
LastCommunicationsDateTime	<p>Date-time when a ZigBee packet was sent/received</p> <p>SMETS1 only: where the Device is not able to support the LastCommunicationsDateTime parameter, the DCC shall set the value of that parameter to "3000-12-31T00:00:00Z" to indicate that the Device does not support that parameter</p>	xs:dateTime	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
SubGHzLinkQuality	<p>For each Device in the <i>CHF Device Log</i>, an indication of its quality of communication for Communication Links in Sub GHz Bands</p> <p>A value of zero indicates Device ID is not communicating using Sub GHz frequencies:</p> <p>If the <i>LastCommunicationsDateTime</i> is recent, the Device is on 2.4GHz</p> <p>If the <i>LastCommunicationsDateTime</i> is not recent, the Device has not communicated or has ceased communicating</p> <p>SubGHzLinkQuality is only supported on CHF Devices with a Firmware version certified to GBCS v2.0 or later</p> <p>SMETS1 only: the DCC shall set the value of SubGHzLinkQuality to zero, meaning that the Device is not communicating on Sub GHz frequencies</p>	Restriction of xs:short (minInclusive = -128 maxInclusive = 127)	None	dBm	Non-Sensitive

Table 95 - CHFDeviceLogEntry Data Items

8.9.2.2.3.3 CHFConnectedDeviceLog Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
CHFCurrentConnectedDeviceLogEntry	List of Devices and their Security Details that are currently in the CHF Device Log.	List of CHFConnectedDeviceLogEntry (see section 8.9.2.2.3.4)	None	N/A	Non-Sensitive
CHFHistoricConnectedDeviceLogEntry	List of Devices and their Security Details that are in the CHF Historic Device Log.	List of CHFConnectedDeviceLogEntry (see section 8.9.2.2.3.4)	None	N/A	Non-Sensitive

Table 95.1- CHFConnectedDeviceLog Data Items

8.9.2.2.3.4 CHFConnectedDeviceLogEntry Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
DeviceID	The device identifier.	ra:EUI	None	N/A	Non-Sensitive
DeviceSecurityDetails	Where a TC Link Key between the CHF and the Device with this Device ID had been established previously, this field shall contain a Hash of that TC Link Key. Otherwise this field shall contain an empty string.	Restriction of xs:string (maxLength = 32)	None	N/A	Non-Sensitive

Table 95.2 - CHFConnectedDeviceLogEntry Data Items

8.9.2.2.4 Sample Response

```
<ra:ReadDeviceLogRsp MessageSuccess="true">
  <ra:DeviceLogEntries>
    <ra:LogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FF</ra:DeviceID>
      <ra:DeviceType>ESME</ra:DeviceType>
    </ra:LogEntry>
    <ra:LogEntry>
      <ra:DeviceID>11-00-AA-55-44-33-22-11</ra:DeviceID>
      <ra:DeviceType>GSME</ra:DeviceType>
    </ra:LogEntry>
  </ra:DeviceLogEntries>
</ra:ReadDeviceLogRsp>
```

Figure 48 - Read Device Log (CS07) Parse Response Sample

```
<ra:ReadDeviceLogRsp MessageSuccess="true">
  <ra:CHFDeviceLog>
    <ra:CHFDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FF </ra:DeviceID>
      <ra:LastCommunicationsDateTime>2014-10-03T00:00:00.00</ra:LastCommunicationsDateTime>
    </ra:CHFDeviceLogEntry>
    <ra:CHFDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FF </ra:DeviceID>
      <ra:LastCommunicationsDateTime>2014-10-03T00:00:00.00</ra:LastCommunicationsDateTime>
    </ra:CHFDeviceLogEntry>
  </ra:CHFDeviceLog>
</ra:ReadDeviceLogRsp>
```

Figure 49 - Read Device Log (CCS04/CCS05 Parse Response) Sample

```
<ra:ReadDeviceLogRsp MessageSuccess="true">
  <ra:CHFDeviceLog>
    <ra:CHFDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FF</ra:DeviceID>
      <ra:LastCommunicationsDateTime>2017-10-03T00:00:00.00</ra:LastCommunicationsDateTime>
      <ra:SubGHzLinkQuality>3</ra:SubGHzLinkQuality>
    </ra:CHFDeviceLogEntry>
    <ra:CHFDeviceLogEntry>
      <ra:DeviceID>99-00-DA-BB-CC-DD-EE-FE</ra:DeviceID>
      <ra:LastCommunicationsDateTime>2017-10-03T00:00:00.00</ra:LastCommunicationsDateTime>
      <ra:SubGHzLinkQuality>0</ra:SubGHzLinkQuality>
    </ra:CHFDeviceLogEntry>
  </ra:CHFDeviceLog>
</ra:ReadDeviceLogRsp>
```

Figure 50 - Read Device Log (CCS06 Parse Response) Sample

```
<ra:ReadDeviceLogRsp MessageSuccess="true">
  <ra:CHFConnectedDeviceLog>
    <ra:CHFCurrentConnectedDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FF</ra:DeviceID>
      <ra:DeviceSecurityDetails>1234567890ABCDEF1234567890ABCDEF</ra:DeviceSecurityDetails>
    </ra:CHFCurrentConnectedDeviceLogEntry>
    <ra:CHFCurrentConnectedDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FA</ra:DeviceID>
      <ra:DeviceSecurityDetails>1234567890ABCDEF1234567890ABCDEA</ra:DeviceSecurityDetails>
    </ra:CHFCurrentConnectedDeviceLogEntry>
    <ra:CHFHistoricConnectedDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FB</ra:DeviceID>
      <ra:DeviceSecurityDetails>1234567890ABCDEF1234567890ABCDEB</ra:DeviceSecurityDetails>
    </ra:CHFHistoricConnectedDeviceLogEntry>
    <ra:CHFHistoricConnectedDeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FC</ra:DeviceID>
      <ra:DeviceSecurityDetails>1234567890ABCDEF1234567890ABCDEC</ra:DeviceSecurityDetails>
    </ra:CHFHistoricConnectedDeviceLogEntry>
  </ra:CHFConnectedDeviceLog>
</ra:ReadDeviceLogRsp>
```

Figure 50.1 - Read CHF Device Logs (CCS07 Parse Response) Sample

8.10 Section 8.10

This section has been intentionally left blank as there is no Service Reference 8.10.

8.11 Update HAN Device Log (8.11)

Service Request Name	UpdateHANDeviceLog
Service Reference	8.11
Service Request Variant Name	UpdateHANDeviceLog
Service Reference Variant	8.11
Service Request Objective	To update the Communications Hub Function's Device Log (as defined within SMETS) with details of other Devices to either be added to or removed from it.
Business Context Statement	The Supplier wishes to add or remove a specified Device to the Home Area Network (HAN) as part of the management of its Smart Metering System at a consumer premise.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Other User (OU) (Type 2 CAD Only)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC
Service Request Narrative (SMETS2 or later)	1. The Communications Hub Function's Device Log contains the whitelist of the other Devices that are part of its HAN. A backup of this whitelist is maintained by the DCC Data Systems to enable its restoration in case the Communications Hub needs replacing. See section 8.12. The Gas Proxy Function is not included in this whitelist, because both Device IDs are part of

the physical Communications Hub. The relationship between these two Device IDs is set via Service Request 12.2 - Device Pre-notification. See Annex section 12.2.

2. As defined in CHTS, the CHF Device Log can include a maximum of sixteen Devices, with each type limited to a maximum number of Devices. Please note the CHF will reject Commands to add more Devices of a type for which it has already reached the maximum number. Any Devices no longer required should be removed from the CHF Device Log to avoid this. The maximum number of Devices by Device Type are:
 - a. Four ESME
 - b. One GSME
 - c. One GPF
 - d. Seven Type 1 Devices (including a minimum of two PPMIDs)
 - e. Three Type 2 Devices (IHD and / or CAD)
3. This Service Request's Business Target ID is the Communications Hub Function ID and the Device ID of the Device to be added to or removed from the HAN (one Device ID per Request) is included in the Service Request. The Device Type is not included in the Service Request, because the DCC Data Systems can identify it from the Device ID.
 - a. A Device must have been Pre-notified via Service Request 12.2 - Device Pre-notification (see Annex section 12.2) before it can be added to a CHF Whitelist via this Service Request.
4. All Service Requests to add a Device to the HAN Device Log have to include the Join Time Period, which is the maximum time the CHF will wait for the Device to join the HAN. This has to be set to a value between 1 and 3600 seconds (1 hour). For GSME, the Join Time Period value needs to reflect the extended latency due to the fact that the Meter is 'Sleepy', i.e. its HAN radio will not be active most of the time.
5. If the Device being added to the whitelist is an ESME, GSME, HCALCS or PPMID, its status must be 'Pending'. As an exception it will also be possible to add one of these Devices if its status is 'Whitelisted', but it will be the DCC Service User responsibility to ensure it is added to the same CHF whitelist and, where applicable, associated to the same MPxN(s) as when the Request was sent for the Device being in a status of 'Pending'
6. If the Device being added to the whitelist is an ESME, GSME or HCALCS, validation checks are made by the DCC to ensure that the identity of the sender matches the organisation registered against one of the MPxNs specified within the Service Request, by checking the DCCs registration database, i.e.

- a. For ESME / HCALCS. The Service Request includes an Import MPxN (Primary Import MPAN) and optionally a Secondary Import MPAN and or an Export MPAN and the sender's identity matches the organisation registered against each of the MPANs included in the Service Request
 - b. For GSME. The Service Request includes an MPRN and the sender's identity matches the organisation registered against the Import MPxN (MPRN)
7. If the Device being added to the whitelist is an IHD and the Command is for Local Delivery only (Command Variant = 2) the authorisation registration check (E4) is not applicable. See Main Document of this documentation set section 7.4
8. Because Access Control is based on registration data, Meters have to be added before Type 1 and Type 2 Devices and removed after them.
9. If the Device is being removed from the whitelist, all its joins to other Devices in the same whitelist should have previously been removed.
10. This Service Request can be submitted to the DCC Data Systems by the Import Supplier registered to the ESME / GSME MPxN(s) to be added to or removed from the whitelist as well as by Other Users (CAD Devices only). Because these User Roles are URPs to the Communications Hub Function, the DSP Access Control Broker submits the Commands to the Device on their behalf and the CHF responses and Device Alerts are also returned to the DSP Access Control Broker.
11. A Service Response is returned to the DCC Service User to indicate if the Service Request was successful or not.

If the DCC Service User calls the Request Type "Add" variant of 8.11, then a successful Command Response indicates that the details provided in the Service Request have been successfully added to the CHF Device Log and the CHF is waiting for the Device to join the HAN. This triggers the following actions;

 - a) The DCC Data Systems will set the status of the Device to be added within the Service Request to 'Whitelisted' in the Smart Metering Inventory
 - b) For ESME and GSME, the association between the Meter Device ID and its MPxN(s) is recorded in the Smart Metering Inventory and DCC Alert N16 is sent to the Meter's Registered Network Operator. Only the Primary Import MPAN, the Export MPAN and the MPRN will be used for registration checks
 - c) The DCC Data Systems shall wait for a timeout period to receive the updated Device Log from the CHF. This updated CHF Device Log (received via a Device Alert to the ACB) will confirm that the specified Device has been successfully connected onto the HAN. The timeout period that the DCC Data Systems shall wait for the Device Alert is defined as "JoinTimePeriod" as

	<p>specified within the Service Request + a configurable network transmission time to allow delivery of the Device Alert over the SMWAN</p> <p>d) If the CHF Device Log confirming communications have been established with the Device specified in the Service Request is received within the timeout period, then the DCC Data Systems informs the DCC Service User via a DCC Alert N24, and;</p> <p>I. For ESME, GSME, HCALCS and PPMID, the Device Status is set to 'Installed Not Commissioned' in the Smart Metering Inventory</p> <p>e) If the CHF Device Log confirming communications have been established with the Device specified in the Service Request is not received within the timeout period, then the DCC Data Systems informs the DCC Service User via a DCC Alert N25</p> <p>If the Service User calls the Request Type "Add" variant of 8.11, then an unsuccessful Command Response indicates that the CHF did not execute the command, the details provided in the Service Request have NOT been successfully added to the CHF Device Log and no further actions are triggered by the DCC Data Systems.</p> <p>If the Service User calls the Request Type "Remove" variant of 8.11, then the Command Response indicates whether the specified Device provided in the Service Request was either successfully or unsuccessfully removed from the CHF Device Log. Upon receipt of a successful Response resulting from the Update HAN Device Log Service Request to Remove a Device, the DCC shall where the Device Status is currently 'Whitelisted', set the Device status to 'Pending'. No additional DCC Alerts are produced by the DCC Data Systems as the Service Response contains all the required details for the Sender of the Service Request and any DCC Alerts would duplicate information already received as part of the Service Response.</p> <p>12. Updates to the Smart Metering Inventory are carried out before the Service Response is generated. The other actions detailed above are post-processing steps after the Service Response has been sent to the User.</p>
GBCS Cross Reference	Communications Hub Function
GBCS Message Code	Request Type Add – 0x0001 Request Type Remove – 0x0002
GBCS Use Case	Request Type Add – CCS01 Request Type Remove – CCS02
GBCS Use Case Name	Request Type Add – Add Device to CHF device log Request Type Remove – Remove device from CHF device log

SMETS1 Applicability	Yes (Add and Remove)
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. The N25 DCC Alert and use of "Whitelisted" Device Status to indicate potentially unsuccessful additions to the HAN Device Log are not applicable to SMETS1 Devices. 2. CHTS does not apply to SMETS1 CHF Devices; SMETS1 limits on Device numbers may be different. 3. HCALCS Devices are not applicable to SMETS1. 4. Local Delivery is not applicable. 5. This section for SMETS1 Devices supersedes the steps under SMETS2 or later narrative step 11. <p>If the DCC Service User calls the Request Type "Add" variant of 8.11 then a successful SMETS1 Response from the S1SP to the DCC Data Systems indicates that the details provided in the Service Response have been successfully processed and that the device is assumed to be joined to the HAN. The timeout period for the DCC Data Systems while waiting for the SMETS1 Response shall be long enough to include a 15 minute timeout for the target Device to join to the CHF; note that the "JoinTimePeriod" as specified within the Service Request is not used by the DSP for SMETS1 Devices. The successful response triggers the following actions (using the same step numbers as for SMETS2 or later Devices);</p> <ol style="list-style-type: none"> a) <i>(There is no Whitelisted state for SMETS1 devices)</i> b) For ESME and GSME, the association between the Meter Device ID and its MPxN(s) is recorded in the Smart Metering Inventory and DCC Alert N16 is sent to the Meter's Registered Network Operator. Only the Primary Import MPAN, the Export MPAN and the MPRN will be used for registration checks c) <i>(There is no separate alert to indicate the join to the HAN is complete for SMETS1 devices.)</i> d) In addition to the DCC Data Systems informing the DCC Service User of the successful outcome via the Countersigned SMETS1 Response to the 8.11 Service Request, a DCC Alert N24 is issued for compatibility with SMETS2 or later Device processing, and; <ol style="list-style-type: none"> a. For ESME, GSME and PPMID, the Device Status is set to 'Installed Not Commissioned' in the Smart Metering Inventory e) <i>(There is no equivalent of a failure to receive a Device Alert at this point, since only the SMETS1 Response is required and there is no Device Alert in this process).</i> <p>If the Service User calls the Request Type "Add" variant of 8.11, then an unsuccessful response from the S1SP indicates that the device was not linked to the CHF. This will be forwarded to the DCC Service User in the normal way and no further actions are triggered by the DCC Data Systems.</p>

	<p>If an S1SPAlert indicating failure to process the 8.11 request is received from the S1SP then this will be forwarded to the DCC Service User as DCC Alert N55 in the normal way and no further actions are triggered by the DCC Data Systems.</p> <p>If the Service User calls the Request Type “Remove” variant of 8.11, then the Command Response indicates whether the specified Device provided in the Service Request was either successfully or unsuccessfully removed from the CHF Device Log. No additional DCC Alerts are produced by the DCC Data Systems as the Service Response contains all the required details for the Sender of the Service Request and any DCC Alerts would duplicate information already received as part of the Service Response.</p>
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Table 96 Update HAN Device Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.11.1 Service Request

8.11.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateHANDeviceLog XML element defines this Service Request and it contains the details the Communications Hub Function requires to add a Device to or remove it from its Whitelist and, for Future Dated Requests, the Execution Date Time.

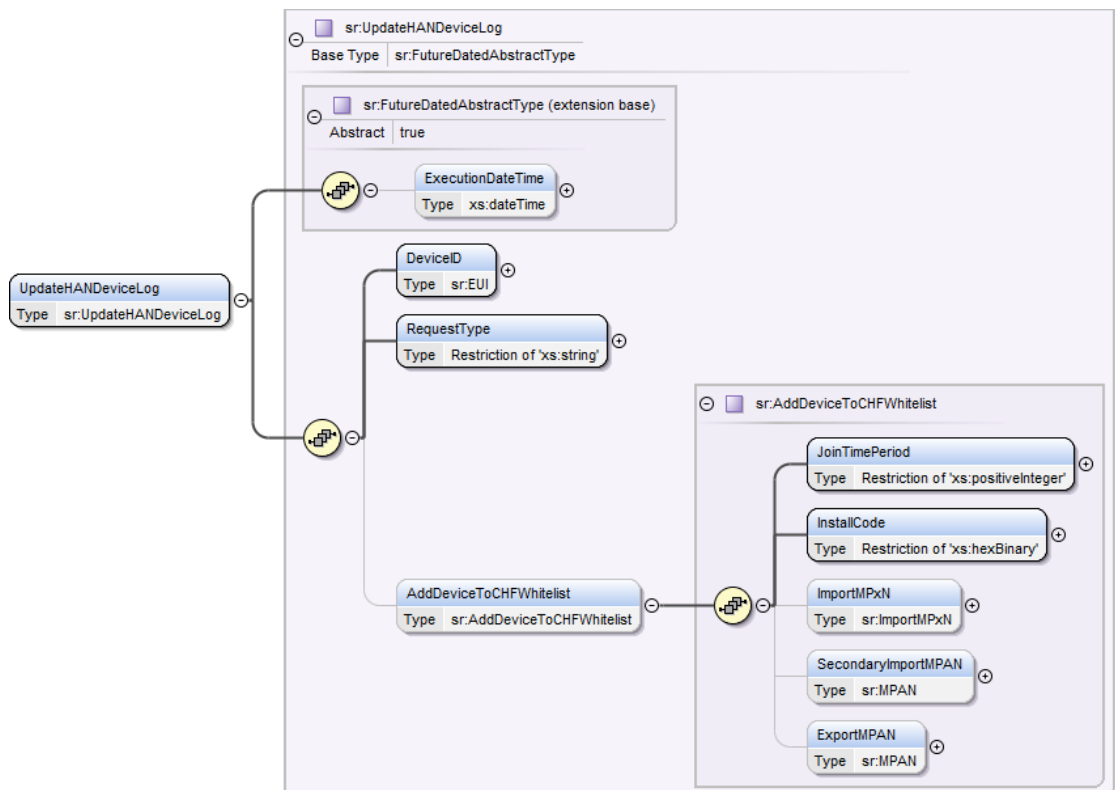


Figure 51 Update HAN Device Log Service Request Structure

8.11.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC Service User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
DeviceID	Device ID of a Device to be added to the Communications Hub Function Whitelist or removed from it	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
RequestType	Indicates whether the request is to add or remove the Device from the Communications Hub Function Whitelist Valid Set: <ul style="list-style-type: none"> Add Remove 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
AddDeviceToCHFWhitelist	List of data items required to add the Device to the Communications Hub Function Whitelist	sr:AddDeviceToCHFWhitelist (see section 8.11.1.3)	Device to be added to Whitelist: Yes Device to be removed from Whitelist: N/A	None	N/A	Non-Sensitive

Table 97 Update HAN Device Log Service Request Data Items

8.11.1.3 AddDeviceToCHFWhitelist Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
JoinTimePeriod	Defines the time period in seconds during which the Communications Hub Function will permit the device being added to join the HAN and communicate with the Communications Hub Function SMETS1: this value should be set to a maximum of 15 minutes to align with DSP timeout behaviour	Restriction of xs:positiveInteger (min Inclusive = 1, max Inclusive = 3600)	Yes	None	Seconds	Non-Sensitive
InstallCode	Installation Credentials Valid set: <ul style="list-style-type: none"> SMETS2: Install code of 16 octets; note that device behaviour is not defined if an install code of less than 16 octets is used, and from DUIS v3.0 the XML schema allows a lower minimum length, so the DCC Service User is advised to ensure that the install code is exactly 16 bytes. From DUIS v4.0 this will be validated by the DSP SMETS1: Install code in the range 6 to 16 octets 	Restriction of xs:hexBinary (minLength = 6, maxLength = 16)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ImportMPxN	The reference number identifying an Import electricity or a gas metering point	sr:ImportMPxN (Restriction of xs:string (minLength = 1, maxLength = 13))	ESME, HCALCS ⁴ and GSME: Yes ¹ Else: N/A	None	N/A	Non-Sensitive
SecondaryImportMPAN	The reference number identifying a Twin Element Import electricity secondary metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Twin ESME, HCALCS ⁴ : No ² Else: N/A	None	N/A	Non-Sensitive
ExportMPAN	The reference number identifying an Export electricity metering point	sr:MPAN (Restriction of xs:string (minLength = 13, maxLength = 13))	Export ESME, HCALCS ⁴ : No ³ Else: N/A	None	N/A	Non-Sensitive

Table 98 Update HAN Device Log Service Request – AddDeviceToCHFWhitelist Data Items

¹ Used for registration checks

² Not used for registration checks

³ If Export capability is used it must be provided, because it is used for registration checks

⁴ N/A to SMETS1

8.11.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No
SMETS1	No	Yes	No	DSP	No

Table 99 Update HAN Device Log Modes of Operation

8.11.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 100 Update HAN Device Log Command Variant Values

8.11.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation):

Validation Check	Process	Response Code
Is the Device ID of the Device to be added to the CHF Whitelist valid?	If the Request Type is 'Add', check that the Device ID of the Device to be added to the CHF Whitelist is not already associated with another CHF	E081101
Is the Device ID of the Device to be removed from the CHF Whitelist valid?	If the Request Type is 'Remove', check that the Device ID of the Device to be removed is one of the Devices in the CHF Whitelist	E081102
Is the Device Type of a Device being added to the Whitelist valid?	Check that the Device Type of a Device being added to the Whitelist is one of: <ul style="list-style-type: none"> • ESME • GSME • HCALCS² • PPMID • IHD • CAD 	E081104
Is the Device Status of a Device being added to the Whitelist valid?	For those Devices that have a Device Status, check that if the Device is being added to the Whitelist its Device Status is 'Pending' or 'Whitelisted'	E081105
Is the data in the Request consistent?	Check that if the Request Type is: <ul style="list-style-type: none"> • 'Add'. The Request includes the Add Device CHF Whitelist element • 'Remove'. The Request doesn't include the Add Device CHF Whitelist element 	E081106
Does the Device ID of the Device being added to or removed from the Whitelist exist?	Check that the Device ID of the Device being added to or removed from the Whitelist exists in the Smart Metering Inventory	E081107
Is the DCC Service User authorised to Add the Device to or remove it from the HAN Device Log?	If the DCC Service User Role is 'OU', check that the Device ID Device Type is CAD	E081108
Does the Service Request include correct MPxNs? ¹	If the Service Request is adding an ESME, GSME or HCALCS, check that: <ul style="list-style-type: none"> • For ESME / HCALCS. The Service Request includes an Import MPxN (Primary Import MPAN) and optionally a Secondary Import MPAN and / or an Export MPAN and the sender's identity matches the organisation registered against each of the MPANs included in the Service Request • For GSME. The Service Request includes an MPRN and the sender's identity matches the organisation registered against the Import MPxN (MPRN) 	E081109

Validation Check	Process	Response Code
Are the MPANs of the correct type?	<p>If the Service Request includes one or more MPANs, for those included check that:</p> <ul style="list-style-type: none"> The Import MPxN (Primary Import MPAN) contains an Import MPAN The Secondary Import MPAN contains an Import MPAN The Export MPAN contains an Export MPAN 	E081110
Is the length of the Install Code valid for a SMETS2 or later Device?	Check that if the target device is SMETS2 or later then the Install Code is exactly 32 hexadecimal characters (representing 16 octets) in length.	E081111

Table 101 Update HAN Device Log Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E4 only for Request Type 'Add' (please note the check associated to Response Code E4 is applicable to Request Type 'Remove'). See Main Document of this documentation set section 7.4

² N/A to SMETS1

8.11.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdateHANDeviceLog>
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
<RequestType>Add</RequestType>
<AddDeviceToCHFWhitelist>
  <JoinTimePeriod>600</JoinTimePeriod>
  <InstallCode>0123456789ABCDEF0123456789ABCDEF</InstallCode>
  <ImportMPxN>1234567890123</ImportMPxN>
</AddDeviceToCHFWhitelist>
</UpdateHANDeviceLog>
```

Figure 52 Update HAN Device Log Service Request (Body) Format

8.11.2 Responses

- The response messages for an "Update HAN Device Log" request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;
 - Acknowledgement
 - Service Response (from Device) – GBCSPayload
 - Command for Local Delivery
 - Parse Output / SMETS1 Response

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.11.2.1 Unsuccessful Response

Response Code	Response Code Name	Response Code Type	Description
E081101	Failed Validation – Device to be added already associated with another CHF	Error	The Device ID of a Device to be added to the CHF Whitelist is already associated with another CHF
E081102	Failed Validation – Device to be removed not in CHF Whitelist	Error	The Device ID of a Device to be removed is not included in the CHF Whitelist
E081104	Failed Validation – Invalid Device Type to add to whitelist	Error	The Device Type of the Device to be added to the whitelist is invalid, e.g. if it is a Communications Hub Function or Gas Proxy Function
E081105	Failed Validation – Invalid status of Device to add to whitelist	Error	The Status of the Device being added to the Whitelist is not 'Pending' or 'Whitelisted'
E081106	Failed Validation – Inconsistent Request	Error	If the Request Type is: <ul style="list-style-type: none"> 'Add'. It doesn't include the Add Device CHF Whitelist element 'Remove'. It does include the Add Device CHF Whitelist element
E081107	Failed Validation – Invalid Device ID	Error	The Device ID of the Device to be added to or removed from the Whitelist doesn't exist
E081108	Failed Authorisation – Invalid Service User Role for Device Type	Error	The DCC Service User Role is not authorised to add this Device Type to the HAN Device Log or remove it from it
E081109	Failed Authorisation – DCC Service User / MPxN mismatch	Error	The DCC Service User is not the registered organisation (Import Supplier and, where applicable Export Supplier) of all of the MPxNs in the Service Request
E081110	Failed Authorisation – Invalid MPAN Type	Error	The Service Request contains an Invalid MPAN Type, e.g. the Import MPxN is populated with an Export MPAN
E081111	Failed Validation – Invalid Install Code length	Error	The Service Request contains an Install Code which is not exactly 32 hexadecimal characters (representing 16 octets) in length and the target device is SMETS2.

Table 102 Failed Update HAN Device Log Service Request Response Codes

8.11.2.2 Parse Output / SMETS1 Response Format

The response to this request returns only status without any substantial payload. The XML type is UpdateHANDeviceLogRsp.

Parse Responses: Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

SMETS1 Responses: Please see Annex section 19.7 for a description of how status-only responses are represented in the DUIS XML schema.

8.11.2.2.1 Specific Header Data Items

Data Item	Add Device Response	Remove Device Response
GBCSHexadecimalMessageCode	0001	0002

Data Item	Add Device Response	Remove Device Response
<i>GBCS Use Case Number (for information only - not in header)</i>	CCS01	CCS02
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Add Device to CHF device log</i>	<i>Remove device from CHF device log</i>
SupplementaryRemotePartyID	Present	Present
SupplementaryRemotePartyCounter	Present	Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 103 - Update HAN Device Log Parse/SMETS1 Response Header Data Items

8.12 Restore HAN Device Log (8.12)

This Service Request maps to two GBCS Use Cases and each Use Case requires its own Request ID.

Therefore the 8.12 Service Request has been broken into two parts: 8.12.1 (Communications Hub Function Device Log) and 8.12.2 (Gas Proxy Function Device Log).

8.12.1 Restore HAN Device Log (8.12.1)

Service Request Name	RestoreHANDeviceLog
Service Reference	8.12
Service Request Variant Name	RestoreHANDeviceLog
Service Reference Variant	8.12.1
Service Request Objective	To replace the Device log of a specified Communications Hub Function as specified in CHTS with the Device Log of a specified previous Communications Hub Function's Device Log stored within the DCC Data Systems.
Business Context Statement	On replacement of a Communications Hub (e.g. due to failure) restoration of the backup of the Communications Hub Function data is required in order to restore the HAN.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	1. This Service Request can be submitted to the DCC Data Systems by the Import Supplier registered to the ESME / GSME MPxN(s) in the old Communications Hub Function whitelist. Because these User Roles are URPs to the Communications

	<p>Hub Function, the DSP Broker submits the Commands to it on their behalf</p> <p>2. This Service Request Business Target ID is the new Communications Hub Function ID (Device ID). This Device Status must not be one of:</p> <ul style="list-style-type: none"> a. 'Decommissioned' b. 'Pending' c. 'Suspended' d. 'Withdrawn' <p>3. When a Communications Hub is physically replaced, the following Service Requests have to be sent:</p> <ul style="list-style-type: none"> a. 8.12.1 - Restore HAN Device Log (see section 8.12.1). To restore the HAN, the Communications Hub Function ID has to be replaced and the whitelist (Device Log) of the old one restored to the new ID b. 8.12.2 – Restore GPF Device Log (see section 8.12.2). Only applicable if the CHF whitelist includes Gas equipment. It can only be sent following successful completion of Service Request 8.12.1 - Restore HAN Device Log (see section 8.12.1) to restore the Gas Proxy Device Log from the Old Gas Proxy ID to that of the new ID (Business Target ID associated to the new CHF in 8.12.1) c. 8.3 – Decommission Device. To update the status of the old CHF and its associated GPF within the Smart Metering Inventory to a status of 'Decommissioned' <p>4. To restore the HAN Device Log to the new Communications Hub Function Device ID, the DCC Data Systems will take the old Device ID whitelist backup from its records and include it in the Command sent to the new Communications Hub Function Device ID. If the Command is successful, the DCC Data Systems will associate the Whitelist to the new Communications Hub Function Device ID</p> <p>5. On successful completion, DCC Alert N30 will be sent to the other Registered Import Supplier, if applicable</p>
GBCS Cross Reference	Communications Hub Function
GBCS Message Code	0x0003
GBCS Use Case	CCS03
GBCS Use Case Name	Restore CHF Device Log

SMETS1 Applicability

No

Table 104 Restore HAN Device Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.12.1.1 Service Request

8.12.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RestoreHANDeviceLog XML element defines this Service Request and it contains the old Communications Hub Function Device ID.

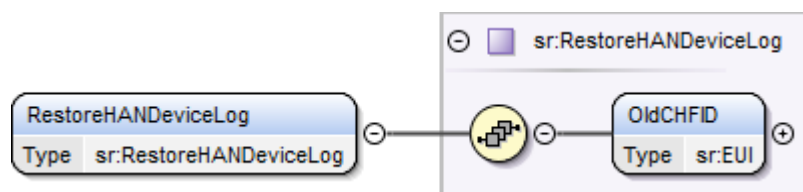


Figure 53 Restore HAN Device Log Service Request Structure

8.12.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OldCHFID	Device ID of the Old Communications Hub Function being replaced	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 105 Restore HAN Device Log Service Request Data Items

8.12.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 106 Restore HAN Device Log Modes of Operation

8.12.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 107 Restore HAN Device Log Command Variant Values

8.12.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Old CHF Device ID existence validation):

Validation Check	Process	Response Code
Is the Old CHF ID Device Type a Communications Hub Function?	Check that the Old CHF ID corresponds to a Device of Type Communications Hub Function	E081202
Is the Business Target ID Device Status valid?	Check that the Device Status of the new Communications Hub Function is not one of: <ul style="list-style-type: none"> Decommissioned Pending Suspended Withdrawn 	E081204
Is the DCC Service User Authorised to access the Old CHF ID? ¹	Check that the DCC Service User is a registered Import Supplier to one of the MPxNs associated with Device(s) in the Old CHF ID Whitelist	E081205

Table 108 Restore HAN Device Log Service Request Validation

¹ This check replaces the generic authorisation registration check (E4), which in this case is not applicable to the Business Target ID

8.12.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RestoreHANDeviceLog>
<OldCHFID>13-35-AA-BB-CC-DD-EE-FF</OldCHFID>
</RestoreHANDeviceLog>
```

Figure 54 Restore HAN Device Log Service Request (Body) Format

8.12.1.2 Responses

The response messages for a “Restore HAN Device Log” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.12.1.2.1 Unsuccessful Response

Response Code	Response Code Name	Response Code Type	Description
E081202	Failed Validation – Invalid Old CHF ID Device Type	Error	The Old CHF ID doesn't correspond to a Device of Type Communications Hub Function

Response Code	Response Code Name	Response Code Type	Description
E081204	Failed Validation – Invalid new Communications Hub Function Device Status	Error	The Device Status of the new Communications Hub Function is invalid
E081205	Failed Authorisation – DCC Service User unable to access Old CHF ID	Error	The DCC Service User is not a registered Import Supplier to any of the MPxNs associated with Device(s) in the Old CHF ID Whitelist

Table 109 Failed Restore HAN Device Log Service Request Response Codes

8.12.1.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is RestoreHANDeviceLogRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

8.12.1.2.2.1 Specific Header Data Items

Data Item	Response
GBCSHexadecimalMessageCode	0003
<i>GBCS Use Case Number (for information only - not in header)</i>	CCS03
<i>GBCS Use Case Name (for information only - not in header)</i>	Restore CHF Device Log
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 110 - Restore HAN Device Log Parse Response Header Data Items

8.12.2 Restore Gas Proxy Function Device Log (8.12.2)

Service Request Name	RestoreGPFDDeviceLog
Service Reference	8.12
Service Request Variant Name	RestoreGPFDDeviceLog
Service Reference Variant	8.12.2
Service Request Objective	To replace the Device log of a specified Gas Proxy Function (GPF) Function as specified in CHTS with the Device Log of a specified previous Gas Proxy Function's Device Log stored within the DCC Data Systems.

Business Context Statement	On replacement of a Communications Hub (e.g. due to failure) restoration of the backup of the Gas Proxy Function data is required in order to restore the new Gas Proxy Function Device Log.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request can be submitted to the DCC Data Systems by the Import Supplier registered to the ESME / GSME MPxN(s) in the Communications Hub Function whitelist of the CHF associated to the Business Target ID GPF. Because the GBCS Use Case is only available to the Access Control Broker, the DSP Access Control Broker submits the Commands to it on their behalf This Service Request Business Target ID is the new Gas Proxy Function ID (Device ID). This Device Status must not be one of: <ol style="list-style-type: none"> 'Decommissioned' 'Pending' 'Suspended' 'Withdrawn' When a Communications Hub is physically replaced, the following Service Requests have to be sent: <ol style="list-style-type: none"> 8.12.1 - Restore HAN Device Log (see section 8.12.1). To restore the HAN, the Communications Hub Function ID has to be replaced and the whitelist (Device Log) of the old one restored to the new ID 8.12.2 – Restore GPF Device Log (see section 8.12.2). Only applicable if the CHF whitelist includes Gas equipment. It can only be sent following successful completion of Service Request 8.12.1 - Restore HAN Device Log (see section 8.12.1) to restore the Gas Proxy Device Log from the Old Gas Proxy ID to that of the new ID (Business Target ID associated to the new CHF in 8.12.1) 8.3 – Decommission Device. To update the status of the old CHF and its associated GPF within the Smart Metering Inventory to a status of 'Decommissioned' To restore the Gas Proxy Function Device Log to the new Gas Proxy Function Device ID, the DCC Data Systems will take the old Device ID Gas Proxy Device Log backup from its records and include it in the Command sent to the new Communications Hub Function Device ID.

	<p>a. If the Command is successful the DCC Data Systems will:</p> <p>i. Associate the Device Log to the new Gas Proxy Function Device ID</p> <p>5. The DCC Service User will also need to:</p> <p>a. Unjoin / join the GSME to the new GPF once the GPF Device Log has been restored by sending the appropriate service request (8.8.2 or 8.7.2 respectively). If not, then the GSME will still have the old GPF details contained within its Device Log.</p> <p>6. On successful completion, DCC Alert N31 will be sent to the other Registered Import Supplier, if applicable</p>
GBCS Cross Reference	Gas Proxy Function
GBCS Message Code	0x008C
GBCS Use Case	GCS59
GBCS Use Case Name	Restore GPF Device Log
SMETS1 Applicability	No

Table 111 Restore Gas Proxy Function Device Log Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.12.2.1 Service Request

8.12.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RestoreGPFDeviceLog XML element defines this Service Request and it contains the old Gas Proxy Function Device ID.

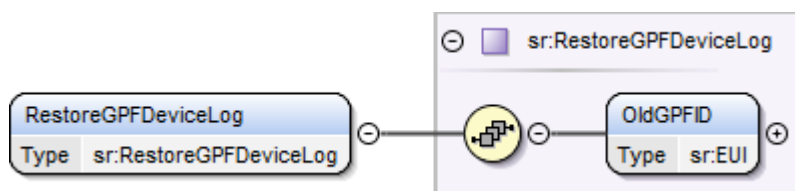


Figure 55 Restore Gas Proxy Function Device Log Service Request Structure

8.12.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OldGPFID	Device ID of the Old Gas Proxy Function being replaced	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 112 Restore Gas Proxy Function Device Log Service Request Data Items

8.12.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 113 Restore Gas Proxy Function Device Log Modes of Operation

8.12.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 114 Restore Gas Proxy Function Device Log Command Variant Values

8.12.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Old GPF Device ID existence validation):

Validation Check	Process	Response Code
Is the Old GPF ID Device Type a Gas Proxy Function?	Check that the Old GPF ID corresponds to a Device of Type Gas Proxy Function	E081221
Is the Business Target ID Device Status valid?	Check that the Device Status of the new Gas Proxy Function is not one of: <ul style="list-style-type: none"> Decommissioned Pending Suspended Withdrawn 	E081222
Is the DCC Service User Authorised to access the CHF associated to the Business Target ID ¹	Check that the DCC Service User is a registered Import Supplier to one of the MPxNs associated with Device(s) in the CHF ID Whitelist associated to the Business Target ID GPF	E081223

Table 115 Restore Gas Proxy Function Device Log Service Request Validation

¹ This check replaces the generic authorisation registration check (E4), which in this case is not applicable to the Business Target ID

8.12.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RestoreGPFDeviceLog>
  <OldGPFID>57-68-AA-BB-CC-DD-EE-FF</OldGPFID>
</RestoreGPFDeviceLog>
```

Figure 56 Restore Gas Proxy Function Device Log Service Request (Body) Format

8.12.2.2 Responses

The response messages for a “Restore Gas Proxy Function Device Log” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

8.12.2.2.1 Unsuccessful Response

Response Code	Response Code Name	Response Code Type	Description
E081221	Failed Validation – Invalid Old GPF ID Device Type	Error	The Old GPF ID doesn't correspond to a Device of Type Gas Proxy Function
E081222	Failed Validation – Invalid new Gas Proxy Function Device Status	Error	The Device Status of the new Gas Proxy Function is invalid
E081223	Failed Authorisation – DCC Service User unable to access CHF associated to the GPF	Error	The DCC Service User is not a registered Import Supplier to any of the MPxNs associated with Device(s) in the CHF ID Whitelist associated to the Business Target ID GPF

Table 116 Failed Restore Gas Proxy Function Device Log Service Request Response Codes

8.12.2.2.2 Parse Output Format

8.12.2.2.2.1 Format - RestoreGPFDeviceLogResp

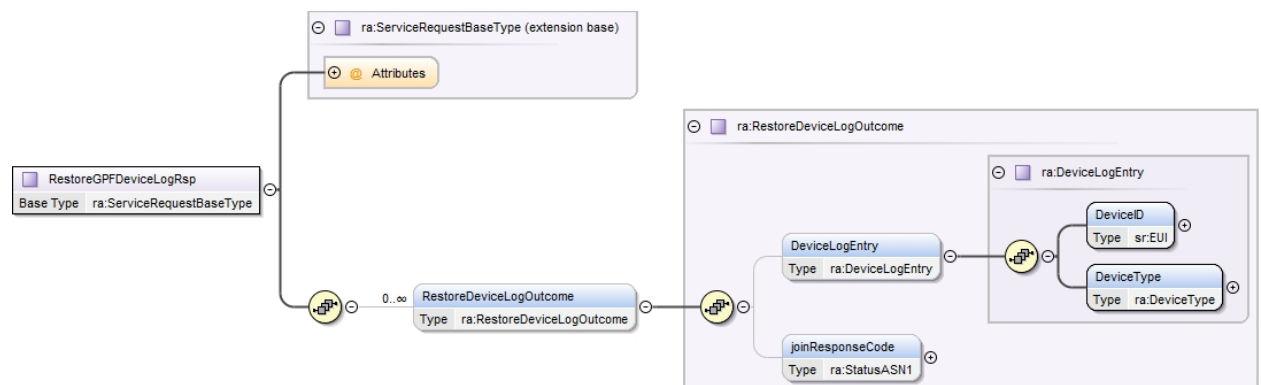


Figure 57 – Restore Gas Proxy Function Device Log Parse Response Structure

8.12.2.2.2.2 Specific Header Data Items

Data Item	Gas Response
GBCSHexadecimalMessageCode	008C
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>GCS59</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Restore GPF Device Log</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 117 - Restore Gas Proxy Parse Response Header Data Items

8.12.2.2.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
RestoreDeviceLogOutcome	There will be one present corresponding to each Device. The element returns a DeviceLogEntry and join response code giving the outcome of the restore.	DeviceLogEntry – see below	None	N/A	Non-Sensitive
DeviceLogEntry	A Device ID and Type for which there is a join response code.	See 8.9.2.2.3.1	None	N/A	Non-Sensitive
joinResponseCode	Outcome of the request for this particular device Valid Set: <ul style="list-style-type: none"> success incompatibleWithExistingEntry deviceLogFull writeFailure 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive

Table 118 - Restore Gas Proxy Function Device Log Parse Response Body Data Items

8.12.2.2.2.4 Sample Response body

```
<ra:RestoreGPFDeviceLogRsp MessageSuccess="false">
  <ra:RestoreDeviceLogOutcome>
    <ra:DeviceLogEntry>
      <ra:DeviceID>99-00-AA-BB-CC-DD-EE-FF</ra:DeviceID>
      <ra:DeviceType>ESME</ra:DeviceType>
    </ra:DeviceLogEntry>
    <ra:joinResponseCode ResponseCode="4">
      <ra:ASN1Status>deviceLogFull</ra:ASN1Status>
    </ra:joinResponseCode>
  </ra:RestoreDeviceLogOutcome>
</ra:RestoreGPFDeviceLogRsp>
```

Figure 58 - Restore Gas Proxy Function Device Log Parse Response Sample

8.13 Return Local Command Response (8.13)

Service Request Name	ReturnLocalCommandResponse
----------------------	----------------------------

Service Reference	8.13
Service Request Variant Name	ReturnLocalCommandResponse
Service Reference Variant	8.13
Service Request Objective	To return to the DCC the response from a Device obtained as a result of a locally executed Command resulting from DCC Local Command Services.
Business Context Statement	A DCC Service User requests Local Command Service from DCC so that commands are delivered to them for loading to a HHT. The command is executed by the Device locally and the HHT receives the responses from the Smart Metering Equipment. The DCC Service user should then use this service to return responses to DCC as applicable.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC
Service Request Narrative	<ol style="list-style-type: none"> This Service Request has to be used when the result of a Command applied locally has a DCC Data Systems or Public Key Repository Impact. <ol style="list-style-type: none"> In most cases the Device returns the result of the Command in the Command Response but, in some, e.g. 8.11 Update HAN Device Log (see section 8.11) the result is included in a Device Alert This Service Request has to be used when a successful Device Response for a Command for each of the Service Requests in Table 120 is applied Locally by the DCC Service Users is returned to them rather than to the DCC Data Systems via the SM WAN This Service Request also has to be used when any of the Device Alerts in Table 121 associated to Commands applied Locally for the Service Request in Table 120 is returned to the DCC Service Users rather than to the DCC Data Systems via the SM WAN This Service Request includes: <ol style="list-style-type: none"> For Device Responses, the Original Service Request ID to which the Device Response corresponds, where known. Note the DCC Service User won't be able to match Device Responses that use the URP interaction pattern, i.e. where the Business Target ID is the DSP Access Control Broker. In all cases, the Device GBCS Response (in GBCS format) as would have been received by the DCC

	Data Systems if the Device Response / Alert had been sent via the SM WAN.	
	5. Response Codes E081301 and E081303 should be ignored if they correspond to Commands not applied locally	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 119 Return Local Command Response Service Request

The following table lists the Service Requests Responses needed by the DCC Data Systems and the reasons why:

Service Request Response	DCC Data Systems Actions (Successful Service Request Response)
3.2 - Restrict Access For Change Of Tenancy	<ul style="list-style-type: none"> All active DSP Schedules on that Device owned by an Other User will be automatically deleted by the DCC Data Systems. For each deleted DSP Schedule A DCC Alert N4 will be sent to the Other User that owned it All Other User Future Dated (DSP) Requests not yet sent to the Device will be automatically cancelled by the DCC Data Systems. For each cancelled Future Dated (DSP) Request a DCC Alert N3 will be sent to the Other User that had sent the Service Request.
6.8 - Update Device Configuration (Billing Calendar)	<ul style="list-style-type: none"> The DCC Data Systems will inform the CSPs that require it, to enable them to collect and send Billing Data Log Device Alerts
6.14.1 - Update Device Configuration (Auxiliary Load Control Descriptions)	<ul style="list-style-type: none"> The DSP shall send a DCC Alert N58 to the ESME's ENO to notify them of the ALCS / HCALCS configuration change (where the ENO is a user of DUIS version 3.1 or later).
6.14.2 - Update Device Configuration (Auxiliary Load Control Scheduler)	<ul style="list-style-type: none"> The DSP shall send a DCC Alert N58 to the ESME's ENO to notify them of the ALCS / HCALCS configuration change (where the ENO is a user of DUIS version 3.1 or later).
6.14.3 - Update Device Configuration (Auxiliary Controller Scheduler)	<ul style="list-style-type: none"> The DSP shall send a DCC Alert N58 to the ESME's ENO to notify them of the Auxiliary Controller configuration change

Service Request Response	DCC Data Systems Actions (Successful Service Request Response)
	(where the ENO is a user of DUIS version 3.1 or later).
6.15.1 - Update Security Credentials (KRP)	<ul style="list-style-type: none"> The DCC Data Systems shall update the Smart Metering Inventory with new certificate identifiers as a record of the certificate held in the relevant Trust Anchor Cell on that Device Where the Remote Party whose certificate has been placed on the Device is not the sender of the Service Request, the DCC Data Systems shall send a DCC Alert N42 to the Remote Party whose certificate has been placed on the Device
6.15.2 - Update Security Credentials (Device)	<ul style="list-style-type: none"> The DCC Data Systems will update Public Key Repository with the status of the Certificates
6.21 - Request Handover of DCC Controlled Device	<ul style="list-style-type: none"> The DCC Data Systems shall update the Smart Metering Inventory with the new certificate identifiers as a record of the certificate held in the relevant Trust Anchor Cell on that Device Where the Remote Party whose certificate has been placed on the Device is not the sender of the Service Request, the DCC Data Systems shall send a DCC Alert N42 to the Remote Party whose certificate has been placed on the Device
8.7.1 - Join Service (Critical)	<ul style="list-style-type: none"> The DCC Data Systems will record the association Joining an ESME (Business Target ID) to an HCALCS results in the HCALCS Device Status being set to 'Commissioned' in the Smart Metering Inventory if the status of the ESME it is being joined to is 'Commissioned' Joining an ESME or GSME (Business Target ID) to a PPMID results in the PPMID Device Status being set to 'Commissioned' in the Smart Metering Inventory, unless this was already its Device Status and provided that the status of the ESME or GSME it is being joined to is 'Commissioned'
8.7.2 - Join Service (Non-Critical)	<ul style="list-style-type: none"> The DCC Data Systems will record the association Joining a GSME (Business Target ID) to a GPF results in the GPF Device Status being set to 'Commissioned' in the Smart Metering Inventory if the status of the GSME it is being joined to is 'Commissioned'
8.8.1 - Unjoin Service (Critical)	<ul style="list-style-type: none"> The DCC Data Systems will record the disassociation
8.8.2 - Unjoin Service (Non-Critical)	<ul style="list-style-type: none"> The DCC Data Systems will record the disassociation

Service Request Response	DCC Data Systems Actions (Successful Service Request Response)
8.11 – Update HAN Device Log	<ul style="list-style-type: none"> For Devices being added to / removed from the HAN, the DCC Data Systems will update the Device Status in the Smart Metering Inventory as described in section 8.11 For ESME and GSME Devices being added to the HAN the association between the Meter Device ID and its MPxN(s) is recorded in the Smart Metering Inventory and DCC Alert N16 is sent to the Meter's Registered Operator For Devices being added to the HAN, the DCC Data Systems will a start timeout period (JoinTimePeriod + network transmission time) for the updated Device Log to be returned via a Device Log Backup Device Alert. Subsequent processing related to the Device Log Backup Device Alert is as described in section 8.11.
8.12.1 - Restore HAN Device Log	<ul style="list-style-type: none"> The DCC Data Systems will update the association of the HAN Device Log Backup to the new CHF Device ID If applicable, DCC Alert N30 will be sent to the Registered Import Supplier that didn't send the Request
8.12.2 - Restore Gas Proxy Function Device Log	<ul style="list-style-type: none"> The DCC Data Systems will update the association of the GPF Device Log Backup to the new GPF Device ID If applicable, DCC Alert N31 will be sent to the Registered Import Supplier that didn't send the Request

Service Request Response	DCC Data Systems Actions (Successful Service Request Response)
11.2 Read Firmware Version	<ul style="list-style-type: none"> • if the Target Device Type is ESME, GSME or CHF and the Firmware Version returned by the Device matches an entry on the CPL, but is different from that stored in the SMI, the DCC Data Systems will update the Firmware Version in the SMI to the value returned by the Device. Note that updating the Firmware Version may also update the Device's GBCS Version in the SMI <ul style="list-style-type: none"> ○ If the target Device is CHF, the associated GPF Firmware Version will also be updated ○ If the Firmware Version is valid on the CPL and the Service Request wasn't submitted by the Responsible Import Supplier, DCC Alert N49 will be sent to the Responsible Import Supplier ○ If the Firmware Version is no longer valid on the CPL, the SMI Firmware Version will be updated, but the Device Status will not be set to 'Suspended'. In this case DCC Alert N50 will be sent to the Responsible Import Supplier as a warning • if the Target Device Type is ESME, GSME or CHF and the Firmware Version returned by the Device is invalid (doesn't match an entry on the CPL) DCC Alert N51 will be sent to the Responsible Import Supplier as a warning and the SMI Firmware Version will not be updated • if the Target Device Type is GPF and the GSME Firmware Version returned by the GPF is different from that stored in the SMI, DCC Alert N52 will be sent to the Responsible Import Supplier as a warning and the SMI Firmware Version will not be updated

Service Request Response	DCC Data Systems Actions (Successful Service Request Response)
11.3 - Activate Firmware	<ul style="list-style-type: none"> If the Firmware Version returned by the Device matches an entry on the CPL <ul style="list-style-type: none"> The DCC Data Systems will update the Device ID Firmware version in the Smart Metering Inventory If the Device Status was 'Suspended' and the Firmware Version returned by the Device matches an entry on the CPL with a status of "Current" the DCC Data Systems shall update it to the status it held immediately prior to its Suspension and DCC Alert N29 will be sent to the Responsible Import Supplier and to the Responsible Network Operator If the Firmware Version returned by the Device matches an entry on the CPL with a status of "Removed", the SMI Firmware Version will be updated, but the Device Status will not be set to 'Suspended'. In this case DCC Alert N50 will be sent to the Responsible Import Supplier as a warning If the Firmware Version returned by the Device is invalid (doesn't match an entry on the CPL), DCC Alert N51 will be sent to the Responsible Import Supplier as a warning and the Smart Metering Inventory Firmware Version will not be updated

Table 120 Return Local Command Response – Service Request Responses / Actions

The following table lists the Device Alerts needed by the DCC Data Systems and the reasons why:

Device Alert	DCC Data Systems Action
CHF Device Log Backup Device Alert (GBCS Alert Codes: 0x8F12 – CHF Device Log Updated)	<p>On the receipt of the Device Alert the DCC Data Systems will update the backup of the CHF whitelist it maintains.</p> <p>Subsequent processing related to the Device Log Backup Device Alert is as described in section 8.11.</p>
GPF Device Log Backup Device Alert (GBCS Alert Code: 0x8071)	<p>This Device Alert is returned by the GPF whenever its Device Log changes, except where the change arises from a GPF Device Log Restore Command. I.e. as a result of the successful completion of the following Service Requests:</p> <ul style="list-style-type: none"> 8.7.2 – Join Service (Non-Critical), where the Business Target ID is the GPF. See section 8.7.2 8.8.2 – Unjoin Service (Non-Critical), where the Business Target Id is the GPF. See section 8.8.2 <p>In both cases, the DCC Data Systems will update the backup of the GPF Device Log it maintains</p>

Table 121 Return Local Command Response – Device Alerts / Actions

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.13.1 Service Request

8.13.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ReturnLocalCommandResponse XML element defines this Service Request and contains the original RequestID applied locally to the Device and the GBCS response returned to the DCC Service User by the Device rather than to the DCC Data Systems via the SM WAN.

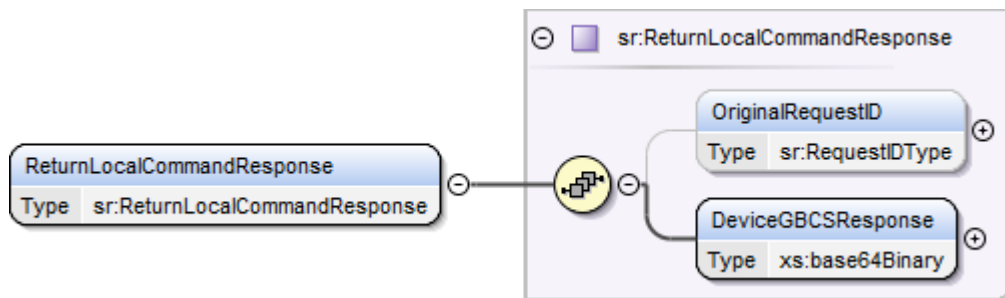


Figure 59 Return Local Command Response Service Request Structure

8.13.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OriginalRequestID	Concatenation of BusinessOriginatorID, BusinessTargetID and OriginatorCounter, separated by ":" in the original Service Request RequestID, e.g. AA-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:1234	sr:RequestIDType (see Annex section 17)	DeviceGBCSResponse is not a Device Alert: No Otherwise: N/A	None	N/A	Non-Sensitive
DeviceGBCSResponse	Message (GBCSPayload) received locally by the DCC Service User and needed by the DCC to perform the relevant actions described in Table 120 if the GBCSPayload contains a Device Response or in Table 121 if it contains a Device Alert	xs:base64Binary	Yes	None	N/A	Non-Sensitive

Table 122 Return Local Command Response Service Request Data Items

8.13.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 123 Return Local Command Response Modes of Operation

8.13.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 124 Return Local Command Response Command Variant Values

8.13.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the OriginalRequestID valid?	If the OriginalRequestID is included in the Request, check that it corresponds to a Command to be Delivered Locally for which no Device Response has been received and for which the DCC Data Systems have to perform the relevant actions described in Table 120	E081301
Does the DeviceGBCSResponse GBCS message ID match the OriginalRequestID?	If the OriginalRequestID is included in the Request, check that the DeviceGBCSResponse corresponds to the OriginalRequestID	E081302
Is the DeviceGBCSResponse valid?	<ul style="list-style-type: none"> If the OriginalRequestID is included in the Request, check that the DeviceGBCSResponse is a successful Device Response If the OriginalRequestID is not included in the Request, check that the DeviceGBCSResponse is a <ul style="list-style-type: none"> Successful Device Response for a Command to be Delivered Locally for which no Device Response has been received and for which the DCC Data Systems have to perform the relevant actions described in Table 120 or <ul style="list-style-type: none"> Device Alert corresponding to a Command for which a Device Alert is expected and for which the DCC Data Systems have to perform the relevant actions described in Table 121 	E081303

Table 125 Return Local Command Response Service Request Validation

8.13.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ReturnLocalCommandResponse>
  <OriginalRequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:50</OriginalRequestID>
  <DeviceGBCSResponse>ZGVmYXVsdA==</DeviceGBCSResponse>
</ReturnLocalCommandResponse>
```

Figure 60 Return Local Command Response Service Request (Body) Format

8.13.2 Responses

The response messages for a "Return Local Command Response" request follow the generic format for all "DCC Only" responses that don't include specific data in the response, the generic responses applicable to this request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.13.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E081301	Failed Validation – Invalid Original Command	Error	The Original Request ID doesn't correspond to a Command to be Delivered Locally for which no Device Response has been received
E081302	Failed Validation – Device Response and Original Command mismatch	Error	The Device Response doesn't correspond to the Original Request ID or it isn't a valid Device Alert Type
E081303	Failed Validation – Invalid Device Response	Error	<ul style="list-style-type: none"> • If the OriginalRequestID is included in the Request, the DeviceGBCS Response is not a successful Device Response • If the OriginalRequestID is not included in the Request, the DeviceGBCS Response is not a <ul style="list-style-type: none"> ○ Device Response for a Command to be Delivered Locally for which no Device Response has been received or <ul style="list-style-type: none"> ○ valid Device Alert Type corresponding to a Command for which a Device Alert is expected and for which the DCC Data Systems have to perform the relevant actions described in Table 121

Table 126 Failed Return Local Command Response Service Request Response Codes

8.14 Communications Hub Status Update

Communications Hub Status Updates are used to provide DCC with information regarding the physical status (including location) of Communications Hubs. Installation and physical maintenance activity of Communications Hubs shall be carried out by Users who shall be required to update DCC on completion of the following activities (each an associated Service Request Variant):

1. Successful Installation of a Communications Hub Device, including connectivity established to the SM WAN (InstallSuccess)
2. Installation of a Communications Hub where connectivity is not established to the SM WAN (InstallNoSMWAN)

3. Communications Hub to be returned to DCC because of a Fault (FaultReturn)
4. Communications Hub to be returned to DCC for a reason other than a Fault, or reporting that a Communications Hub has been lost or stolen (NoFaultReturn)

Where an Energy Supplier successfully installs a Communication Hub at a consumer premise, a Service Request 8.14.1 or 8.14.2 is expected to be sent to the DCC. The choice of Service Request to send is determined by whether or not the Communication Hub was successfully connected to the SM WAN (8.14.1) or not (8.14.2).

Where an Energy Supplier returns a Communication Hub to the DCC, a Service Request 8.14.3 or 8.14.4 is expected to be sent to the DCC. The choice of Service Request to send is determined by the reason for the return of the Communications Hub. This is established on the basis of whether or not the Energy Supplier party is allocating responsibility for the return on the DCC by defining the return as a fault return (8.14.3) or taking responsibility itself for the return and declaring it as a no fault return, or reporting it lost or stolen (8.14.4).

Service Request Variants 8.14.3 and 8.14.4 are for informing DCC of the logistical status of a Communications Hub, but they do not manage the status of Communications Hubs within the Smart Metering Inventory. An Energy Supplier returning a Communications Hub, or reporting it lost or stolen, is also expected to use SR 8.3 (DecommissionDevice) to inform DCC that a Communications Hub is being removed from the consumer premises.

8.14.1 Communications Hub Status Update – Installation Success

Service Request Name	CommunicationsHubStatusUpdate	
Service Reference	8.14	
Service Request Variant Name	CHFInstallSuccess(SMWAN)	
Service Reference Variant	8.14.1	
Service Request Objective	To enable Eligible Users to notify DCC of a successful Communications Hub installation including successful connection to the SM WAN.	
Business Context Statement	The DCC requires that Service Users provide updates upon changes to Communication Hub installation status as set out in the Communications Hub Support Materials.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	Non-critical and non-sensitive GBCS XREF: Not applicable	
Service Request Narrative	1. The Communications Hub Status Update – Installation Success data provided in this Service Request is used to allow DCC to track Communications Hub managed assets and verify CSP Coverage Models against installed meter locations.	
GBCS Cross Reference	Electricity	Gas

GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 127 Communications Hub Status Update - Install Success Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.14.1.1 Service Request

8.14.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its CHFInstallSuccessSMWAN XML element defines this Service Request and contains the DeviceID of the Communications Hub which has been successfully installed over the SM WAN, along with other details.

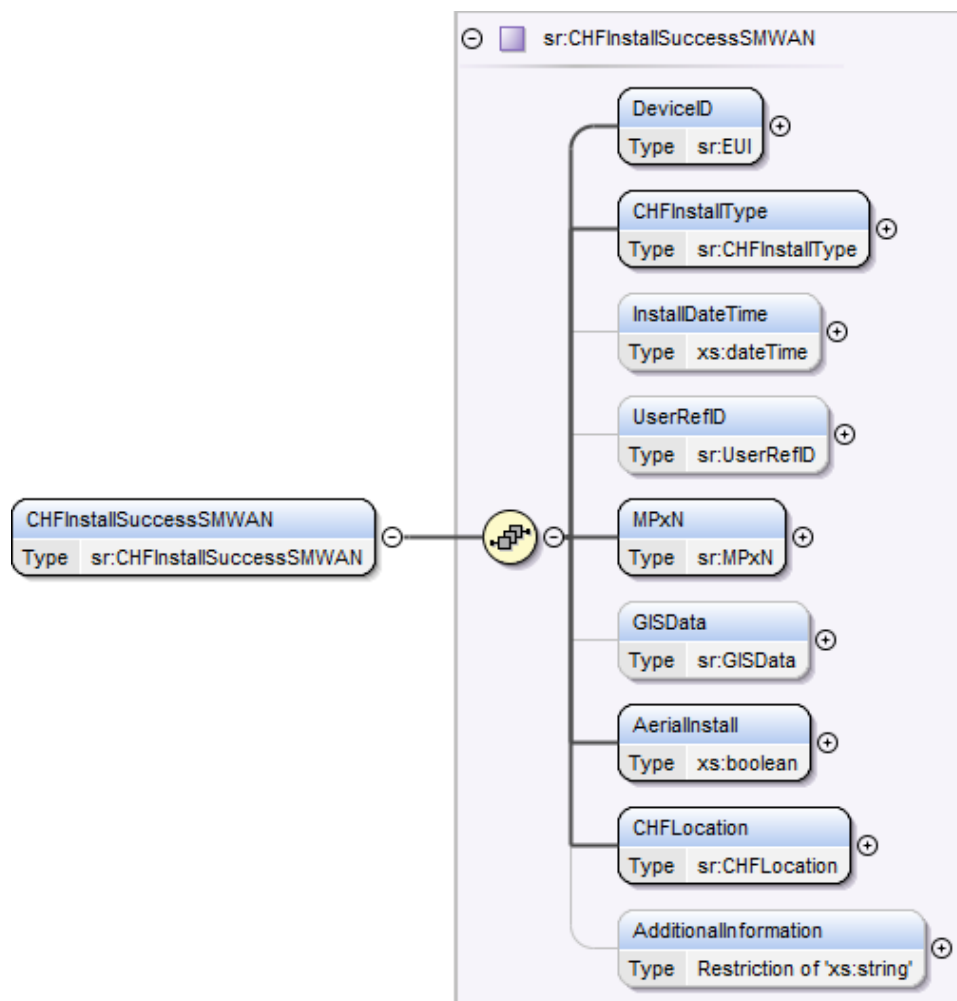


Figure 61 Communications Hub Status Update - Install Success Service Request Structure

8.14.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The DeviceID of the Communications Hub Successfully Installed (CHF)	sr:EUI	Yes	None	N/A	Non-Sensitive
CHFInstallType	Valid Set: <ul style="list-style-type: none"> New CHF Install Replacement CHF Install 	sr:CHFInstallType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
InstallDateTime	An optional field to record the date and time that the CHF was successfully installed	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
UserRefID	An optional field to record User reference for activity or engineer job	sr:UserRefID (Restriction of xs:string (maxLength = 25))	No	None	N/A	Non-Sensitive
MPxN	One MPAN or MPRN associated to the premises For dual fuel installs this value can be populated with either reference number	sr:MPxN Restriction of xs:string (minLength = 1 maxLength = 13)	Yes	None	N/A	Non-Sensitive
GISData	This field is for GPS coordinates which can assist CSPs in diagnosing problems with connecting to CHF Devices. The data will be passed through to CSPs as a string, which should be GPS coordinates in decimal degrees to at least 4 decimal places, range -90.0000 to +90.0000 (latitude) and -180.0000 to +180.0000 (longitude). The string should consist of the latitude value followed by a space and the longitude value, e.g. "+12.1234 -123.1234". The DSP will not validate the format of the field; this description is for guidance only.	sr:GISData (Restriction of xs:string (maxLength = 25))	No	None	N/A	Non-Sensitive
AerialInstall	Indication of whether external aerial installed. Valid set: <ul style="list-style-type: none"> true false 	xs:boolean	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CHFLocation	Installation location within Consumer Premise as further defined through Communications Hubs Support Materials and Installer Training Plans. Valid set: <ul style="list-style-type: none"> Outside Premises Indoors on external wall Deep indoors Basement or Cellar 	sr: CHFLocation (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
AdditionalInformation	An optional field to record any specific User information of Communication Hub installation details or activity	Restriction of xs:string (maxLength = 200)	No	None	N/A	Non-Sensitive

Table 128 Communications Hub Status Update - Install Success Data Items

8.14.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 129 Communications Hub Status Update - Install Success Modes of Operation

8.14.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 130 Communications Hub Status Update - Install Success Command Variant Values

8.14.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the DeviceID specified of a valid Device Type?	Check that the Device Type of a Device being notified is a CHF.	E081401
Is the InstallDateTime in the past?	Check that the InstallDateTime is not a future date.	E081402
Is the DeviceID specified at a compatible status in the Smart Metering Inventory? ¹	Check that the DeviceID of the specified Device is one of the following status values in the Smart Metering Inventory, and if not then raise the Warning Response Code: Commissioned	W081401

Table 131 Communications Hub Status Update - Install Success Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

Note that the generic authorisation check associated to E4 is N/A to this Service Request. See Main Document of this documentation set section 7.4

8.14.1.1.6 Sample Request

A sample Service Request document is as follows:

```
<CHFInstallSuccessSMWAN>  
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>  
<CHFInstallType>New CHF Install</CHFInstallType>  
<InstallDateTime>2006-05-04T18:13:51.00Z</InstallDateTime>  
<UserRefID>UserRefID0</UserRefID>  
<MPxN>1234567890123</MPxN>  
<AerialInstall>false</AerialInstall>  
<CHFLocation>Outside Premises</CHFLocation>  
<AdditionalInformation>AdditionalInformation0</AdditionalInformation>  
</CHFInstallSuccessSMWAN>
```

Figure 62 Communications Hub Status Update - Install Success Service Request Format

8.14.1.2 Responses

The Service Response messages for a “Communications Hub Status Update - Install Success” Request follow the generic format for all “DCC Only” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.14.1.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E081401	Failed Validation – Invalid Device Type	Error	The Device Type of the Device being notified is not CHF.
E081402	Failed Validation – Invalid Install Date Time	Error	The install date & time supplied is a future date.
W081401	Validation warning – Incompatible Device Status	Warning	The CHF Device status is not 'Commissioned'. The change in logistical status of the CHF will be processed by the DCC, but the commissioned status is set according to information from the SM WAN rather than Service Requests. If the CHF Device status is not 'Commissioned' this suggests that the CHF Device has not been installed successfully.

Table 132 Communications Hub Status Update - Install Success Service Request Response Codes

8.14.2 Communications Hub Status Update – Install No SM WAN

Service Request Name	CommunicationsHubStatusUpdate	
Service Reference	8.14	
Service Request Variant Name	CHFInstallSuccess(NoSMWAN)	
Service Reference Variant	8.14.2	
Service Request Objective	<p>To notify DCC of a Communications Hub installation that fails to connect to the SM WAN</p> <p>To enable Eligible Users to notify DCC of a successful Communications Hub installation that fails to connect successfully to the SM WAN.</p>	
Business Context Statement	The DCC requires that Service Users provide updates upon changes to Communication Hub installation status as set out in the Communications Hub Support Materials.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) 	
Security Classification	<p>Non-critical and non-sensitive.</p> <p>GBCS XREF: Not applicable</p>	
Service Request Narrative	<ol style="list-style-type: none"> The Communications Hub Status Update – Install No SM WAN data provided in this Service Request is used to allow DCC to resolve SM WAN coverage incidents on installation Where the CHF Device status is 'Pending' and response code W081401 is returned, the DCC shall update the CHF Device status to 'InstalledNotCommissioned'. If the GPF Device status is also 'Pending' the DCC shall update the GPF Device status to 'InstalledNotCommissioned' 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 133 Communications Hub Status Update - Install No SM WAN Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.14.2.1 Service Request

8.14.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its CHFInstallSuccessNoSMWAN XML element defines this Service Request and contains the DeviceID of the Communications Hub which has been installed without being able to access the SM WAN, along with other details.

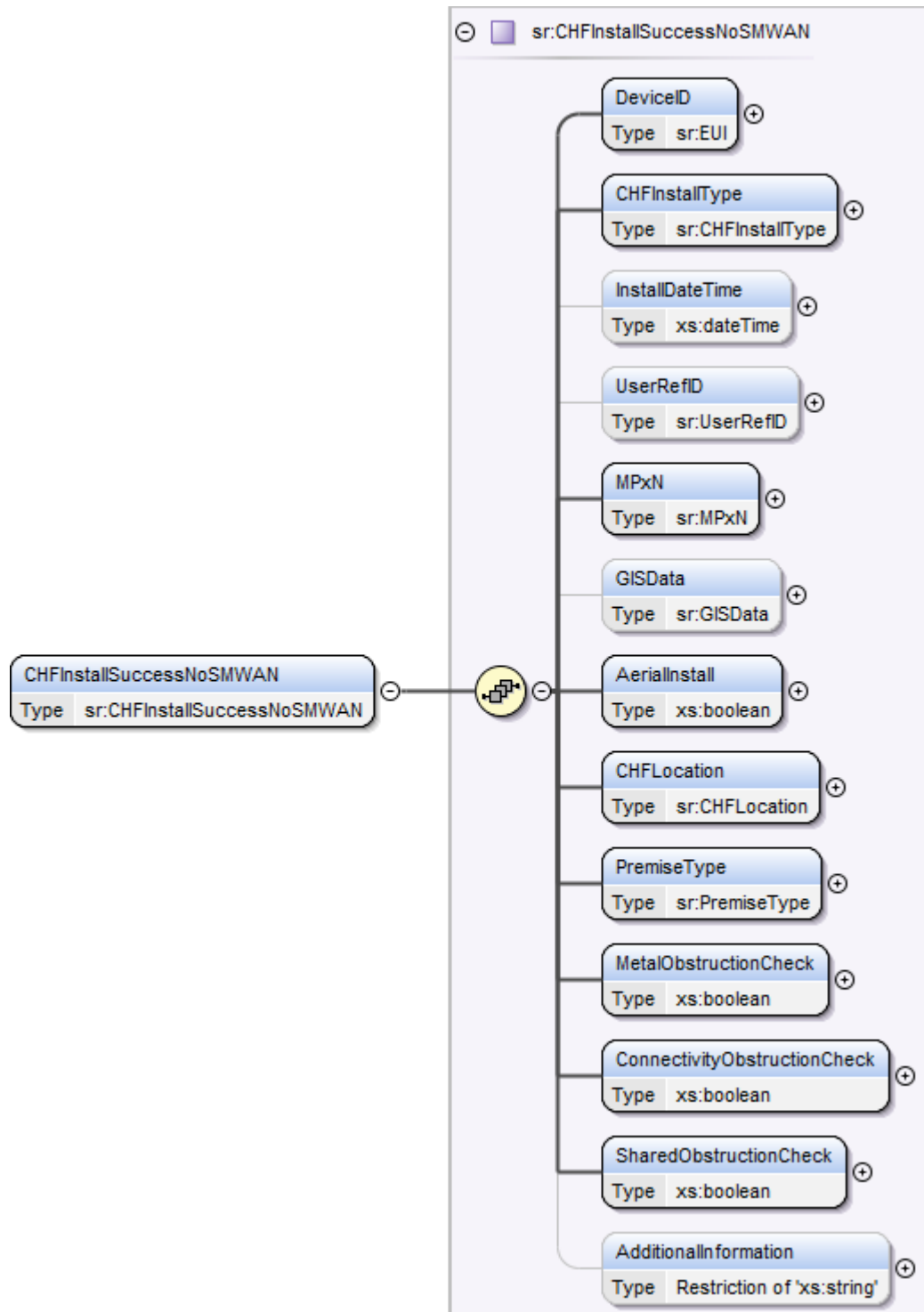


Figure 63 Communications Hub Status Update - Install No SM WAN Service Request Format

8.14.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the Communications Hub Installed (CHF)	sr:EUI	Yes	None	N/A	Non-Sensitive
CHFInstallType	Valid Set: <ul style="list-style-type: none"> CHF Install - no SM WAN 	sr:CHFInstallType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
InstallDateTime	An optional field to record the date and time that the CHF was successfully installed	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
UserRefID	An optional field to record User reference for activity or engineer job	sr:UserRefID (Restriction of xs:string (maxLength = 25))	No	None	N/A	Non-Sensitive
MPxN	One MPAN or MPRN associated to the premises	sr:MPxN Restriction of xs:string (minLength = 1 maxLength = 13)	Yes	None	N/A	Non-Sensitive
GISData	This field is for GPS coordinates which can assist CSPs in diagnosing problems with connecting to CHF Devices. The data will be passed through to CSPs as a string, which should be GPS coordinates in decimal degrees to at least 4 decimal places, range -90.0000 to +90.0000 (latitude) and -180.0000 to +180.0000 (longitude). The string should consist of the latitude value followed by a space and the longitude value, e.g. "+12.1234 -123.1234". The DSP will not validate the format of the field; this description is for guidance only.	sr:GISData (Restriction of xs:string (maxLength = 25))	No	None	N/A	Non-Sensitive
AerialInstall	Indication of whether external aerial installed. Valid set: <ul style="list-style-type: none"> true false 	xs:boolean	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CHFLocation	Installation location within Consumer Premise as further defined through Communications Hubs Support Materials and Installer Training Plans. Valid set: <ul style="list-style-type: none"> • Outside Premises • Indoors on external wall • Deep indoors • Basement or Cellar 	sr: CHFLocation (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
PremiseType	Identifies the property type to support coverage incident resolution: Valid set: <ul style="list-style-type: none"> • Detached / Semi Detached • Terraced • Low Rise Apartment (MDU <= 5 floors) • High Rise Apartment (MDU > 5 floors) <p>Note that the XML representation of < and > is as follows < is &lt; > is &gt;</p>	sr: PremiseType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
MetalObstructionCheck	Connectivity Obstruction Check 1 identifies: <i>Is there a local metal obstruction (as defined in CHSM) or metal meter cabinet?</i> Valid set: <ul style="list-style-type: none"> • true • false 	xs:boolean	Yes	None	N/A	Non-Sensitive
ConnectivityObstructionCheck	Connectivity Obstruction Check 2 identifies: <i>Does the premise have thick stone walled construction (as defined in CHSM)?</i> Valid set: <ul style="list-style-type: none"> • true • false 	xs:boolean	Yes	None	N/A	Non-Sensitive
SharedObstructionCheck	Connectivity Obstruction Check3 identifies: <i>Is the Comms Hub in a shared / communal area (as defined in CHSM)?</i> Valid set: <ul style="list-style-type: none"> • true • false 	xs:boolean	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
AdditionalInformation	An optional field to record any specific User information of Communication Hub installation details or activity	Restriction of xs:string (max length = 200)	No	None	N/A	Non-Sensitive

Table 134 Communications Hub Status Update - Install No SM WAN Data Items

8.14.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 135 Communications Hub Status Update - Install No SM WAN Modes of Operation

8.14.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 136 Communications Hub Status Update - Install No SM WAN Command Variant Values

8.14.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the DeviceID specified of a valid Device Type?	Check that the Device Type of a Device being notified is a CHF.	E081401
Is the InstallDateTime in the past?	Check that the InstallDateTime is not a future date	E081402
Is the DeviceID specified at a valid status in the Smart Metering Inventory? ¹	<p>Check that the DeviceID of the specified Device is one of the following status values in the Smart Metering Inventory and if not then raise the Warning Response Code:</p> <ul style="list-style-type: none"> InstalledNotCommissioned <p>Note: the status of the Device for the CHF and the associated GPF will be updated to Installed Not Commissioned if it is still in the Pending state.</p>	W081401

Table 137 Communications Hub Status Update - Install No SM WAN Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

Note that the generic authorisation check associated to E4 is N/A to this Service Request. See Main Document of this documentation set section 7.4

8.14.2.1.6 Sample Request

A sample Service Request document is as follows:

```
<CHFInstallSuccessNoSMWAN>
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
<CHFInstallType>CHF Install - no SM WAN</CHFInstallType>
<InstallDateTime>2006-05-04T18:13:51.00Z</InstallDateTime>
<UserRefID>UserRefID0</UserRefID>
<MPxN>7012345678999</MPxN>
<AerialInstall>false</AerialInstall>
<CHFLocation>Outside Premises</CHFLocation>
<PremiseType>High Rise Apartment (MDU &gt; 5 floors)</PremiseType>
<MetalObstructionCheck>false</MetalObstructionCheck>
<ConnectivityObstructionCheck>false</ConnectivityObstructionCheck>
<SharedObstructionCheck>false</SharedObstructionCheck>
<AdditionalInformation>AdditionalInformation0</AdditionalInformation>
</CHFInstallSuccessNoSMWAN>
```

Figure 64 Communications Hub Status Update - Install No SM WAN Service Request Format

8.14.2.2 Responses

The Service Response messages for a "Communications Hub Status Update - Install No SM WAN" Request follow the generic format for all "DCC Only" response messages, the generic responses applicable to this Service Request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.14.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E081401	Failed Validation – Invalid Device Type	Error	The Device Type of the Device being notified is not CHF.
E081402	Failed Validation – Invalid Install Date Time	Error	The install date & time supplied is a future date.
W081401	Validation warning – Incompatible Device Status	Warning	The CHF Device status is not 'InstalledNotCommissioned', which is the only valid status compatible with this Service Request.

Table 138 Communications Hub Status Update - Install No SM WAN Service Request Response Codes

8.14.3 Communications Hub Status Update – Fault Return

Service Request Name	CommunicationsHubStatusUpdate
Service Reference	8.14
Service Request Variant Name	CHF(Fault)Return

Service Reference Variant	8.14.3	
Service Request Objective	To enable an Energy Supplier to notify DCC of a Communications Hub return to the DCC due to a Fault associated with the CHF / GPF.	
Business Context Statement	The DCC requires that Service Users provide updates upon changes to Communication Hub installation status as set out in the Communications Hub Support Materials.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) 	
Security Classification	Non-critical and non-sensitive.	
Service Request Narrative	<p>The Communications Hub Status Update – Fault Return data provided in this Service Request is used to allow DCC to track Communications Hub managed assets as they enter the returns logistics path.</p> <p>A Supplier Nominated Agent (SNA) is able to notify the DCC of the return of a Communications Hubs that has not been installed; however, only an Import Supplier may notify the return of a Communications Hub after installation.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 139 Communications Hub Status Update – Fault Return Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.14.3.1 Service Request

8.14.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its CHFFaultReturn XML element defines this Service Request and contains the DeviceId of the Communications Hub which has been returned, along with other details.

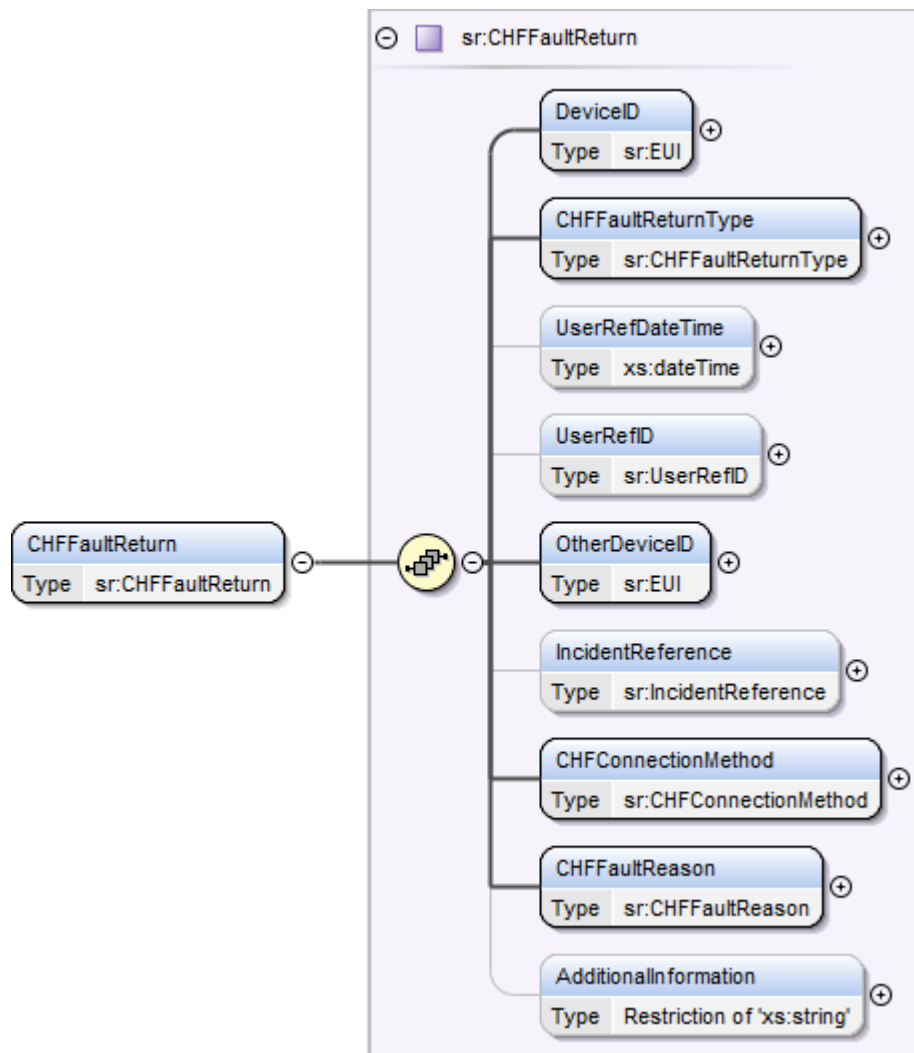


Figure 65 Communications Hub Status Update – Fault Return Service Request Format

8.14.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the Communications Hub Returned (CHF)	sr:EUI	Yes	None	N/A	Non-Sensitive
CHFFaultReturnType	Valid Set: <ul style="list-style-type: none"> Fault identified prior to installation Fault identified post installation 	sr:CHFFaultReturnType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
UserRefDateTime	An optional field to record User recorded time of activity or engineer job	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UserRefID	An optional field to record User reference for activity or engineer job	sr:UserRefID (Restriction of xs:string (maxLength = 25))	No	None	N/A	Non-Sensitive
OtherDeviceID	The Device ID of the ESME / GSME associated with the CHF ¹	sr:EUI	Yes	None	N/A	Non-Sensitive
IncidentReference	An optional field to record a DCC Service Management associated incident reference	sr:IncidentReference (Restriction of xs:string (maxLength = 15))	No	None	N/A	Non-Sensitive
CHFConnectionMethod	To record how the Communication Hub has been installed and connected to the rest of the Smart Metering System within the consumer premise Valid set: <ul style="list-style-type: none"> Hot-shoe Cradle ESME Guidance note: there is no option for a case where a Communications Hub has been identified as faulty but has never been installed. Please use "ESME" in these cases.	sr:CHFConnectionMethod (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
CHFFaultReason	User description of fault; Valid set: <ul style="list-style-type: none"> Damaged case Damaged Connector Illegal interference or missing seals Environmental conditions exceeded SM WAN Fault SMHAN Interface Fault LED Fault Aerial fault Manufacturing defect 	sr:CHFFaultReason (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
AdditionalInformation	An optional field to record any specific User information of Communication Hub installation details or activity	Restriction of xs:string (max length = 200)	No	None	N/A	Non-Sensitive

Table 140 Communications Hub Status Update – Fault Return Data Items

¹ If there is no ESME or GSME associated with the CHF, OtherDeviceID should be populated with the CHF Device ID

8.14.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 141 Communications Hub Status Update – Fault Return Modes of Operation

8.14.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 142 Communications Hub Status Update – Fault Return Command Variant Values

8.14.3.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the DeviceID specified of a valid Device Type?	Check that the Device Type of a Device being notified is a CHF.	E081401
Is the UserRefDateTime in the past?	Check that the UserRefDateTime is not a future date	E081405
Is the DeviceID specified at a valid status in the Smart Metering Inventory? ¹	Check that the DeviceID of the specified Device is one of the following status values in the Smart Metering Inventory and if not then raise the Warning Response Code: <ul style="list-style-type: none"> Decommissioned 	W081401
Where the sender is an SNA, has the Device been installed?	If the Device has a Device Status other than Pending, confirm that the sender of the Service Request is an Import Supplier	E5

Table 143 Communications Hub Status Update – Fault Return Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

Note that the generic authorisation check associated to E4 is N/A to this Service Request. See Main Document of this documentation set section 7.4

8.14.3.1.6 Sample Request

A sample Service Request document is as follows:

```
<CHFFaultReturn>
<DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
<CHFFaultReturn>Fault identified prior to installation</CHFFaultReturn>
<UserRefDateTime>2014-05-04T18:13:51.00Z</UserRefDateTime>
<UserRefID>UserRefID0</UserRefID>
<OtherDeviceID>00-AA-BB-CC-DD-EE-FF-00</OtherDeviceID>
<IncidentReference>INC0000000000001</IncidentReference>
<CHFFaultReason>Damaged case</CHFFaultReason>
<AdditionalInformation>AdditionalInformation0</AdditionalInformation>
</CHFFaultReturn>
```

Figure 66 Communications Hub Status Update – Fault Return Service Request Format

8.14.3.2 Responses

The Service Response messages for a “Communications Hub Status Update – Fault Return” Request follow the generic format for all “DCC Only” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.14.3.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E081401	Failed Validation – Invalid Device Type	Error	The Device Type of the Device being notified is not CHF.
E081405	Failed Validation – Invalid User Ref Date Time	Error	The user reference date & time supplied is a future date.
W081401	Validation warning – Incompatible Device Status	Warning	The CHF Device status is not 'Decommissioned'.
E5	Failed Validation – Invalid Device Status for this Service User	Error	The Service Request has been sent by a Service User which has a role that is not valid for the Device Status of the Device. Note that this is a specific use of a generic Response Code that is also used for other purposes in different circumstances.

Table 144 Communications Hub Status Update – Fault Return Service Request Response Codes

8.14.4 Communications Hub Status Update – No Fault Return

Service Request Name	CommunicationsHubStatusUpdate
Service Reference	8.14
Service Request Variant Name	CHF(NoFault)Return
Service Reference Variant	8.14.4

Service Request Objective	To enable an Energy Supplier to notify DCC of a Communications Hub return to the DCC where there is no fault associated with the CHF / GPF.	
Business Context Statement	The DCC requires that Service Users provide updates upon changes to Communication Hub installation status as set out in the Communications Hub Support Materials.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) 	
Security Classification	Non-critical and non-sensitive.	
Service Request Narrative	<p>The Communications Hub Status Update – No Fault Return data provided in this Service Request is used to allow DCC to track Communications Hub managed assets as they enter the returns logistics path.</p> <p>A Supplier Nominated Agent (SNA) is able to notify the DCC of the return of a Communications Hubs that has not been installed; however, only an Import Supplier may notify the return of a Communications Hub after installation.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 145 Communications Hub Status Update – No Fault Return Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

8.14.4.1 Service Request

8.14.4.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its CHFNoFaultReturn XML element defines this Service Request and contains the DeviceID of the Communications Hub which has been returned, along with other details.

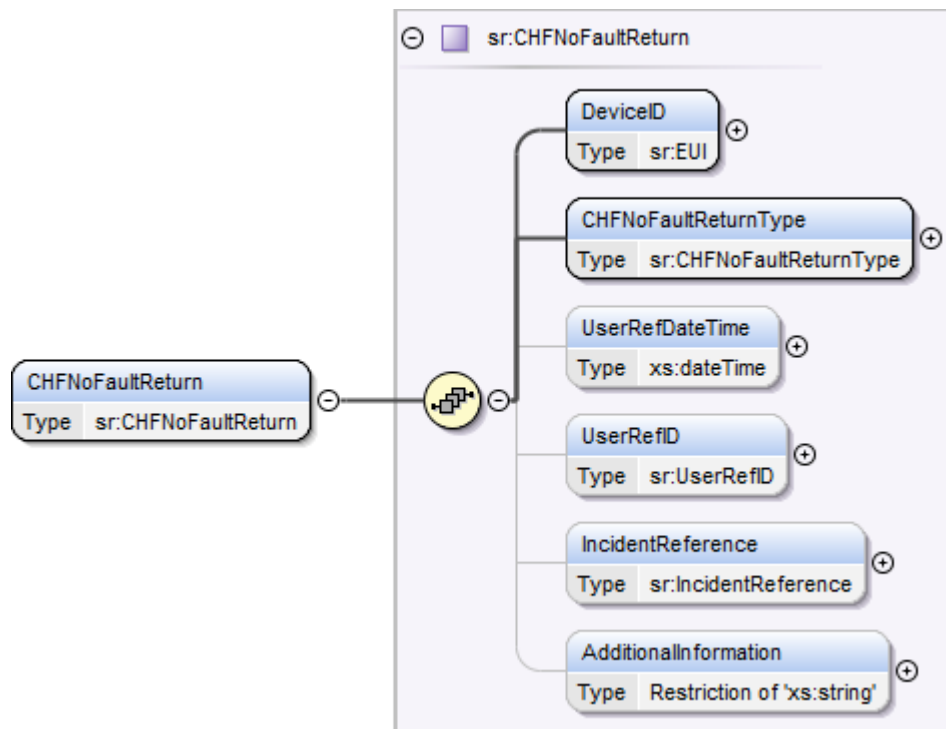


Figure 67 Communications Hub Status Update – No Fault Return Service Request Format

8.14.4.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the Communications Hub Returned (CHF)	sr:EUI	Yes	None	N/A	Non-Sensitive
CHFNoFaultReturn Type	Valid Set: <ul style="list-style-type: none"> No Fault Return (general) No Fault Return (non-dom opt out) No Fault Return (dual supplier HAN variant replacement) No Fault Return (SM WAN variant replacement requested by DCC) Lost or Stolen Hub 	sr:CHFNoFaultReturn Type (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
UserRefDateTime	An optional field to record User recorded time of activity or engineer job	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive
UserRefID	An optional field to record User reference for activity or engineer job	sr:UserRefID (Restriction of xs:string (maxLength = 25))	No	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
IncidentReference	An optional field to record a DCC associated incident reference	sr:IncidentReference (Restriction of xs:string (maxLength = 15))	No	None	N/A	Non-Sensitive
AdditionalInformation	An optional field to record any specific User information of Communication Hub installation details or activity	Restriction of xs:string (max length = 200)	No	None	N/A	Non-Sensitive

Table 146 Communications Hub Status Update – No Fault Return Data Items

8.14.4.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 147 Communications Hub Status Update – No Fault Return Modes of Operation

8.14.4.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 148 Communications Hub Status Update – No Fault Return Command Variant Values

8.14.4.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the DeviceID specified of a valid Device Type?	Check that the Device Type of a Device being notified is a CHF.	E081401
Is the UserRefDateTime in the past?	Check that the UserRefDateTime is not a future date	E081405
Is the DeviceID specified at a valid status in the Smart Metering Inventory? ¹	Check that the DeviceID of the specified Device is one of the following status values in the Smart Metering Inventory and if not then raise the Warning Response Code: Decommissioned	W081401
Where the sender is an SNA, has the Device been installed?	If the Device has a Device Status other than Pending, confirm that the sender of the Service Request is an Import Supplier	E5

Table 149 Communications Hub Status Update – No Fault Return Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

Note that the generic authorisation check associated to E4 is N/A to this Service Request. See Main Document of this documentation set section 7.4

8.14.4.1.6 Sample Request

A sample Service Request document is as follows:

```
<CHFNoFaultReturn>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
  <CHFNoFaultReturnType>No Fault Return (dual supplier HAN variant replacement)</CHFNoFaultReturnType>
  <UserRefDateTime>2014-05-04T18:13:51.00Z</UserRefDateTime>
  <UserRefID>UserRefID0</UserRefID>
  <IncidentReference>INC0000000000001</IncidentReference>
  <AdditionalInformation>AdditionalInformation0</AdditionalInformation>
</CHFNoFaultReturn>
```

Figure 68 Communications Hub Status Update – No Fault Return Service Request Format

8.14.4.2 Responses

The Service Response messages for a “Communications Hub Status Update – No Fault Return” Request follow the generic format for all “DCC Only” response messages, the generic responses applicable to this Service Request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

8.14.4.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E081401	Failed Validation – Invalid Device Type	Error	The Device Type of the Device being notified is not CHF.
E081405	Failed Validation – Invalid User Ref Date Time	Error	The user reference date & time supplied is a future date.
W081401	Validation warning – Incompatible Device Status	Warning	The CHF Device status is not 'Decommissioned'.
E5	Failed Validation – Invalid Device Status for this Service User	Error	The Service Request has been sent by a Service User which has a role that is not valid for the Device Status of the Device. Note that this is a specific use of a generic Response Code that is also used for other purposes in different circumstances.

Table 150 Communications Hub Status Update – No Fault Return Service Request Response Codes

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

9 – Customer Consent Service

Author: DCC
Version: 5.2a
Date: June 2023

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9.1.1 Service Request 5

9.1.2 Responses 5

9 Customer Consent Service (9 - CCS)

This section sets out the full content of the DCC Customer Consent Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	CustomerConsent	Service Id	9
Service Objective	To enable a DCC Service User to generate and send a Customer Identification Number (CIN), as defined by SMETS, to a specified Smart Meter and return the generated CIN to the sender of the Service Request.		
Business Context Statement	The DCC Service User wishes DCC to send a CIN (Customer Identification Number) to a Device so that the customer can read it back to the DCC Service User as evidence that they are the relevant householder and can give consent for the DCC Service User to access their consumption data.		
User Roles	<ul style="list-style-type: none">Other User (OU)		

Table 1 Overview of Customer Consent Service

The mapping between the Customer Consent Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
9.1	9.1	Request Customer Identification Number	ESME GSME

Table 2 CCS - Service Requests / Devices

For each of the CCS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

9.1 Request Customer Identification Number (9.1)

Service Request Name	RequestCustomerIdentificationNumber	
Service Reference	9.1	
Service Request Variant Name	RequestCustomerIdentificationNumber	
Service Reference Variant	9.1	
Service Request Objective	To enable a DCC Service User to generate and send a Customer Identification Number (CIN), as defined by SMETS, to a specified meter and return the generated CIN to the sender of the Service Request.	
Business Context Statement	<p>The DCC Service User wishes DCC to send a CIN (Customer Identification Number) to a Device so that the customer can read it back to the DCC Service User as evidence that they are the relevant householder and can give consent for the DCC Service User to access their consumption data.</p> <p>NB – this service is not a pre-condition of the use of any other Service or service request, but merely provides a means for DCC Service Users to evidence consent from customers.</p>	
User Role Access	<ul style="list-style-type: none"> Other User (OU) 	
Security Classification	<p>Non-critical and non-sensitive:</p> <p>GBCS XREF: SME.C.NC</p>	
Service Request Narrative	<ol style="list-style-type: none"> 1. A <i>Customer Identification Number</i> (CIN) as defined in SMETS is a number issued to ESME/GSME for display on the User Interface. 2. The DCC Data Systems generate the CIN and send it to the Device. 3. If the Device Command Response is successful, the DCC Data Systems will include the CIN in the response to the DCC Service Users. Response Type: Service Response (from Device) – CINMessage 4. If the Device Command Response is not successful, the DCC Data Systems will not include the CIN in the response to the DCC Service Users. Response Type: Service Response (from Device) - GBCSPayload 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	0x0058	0x0083
GBCS Use Case	ECS50	GCS36
GBCS Use Case Name	Send CIN to ESME	Send CIN to GSME
SMETS1 Applicability	No	No

Table 3 Request Customer Identification Number Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

9.1.1 Service Request

9.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RequestCustomerIdentificationNumber XML element defines this Service Request and doesn't contain any data items.



Figure 1 Request Customer Identification Number Service Request Structure

9.1.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	No

Table 4 Request Customer Identification Number Modes of Operation

9.1.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 5 Request Customer Identification Number Command Variant Values

9.1.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

9.1.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RequestCustomerIdentificationNumber/>
```

Figure 2 Sample Request Customer Identification Number Service Request (Body) Format

9.1.2 Responses

The response messages for a "Request Customer Identification Number" request follow the generic format for all "Device" response messages. The generic responses applicable to this request are;

- Acknowledgement

- Service Response (from Device) – CINMessage
- Service Response (from Device) - GBCSPayload
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

9.1.2.1 Service Response (from Device) – CIN Message

If the Device Response is successful, the CIN is added to it, as an XML data item, by the DCC Data Systems. If the Device response is not successful, the generic Service Response (from Device) – GBCSPayload is returned to the DCC Service User.

The CINMessage XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of the response that includes the Device Command Response and the Customer Identification Number.

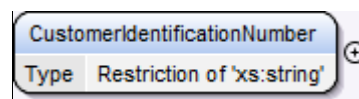


Figure 3 Request Customer Identification Number Service Response (from Device) Structure

9.1.2.1.1 Specific Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CustomerIdentificationNumber	A number issued to Electricity Smart Meter / Gas Smart Meter for display on the User Interface	Restriction of xs:string (length = 4 pattern = "[0-9]{4}")	Yes	None	None	Non-Sensitive

Table 6 Request Customer Identification Number Service Request Response Data Items

9.1.2.1.2 Sample Response

Sample responses are given in Annex Introduction Appendix 1. The specific information for this response is as follows:

```
<ResponseMessage>
  <ServiceReference>9.1</ServiceReference>
  <ServiceReferenceVariant>9.1</ServiceReferenceVariant>
  <CINMessage>
    <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
    <CustomerIdentificationNumber>1234</CustomerIdentificationNumber>
  </CINMessage>
</ResponseMessage>
```

Figure 4 Sample Request Customer Identification Number Service Response (from Device) Format

9.1.2.2 Parse Output Format

The response to this request returns only status without any substantial payload. The XML type is RequestCustomerIdentificationNumberRsp.

Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

9.1.2.2.1 Specific Header Data Items

Data Item	Electricity Response	Gas Response
GBCSHexadecimalMessageCode	0058	0083
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS50</i>	<i>GCS36</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Send CIN to ESME</i>	<i>Send CIN to GSME</i>
SupplementaryRemotePartyID	Present	Present
SupplementaryRemotePartyCounter	Present	Present
SupplementaryOriginatorCounter	Not Present	Not present
Timestamp	Not Present	Not Present

Table 7 - Request Customer Identification Number Parse Response Header Items

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 11 – Firmware Service

Author: DCC
Version: 5.2a
Date: June 2023

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11 Firmware Service (11 - FS)

This section sets out the full content of the DCC Firmware Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	Firmware	Service Id	11
Service Objective	To enable a DCC Service User to upgrade the firmware on a Device for a specified device Id, such that the device can confirm that the operation has either completed or the reason for its failure.		
Business Context Statement	The DCC Service User wishes to manage the current version of firmware operating on a specified Device, e.g. following a firmware fix (or up-to-date version) being released by the Device manufacturer		
User Roles	<p>The following User Roles have access to some of the list of service requests which make up the Firmware Service:</p> <ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU) 		

Table 1 Overview of Firmware Service

The mapping between the Firmware Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
11.1	11.1	Update Firmware	DSP Access Control Broker
11.2	11.2	Read Firmware Version	ESME GPF GSME CHF HCALCS PPMID
11.3	11.3	Activate Firmware	ESME GSME HCALCS CHF (only applicable to SMETS1) PPMID (only applicable to SMETS1)

Service Reference	Service Reference Variant	Name	Business Target ID
11.4	11.4	Update PPMID Firmware	DSP Access Control Broker (only applicable to SMETS2)

Table 2 FS - Service Requests / Devices

For each of the FS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set sections 9 (which describes the general formatting for all Service Requests and Service Responses), 2.3.10 (which describes the Firmware Distribution and Activation process) and with the XSD (XML Schema - document 3 of this documentation set).

11.1 Update Firmware (11.1)

Service Request Name	UpdateFirmware
Service Reference	11.1
Service Request Variant Name	UpdateFirmware
Service Reference Variant	11.1
Service Request Objective	To enable a DCC Service User to request that the DCC distribute a specified Firmware Image to a specified ESME, GSME, HCALCS, SMETS1 CHF or SMETS1 PPMID for storage on the Device.
Business Context Statement	<p>The DCC Service User requires that an existing version of firmware operating on a specified ESME, GSME, HCALCS, SMETS1 CHF or SMETS1 PPMID is updated to the new specified version, e.g. following a firmware fix (or up-to-date version) being released by the Device manufacturer. The Firmware image is included within the Service Request.</p> <p>This Service Request is the first in a two-step process (the second step being to activate the firmware). This service can be used to distribute firmware to multiple device IDs.</p> <p>SRV11.4 should be used to distribute a Firmware Image to SMETS2 PPMIDs.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)

Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: <i>SME.C.NC</i>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. This Service can only be used for command delivery across the SM WAN. There are no local command delivery services for this service request. 2. The maximum number of Device IDs that can be included in a Service Request is 50,000. Each Service Request has to include the Firmware Image and version. 3. The Service Request Mode of Operation is “DCC Only” (see Main Document of this documentation set section 2.3.10 for details on Firmware Distribution Mode of Operation), i.e.: <ol style="list-style-type: none"> a. Business Target ID = DSP Broker ID b. Command Variant = 8 4. The DCC Data Systems apply the following specific authorisation and validation checks prior to the generation of the Service Response: <ol style="list-style-type: none"> a. The Firmware version specified in the Service Request matches an entry on the Central Products List, (approved Firmware version ID). The Firmware version is presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F, for example "1100EEFF" b. The DCC Service User is the Registered Import Supplier for each of the Device IDs in the list. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed c. Each Device ID in the list corresponds to a Device with a status of “Commissioned” . If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed Note: This validation will also allow Devices with a status of “Suspended”. d. The Firmware Version is applicable to each “Commissioned” Device's Device ID in the list. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed e. Each Device in the list is not already the subject of an Update Firmware Request that is in progress (with a Firmware Distribution Tracking status of ‘Accepted by DSP’, ‘Approved For Distribution’ or ‘Successful CH Transfer’ as described in the Main Document of this documentation set, section 2.3.10). If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed. f. If the Devices in the list are of type HCALCS, then the Firmware of the CHF on the same HAN must be GBCS v4.1 or later. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed. g. In addition to the check above, if the Devices in the list are of type HCALCS, then the current Firmware of each Device must be GBCS v4.1 or later. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed. This validation is not expected to fail as DCC Service Users should be aware of the GBCS Version of the target HCALCS Devices, as they are responsible for the version of the firmware on those Devices.

5. If the validation succeeds at least for one Device ID and the Service Request doesn't fail any anomaly detection checks, the DCC Data Systems distribute the Firmware to the Devices (via the appropriate CSPs) as described in the Main Document of this documentation set section 2.3.10.
6. Update Firmware Service Requests are subject to threshold anomaly detection (see Main Document of this documentation set section 16.3) but with a slight variation on the rules. Since a single Update Firmware Service Request may result in messages to many Devices, the message count for the purposes of anomaly detection will be increased by the total number of Devices listed in the Service Request rather than simply being increased by one.
7. Reporting of errors or Firmware Distribution Tracking status changes via DCC Alerts subsequent to DSP validation. Please note that, because one Update Firmware Service Request can be split into Commands to more than one CSP it is possible for one of the Commands to succeed and another to fail:
 - a. If the CSP detects a mismatch in Firmware Version / Hash, then the DCC Service User will be sent a DCC Alert N18.
 - b. If the CSP detects an invalid combination of Communications Hub / Device then the DCC Service User will be sent a DCC Alert N19.
 - c. If the CSP detects that the Firmware Image is too large then the DCC Service Users will be sent a DCC Alert N20.
 - d. If the Firmware Version is not recognised by the CSP then the DCC Service User will be sent a DCC Alert N21.
 - e. If the DCC cannot deliver the firmware image to the CSP, then the DCC Service User will be sent a DCC Alert N22 / N23.
 - f. If the firmware image has not been rejected by the CSP, all the Responsible Suppliers to that Device other than the sender will be sent a DCC Alert N59.
 - g. If the CSP cannot deliver the firmware image to the CHF, then the DCC Service User will be sent a DCC Alert N60.
 - h. If the CSP successfully delivers the firmware image to the CHF, then the DCC Service User will be sent a DCC Alert N61.
 - i. The Device Alerts received from the CHF indicating the following statuses will be sent to the DCC Service User using the DCC Alert N62:
 - i. CHF failed to deliver the firmware image to the target Device.
 - ii. The firmware image has been discarded at the CHF.
 - iii. The firmware image has been rejected due to hardware version mismatch of the target Device.
 - iv. The firmware image has been successfully delivered to the target Device by the CHF.
8. Each ESME, GSME or HCALCS that receives the Firmware will send a Device Alert to the Registered Supplier confirming success (0x8F72) / failure (0x8F1C).
9. It is the DCC Service User's responsibility to resend an Update Firmware Service Request to those Devices for which DSP, CSP or Device validation has failed or for which no successful response from the Device has been received. Note that in order to distinguish the Firmware Distribution Tracking between the original Upgrade Firmware Requests and resubmissions for the same Device and the same Firmware, the DCC Service User should use a new Service Request ID for each request.

	<p>10. The Firmware Image (maximum size = 750 KB) has to be included in the Service Request in base 64 binary form (maximum length = 1024000). Please see GBCS section 11, for details of the Firmware Image contents, format and validation.</p> <p>11. The specified ESME, GSME or HCALCS will verify the Firmware Image received by verifying that the sending Users digital signature applied to the Firmware Image is the same as the digital signature held in the Supplier trust anchor cell on the specified Device.</p> <p>12. The Sending Users digital signature must be calculated across the Firmware image using the sending Users Digital Signing Key.</p> <p>13. The Authorisation Check allows the Device Status to be 'Suspended', but successful completion of the Service Request doesn't change the Device Status in the Smart Metering Inventory. Once the Firmware Version is activated via Service Request 11.3 (Activate Firmware), the DCC Data Systems shall update the Device Status to the value it held immediately prior to its Suspension. See section 11.3.</p> <p>14. Where a User receives a warning that an Update Firmware Request is in progress and does not believe that this is correct, then a service management incident should be raised so that the DCC's Firmware Distribution Tracking Status can be updated to 'Reset By DCC' to allow subsequent Update Firmware Requests to be accepted by the DCC.</p> <p>15. DCC Service Users are requested to maximise the efficiency of firmware distribution within the DCC by ensuring that as many Devices as possible are included within Update Firmware Service Requests. Sending Service Requests with single or low numbers of Devices reduces firmware download efficiencies and increases overall delivery timescales.</p> <p>16. DCC Data Systems will perform validation to check that the OTA header conforms to GBCS Table 11.2.3 requirements for the construction of the OTA Upgrade Image (ZigBee OTA Header + Upgrade Image), including the content of the OTA upgrade file identifier, OTA Header version, OTA Header length, OTA Header Field control and ZigBee Stack version, and that the total length of the OTA Upgrade Image matches the Total image size declared in the header.</p>	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes for ESME, GSME, CHF and PPMID	
SMETS1 Service Request Narrative	<p>The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except as follows:</p> <ol style="list-style-type: none"> For Firmware updates of a SMETS1 CHF or SMETS1 PPMID the DCC Service User must be the Responsible Supplier for the SMETS1 ESME which is connected to the same home area network as the SMETS1 CHF / PPMID. The maximum length of a SMETS1 Firmware Image which may be uploaded to the DSP is 10240000 in base 64 binary (approx. 7.5 Mb). 	

3. Firmware Images are distributed by S1SPs.
4. Please see SEC SMETS1 Supporting Requirement Document for the composition and verification of Firmware Images.
5. Firmware verification success & failure are indicated using SMETS1 Alerts that are equivalent to the Device Alerts used for the same purpose.
6. Where the Firmware Image has been successfully verified and Devices of the Device Model identified by the OTA Header are not capable of having the Manufacturer Image distributed to them without that causing the firmware to activate, the S1SP shall retain the Manufacturer Image until receipt of the corresponding Firmware activation command (SRV11.3).
7. For SMETS1 CHF and PPMID Devices only, following receipt of SRV 11.1, for each successfully-validated Device ID a DCC Alert with DCC Alert code N57 will be sent to other Suppliers with an interest in the HAN. DCC Alerts N59, N60, N61, N62 are not generated for SMETS1 devices.
8. The Alerts sent to the Registered Supplier confirming success (0x8F72) / failure (0x8F1C) shall be sent as SMETS1 Alerts.
9. The check whether each Device already has an Update Firmware Request in progress does not apply.
10. Firmware Distribution Tracking is not performed for SMETS1 Devices.
11. The specification for OTA Upgrade Images targeted at SMETS1 Devices is defined in the SMETS1 Supporting Requirements document, though it should be noted that the definition is the same as the requirements of GBCS Table 11.2.3.

Table 3 Update Firmware Service Request

This section should be read in conjunction with the Main Document of this documentation set sections 9 (which describes the general formatting for all Service Requests and Service Responses) and 2.3.10 (which describes the Firmware Distribution and Activation process) and with the XSD (XML Schema - document 3 of this documentation set).

11.1.1 Service Request

11.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdateFirmware XML element defines this Service Request and contains the Firmware Image, its Version and the list of Device IDs the Firmware is to be distributed to.

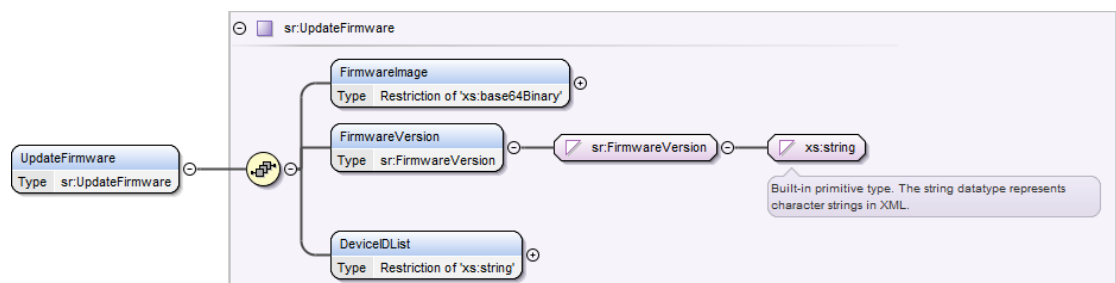


Figure 1 Update Firmware Service Request Structure

11.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FirmwareImage	<p>The Firmware Image corresponding to the Firmware Version</p> <p>The Firmware Image is the full OTA Upgrade Image as defined in GBCS. Note that this includes not only the Manufacturer Image but also additional signature and OTA Header information.</p> <p>Please see GBCS for details of how to construct the OTA Upgrade Image.</p> <p>The max length value in the XML schema is large enough to allow for SMETS1 Firmware images, whereas non-SMETS1 Firmware image size is restricted further; see validation error E110105.</p> <p>SMETS1: See the SMETS1 Supporting Requirements for definition of the Firmware image</p>	<p>Restriction of xs:base64Binary (max Length = 10240000)</p>	Yes	None	N/A	Non-Sensitive
FirmwareVersion	<p>A unique identifier representing a firmware image that has been approved for release by the DCC User concerned.</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This value must align with the firmware version value listed on the Central Products List (excluding the colon separator between octet values) pursuant to SEC Section F2.</p> <p>For avoidance of doubt, there is no direct comparison made between this FirmwareVersion value to the File Version value contained in the OTA Header (as defined by GBCS).</p>	<p>sr::FirmwareVersion (Restriction of xs:string (minLength = 1, maxLength = 8))</p>	Yes	None	N/A	Non-Sensitive
DeviceIDList	<p>Comma separated list of Device IDs. Containing a minimum of 1 and a maximum of 50000 Device IDs, each as defined by sr:EUI (see Annex section 17)</p>	<p>Restriction of xs:string (min length = 23 max length = 1199999 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})")</p>	Yes ¹	None	N/A	Non-Sensitive

Table 4 Update Firmware Service Request Data Items

¹ List of Device IDs. Minimum 1 and maximum 50000

11.1.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes ¹	No	No
SMETS1	No	No	Yes ¹	No	No

Table 5 Update Firmware Modes of Operation

¹ See Main Document of this documentation set section 2.3.10 for details on Firmware Distribution Mode of Operation

11.1.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes
SMETS1	No	No	No	No	No	No	No	Yes

Table 6 Update Firmware Command Variant Values

11.1.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Does the Firmware version ID match an entry on the Central Products List?	Check that the Firmware Version aligns with an entry on the Central Products List, i.e. it is an approved Firmware Version Id	E110101 ⁴
Are all the Devices in the list valid? ³	Check that each Device ID in the list exists and the DCC Service User, in the User Role defined in the Service Request, is the registered Import Supplier for all the Devices in the list, or for a SMETS1 CHF / SMETS1 PPMID the Lead Supplier	W110101 ²
Are all Devices in the list in a Status of 'Commissioned' or 'Suspended'? ¹	SMETS2 or later: Check that each Device ID in the list corresponds to a Meter or HCALCS in a status of 'Commissioned' or 'Suspended' SMETS1: Check that each Device ID in the list corresponds to a Meter, CHF or PPMID in a status of 'Commissioned' or 'Suspended'	W110101 ²
Is the Firmware Version applicable to each 'Commissioned' Device in the list?	Check that the Firmware Version is applicable to each 'Commissioned' Device ID in the list	W110101 ²

Validation Check	Process	Response Code
For SMETS2 or later Devices: Is there another firmware upgrade request already in progress for the Device in the list?	For SMETS2 or later Devices, check that the Device does not have another active firmware upgrade request in progress.	W110101 ²
For an HCALCS Device Type: Does the Device currently have a Firmware Version that is GBCS v4.1 or later?	For the HCALCS Device Type, check that the Device has a Firmware Version that is GBCS v4.1 or later.	W110101 ²
For an HCALCS Device Type: Does the CHF associated with the HCALCS have a Firmware Version that is GBCS v4.1 or later?	For the HCALCS Device Type, check that the Firmware Version of the CHF associated with the Device is GBCS v4.1 or later.	W110101 ²
Check that the firmware status value as per CPL is active?	Check the status of the firmware image against the CPL.	E110102
Check that the Firmware Hash of the Manufacturer Image part of the firmware image contained within the Service Request is the same as the Firmware Hash for that firmware image contained within the CPL	DCC Data Systems to compute the hash of the Manufacturer Image part of the firmware image and check this against the hash held for this version of firmware from the stored Central Products List (CPL)	E110103
Is the FirmwareImage well formed?	Check that the FirmwareImage contains both an OTA Header and a Firmware Image concatenated together, conforms to GBCS requirements, and if a non-SMETS1 Firmware image is within the non-SMETS1 size limit i.e. 1024000. Note that 1024000 is the base 64 equivalent of approx. 750kb.	E110105

Table 7 Update Firmware Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

² The same Response Code is returned to indicate the Response contains a warning

³ This check supersedes the generic Authorisation Check associated to Response Code E4. See Main Document of this documentation set section 7.4

⁴ HCALCS Firmware Versions are not valid prior to DUIS v5.0

11.1.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```

<UpdateFirmware>
  <FirmwareImage>ZGVmYXVsdA==</FirmwareImage>
  <FirmwareVersion>1100EEFF</FirmwareVersion>
  <DeviceIDList>11-00-AA-BB-CC-DD-EE-FF,22-00-AA-BB-CC-DD-EE-FF</DeviceIDList>
</UpdateFirmware>

```

Figure 2 Sample Update Firmware Service Request (Body) Format

11.1.2 Responses

The response messages for an “Update Firmware” Request follow the generic format for all “DCC Only” Service Responses. The generic responses applicable to this request are;

- Acknowledgement.
- Service Response (from DCC). Applicable if response includes a warning

See Main Document of this documentation set section 2.3.10 for details on the Firmware Distribution responses from the Devices.

11.1.2.1 Service Response (from DCC)

Applicable to cases where authorisation / validation failed for one or more of the Device IDs in the list to inform the DCC Service User of the Device IDs not included in the DCC Data Systems Request to the CSPs.

11.1.2.1.1 Format

This Service Request synchronous response is defined in the XSD DSPUpdateFirmwareWarning XML element, which contains the list(s) of Device IDs that failed DCC Authorisation / Validation.

Note that when the image has been received by the target device the device shall send an Alert (code 0x8F72 for success and 0x8F1C for failure) see Annex 15 for further information on these Alerts.

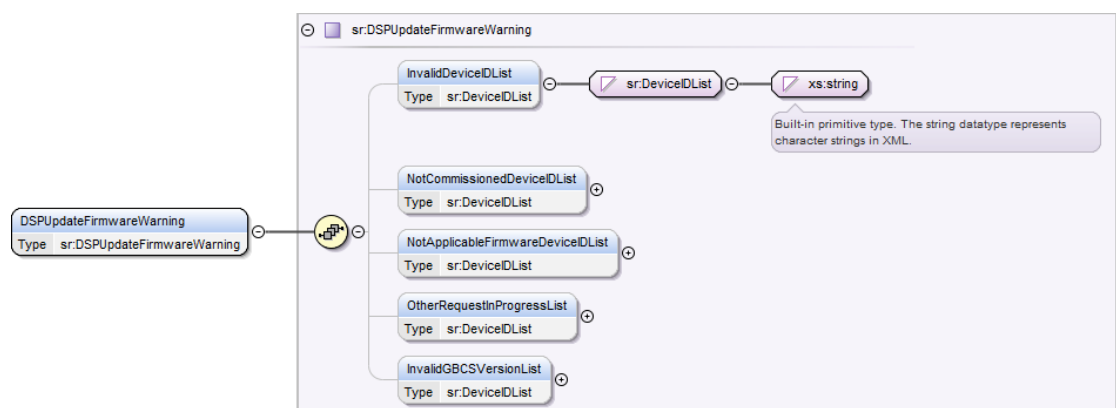


Figure 3 Update Firmware Service Response (from DCC) – Update Firmware Warning Structure

A DSPUpdateFirmwareWarning element is returned when ResponseCode is W110101.

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
InvalidDeviceIDList	<p>Comma separated list of Device IDs for which the DCC Service User ID is not the registered Import Supplier or the Device IDs don't exist.</p> <p>Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)</p>	<p>sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}){1,}([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}){0,1})")</p>	No ¹	None	N/A	Non-Sensitive
NotCommissionedDeviceIDList	<p>SMETS2 or later: Comma separated list of Device IDs which aren't in a status of "Commissioned" or "Suspended" or the Device is not a Meter or HCALCS.</p> <p>SMETS1: Comma separated list of Device IDs which aren't in a status of "Commissioned" or "Suspended" or the Device is not a Meter or a SMETS1 CHF/PPMID.</p> <p>Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)</p>	<p>sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}){1,}([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}){0,1})")</p>	No ¹	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
NotApplicableFirmwareDeviceIDList	Comma separated list of Device IDs for which the Firmware is not applicable. Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})"))	No ¹	None	N/A	Non-Sensitive
OtherRequestInProgressList	Comma separated list of Device IDs for which another Firmware Update request is in progress. Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17). Prior to DUIS v5.0, Devices with in-progress updates will be included in the InvalidDeviceIDList. This list type is introduced in DUIS v5.0.	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})"))	No ¹	None	N/A	Non-Sensitive
InvalidGBCSVersionList	Comma separated list of <ul style="list-style-type: none"> HCALCS Device IDs for which the GBCS Version of the associated CHF is prior to v4.1 HCALCS Device IDs for which the current GBCS Version is prior to v4.1 Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17). This list type is introduced in DUIS v5.0. Note: this list and the associated validation is primarily intended to check GBCS compatibility of the CHF Firmware Version. However the same list will also be used to report any validation failures for GBCS compatibility of the HCALCS Firmware Version.	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})"))	No ¹	None	N/A	Non-Sensitive

[illegible]

¹ The DSPUpdateFirmwareWarning will contain at least one of the 5 Lists and it could contain all of them

11.1.2.1.3 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```
<ResponseMessage>
  <ServiceReference>11.1</ServiceReference>
  <ServiceReferenceVariant>11.1</ServiceReferenceVariant>
  <DSPUpdateFirmwareWarning>
    <NotCommissionedDeviceIDList>22-00-AA-BB-CC-DD-EE-FF</NotCommissionedDeviceIDList>
    <OtherRequestsInProgressList>22-00-AA-BB-CC-DD-EE-AA</OtherRequestsInProgressList>
  </DSPUpdateFirmwareWarning>
</ResponseMessage>
```

Figure 4 Sample Update Firmware Service Response (from DCC) – Update Firmware Warning Format

11.1.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E110101	Failed Validation – Firmware Version not approved	Error	The Firmware Version is not approved, i.e. it doesn't align with an entry on the Central Products List
W110101	Failed Authorisation – Invalid User / Device Registration Status and / or Firmware Version not applicable to Device	Warning	<p>The Update Firmware Warning contains between one and five lists of Device IDs for which the validation failed:</p> <ul style="list-style-type: none"> InvalidDeviceIDList. The Device ID doesn't exist or the DCC Service User is not the Device's registered Import Supplier NotCommissionedDeviceIDList. The Device's status is not 'Commissioned' or 'Suspended' or the Device is not a Meter, HCALCS, SMETS1 CHF or SMETS1 PPMID NotApplicableFirmwareDeviceIDList. The Firmware Version is not applicable to the Device OtherRequestsInProgressList. The Device already has another Firmware update request in progress InvalidGBCSVersionList: The CHF associated with the HCALCS Device has a GBCS Version prior to v4.1 (and so firmware updates are not supported); or additionally the target HCALCS Device has a GBCS Version prior to v4.1 (and so firmware updates are not supported).
E110102	Failed Validation – Firmware not active	Error	The firmware is not marked as active in the Central Products List and Smart Meter Inventory.
E110103	Failed Validation – Hash error	Error	The calculated hash value for the Manufacturer Image part of the firmware Image provided by the User within the Service Request differs from that held in the CPL for the specified FirmwareVersion.
E110105	Failed Validation – Firmware image not correctly formed	Error	The firmware image is not constructed as per the GBCS definition, e.g. the FirmwareImage does not contain both an OTA Header and a Firmware Image concatenated together, or the size is too large for the SMETS version.

Table 9 Failed Update Firmware Service Request Response Codes

11.2 Read Firmware Version (11.2)

Service Request Name	ReadFirmwareVersion
Service Reference	11.2
Service Request Variant Name	ReadFirmwareVersion
Service Reference Variant	11.2
Service Request Objective	To enable a DCC Service User to retrieve the firmware details that currently exists on a specified Device.
Business Context Statement	The DCC Service User requires the details of the current operating firmware version for a specified device
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU)
Security Classification	Non-critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.NC
Service Request Narrative (SMETS2 or Later)	<ol style="list-style-type: none"> The Gas Smart Meter Firmware Version can be read from the Gas Proxy Function (preferred) or from the Meter. This approach is recommended to preserve the battery life of the GSME. Upon receipt of a Response to this Service Request containing a Firmware Version value, <ol style="list-style-type: none"> if the Target Device Type is ESME, GSME, CHF, PPMID or HCALCS and the Firmware Version returned by the Device matches an entry on the CPL, but is different from that stored in the SMI, the DCC Data Systems will update the Firmware Version in the SMI to the value returned by the Device. Note that updating the Firmware Version may also update the Device's GBCS Version in the SMI <ol style="list-style-type: none"> If the target Device is CHF, the associated GPF Firmware Version will also be updated If the Firmware Version entry on the CPL has a status of "Current" and the Read Firmware Version Service Request wasn't submitted by the Responsible Import Supplier, DCC Alert N49 will be sent to the Responsible Import Supplier, or to all Responsible Import Suppliers where the Device is a PPMID. If the Device Status was 'Suspended' and the Firmware Version returned by the Device matches an entry on the CPL with a status of "Current" the DCC Data Systems shall update it to the status it held immediately prior to its Suspension and DCC Alert

	<p>N29 will be sent to the Responsible Import Supplier and, for ESMEs, GSMEs and GPFs, to the Responsible Network Operator.</p> <p>iv. If the Firmware Version entry on the CPL has a status of "Removed", the SMI Firmware Version will be updated, but the Device Status will not be set to 'Suspended'. In this case DCC Alert N50 will be sent to the Responsible Import Supplier as a warning, or to all Responsible Import Suppliers where the Device is a PPMID.</p> <p>b. if the Target Device Type is ESME, GSME, CHF, PPMID or HCALCS and the Firmware Version returned by the Device doesn't match an entry on the CPL DCC Alert N51 will be sent to the Responsible Import Supplier, or to all Responsible Import Suppliers where the Device is a PPMID, as a warning and the SMI Firmware Version will not be updated</p> <p>c. if the Target Device Type is GPF and the GSME Firmware Version returned by the GPF is different from that stored in the SMI, DCC Alert N52 will be sent to the Responsible Import Supplier as a warning and the SMI Firmware Version will not be updated</p> <p>d. Updates to the Smart Metering Inventory are carried out before the Service Response is generated. The other actions above are post-processing steps after the Service Response has been sent to the User</p> <p>3. In case of a SMETS2 or later PPMID, the Command will always be sent to the Device even if the version of the firmware recorded in the SMI indicates that the Device is not capable of returning the firmware version, as there is a possibility that the firmware has been updated but no activation alert has been received. If the PPMID does not in fact support the command, it will discard the command without sending a response, and will generate Device Alert 0x8F1E, which will cause DSP to generate a DCC Alert N39.</p>			
GBCS Cross Reference	Electricity / Communications Hub Function	Gas	PPMID	HCALCS
GBCS Message Code prior to GBCS v4.1	0x0059	0x0084	N/A ¹	N/A
GBCS Use Case prior to GBCS v4.1	ECS52	GCS38	N/A ¹	N/A
GBCS Use Case Name prior to GBCS v4.1	Read ESME/Comms Hub Firmware Version (prior to GBCS v4.0) Read ESME/SAPC/Comms Hub Firmware Version (GBCS v4.0 or later)	Read GSME Firmware Version	N/A ¹	N/A
GBCS Message Code v4.1 or later	0x0059	0x0084	0x0129	0x0129

GBCS Use Case v4.1 or later	ECS52	GCS38	CS08	CS08
GBCS Use Case Name v4.1 or later	Read ESME/SAPC/Comms Hub Firmware Version	Read GSME Firmware Version	Read PPMID/HCALCS Firmware Version	Read PPMID/HCALCS Firmware Version
SMETS1 Applicability	Yes	Yes	Yes	No
Service Request Narrative (SMETS1)	The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except: <div>1. Steps 2a and 2b in the SMETS2 or later narrative above, for SMETS1 CHF and PPMID, the alerts N49, N50 and N51 are only sent to the Responsible Import Supplier for the ESME on the same HAN.</div>			
GBCS Commands - Versioning Details				
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations				
Device Type			ESME	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI			GBCS v1.0 or later	
DEFAULT - No specific XML criteria			ECS52	
Device Type			GSME	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI			GBCS v1.0 or later	
DEFAULT - No specific XML criteria			GCS38	
Device Type			PPMID	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI			GBCS prior to v4.1	GBCS v4.1 or later
DEFAULT - No specific XML criteria			CS08 ¹	CS08
Device Type			HCALCS	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI			GBCS prior to v4.1	GBCS v4.1 or later
DEFAULT - No specific XML criteria			Response Code - E57	CS08

Table 10 Read Firmware Version Service Request

¹ For a SMETS2 PPMID, DSP will create a GBCS Command conforming to GBCS Use Case CS08 regardless of the firmware version for the Business Target Device ID specified within the SRV and contained within SMI (see narrative point 3 for further information); this is to enable the DCC Service User to query the Device in the event that a Device with a GBCS version prior to v4.1 has been updated to GBCS v4.1 or later successfully but the SMI record was not updated to show that (e.g. the activation alert was not received). Note that this is not applicable to HCALCS because (unlike PPMID) it is not feasible to update the firmware of an HCALCS Device with GBCS version prior to v4.1.

This section should be read in conjunction with Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

11.2.1 Service Request

11.2.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its `ReadFirmwareVersion` XML element defines this Service Request and only contains the Execution Date and Time for Future Dated Requests.

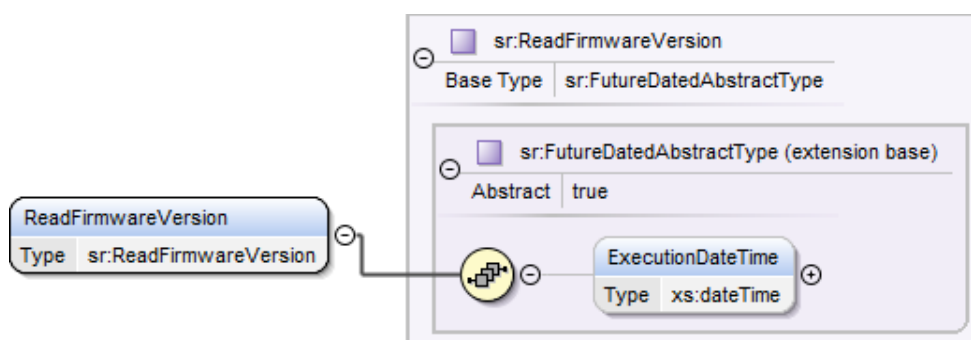


Figure 5 Read Firmware Version Service Request Structure

11.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 11 Read Firmware Service Request Data Items

11.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	Yes	No	DSP	No

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS1	No	Yes	No	DSP	No

Table 12 Read Firmware Version Modes of Operation**11.2.1.4 Applicable Command Variant Values**

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	Yes	Yes	Yes	No	No	No	No	No
SMETS1	Yes	No	No	No	No	No	No	No

Table 13 Read Firmware Version Command Variant Values**11.2.1.5 Validation**

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

11.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

<ReadFirmwareVersion/>

Figure 6 Sample Read Firmware Version Service Request (Body) Format**11.2.2 Responses**

The response messages for a "Read Firmware Version" Request follow the generic format for all "Device" response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) - GBCSPayload. Service Response Specific Payload
- Command for Local Delivery
- Parse Output / SMETS1 Response.

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Known Remote Parties (KRP) or Unknown Remote Parties (URP) to the Device.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

11.2.2.1 Parse Output / SMETS1 Response Format**11.2.2.1.1 Format - ReadFirmwareVersionRsp**

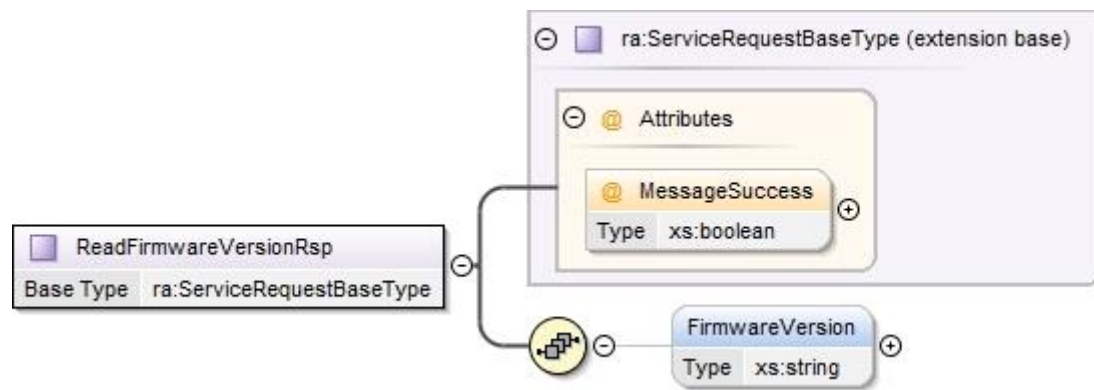


Figure 7 - Read Firmware Version Parse Response / SMETS1 Response Structure

11.2.2.1.2 Specific Header Data Items Definition

Data Item	Electricity Response	Gas Response	CHF/PPMID Response (SMETS1 only)	HCALCS	PPMID (SMETS2 only)
GBCSHexadecimalMessageCode	0059	0084	0059	0129	0129
GBCS Use Case Number (for information only - not in header)	ECS52	GCS38	n/a	CS08	CS08
GBCS Use Case Name (for information only - not in header)	Read ESME/Comms Hub Firmware Version (prior to GBCS v4.0) Read ESME/SAPC/Comms Hub Firmware Version (GBCS v4.0 or later)	Read GSME Firmware Version	Read ESME/Comms Hub Firmware Version	Read PPMID / HCALCS Firmware Version	Read PPMID / HCALCS Firmware Version
SupplementaryRemotePartyID	Present if originator is a URP	Present if originator is a URP	Present	Present if originator is a URP	Present
SupplementaryRemotePartyCounter	Present if originator is a URP	Present if originator is a URP	Present	Present if originator is a URP	Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present	Not Present	Not Present

Table 14 - Read Firmware Version Parse Response Header Data Items

See DUGIDS main document sections 8.1.1 and 4 for circumstances in which Users are a KRP or URP to a Device.

11.2.2.1.3 Specific Body Data Items Definition

The data items contained in the parse response are.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FirmwareVersion	<p>Current version number in manufacturer format.</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This data item matches the value on the CPL (excluding the colon separator between octet values)</p> <p>The value shall be four octets in length and shall correspond to the File Version field in the ZSE OTA Header structure.</p>	xs:string (maxLength = 8)	No	None	N/A	Non-Sensitive

Table 15 - Read Firmware Version Parse Response / SMETS1 Response Body Data Items

11.2.2.1.4 Sample Response

```
<ra:ReadFirmwareVersionRsp MessageSuccess="true">
  <ra:FirmwareVersion>1100EEFF</ra:FirmwareVersion>
</ra:ReadFirmwareVersionRsp>
```

Figure 8 - Read Firmware Version Parse Response Sample

11.3 Activate Firmware (11.3)

Service Request Name	ActivateFirmware
Service Reference	11.3
Service Request Variant Name	ActivateFirmware
Service Reference Variant	11.3
Service Request Objective	To enable a DCC Service User to activate the specified firmware image stored on a specified ESME, GSME, HCALCS, SMETS1 CHF or SMETS1 PPMID.
Business Context Statement	The DCC Service User requires that the current version of firmware operating on a specified device is updated to the required version, e.g. following a firmware fix (or up-to-date version) being released by the device manufacturer.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)

Security Classification	Critical and non-sensitive SMETS2 or later: GBCS XREF: SME.C.C		
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> 1. Pre-Condition - To successfully execute this Service Request a DCC Service User Must first have sent and received successful confirmation that a new firmware image is stored on the target Device ready for activation as a result of sending Service Request 11.1 UpdateFirmware. 2. A DCC Service User will know this to be true if and / or when they will have received a GBCS Alert (Alert Code 0x8F72). 3. The DCC Data Systems shall monitor all Responses received to this Service Request. Where the DCC identifies any Response where the current Firmware Version returned by the Device matches an entry on the CPL for that Device Model and that Firmware Version is different to the value currently held in the Smart Metering Inventory for that Device, an update to the Smart Metering Inventory shall be made. <ol style="list-style-type: none"> a. The DCC Data Systems shall update the DeviceFirmwareVersion data item within the Smart Metering Inventory to record the new DeviceFirmwareVersion value for the specified Device ID received in the Response. b. If the Device Status was 'Suspended' and the Firmware Version returned by the Device matches an entry on the CPL with a status of "Current" the DCC Data Systems shall update it to the status it held immediately prior to its Suspension and DCC Alert N29 will be sent to the Responsible Import Supplier and, for ESMes, GSMes and GPFs, to the Responsible Network Operator. c. If the Firmware Version returned by the Device matches an entry on the CPL with a status of "Removed", the SMI Firmware Version will be updated, but the Device Status will not be set to 'Suspended'. In this case DCC Alert N50 will be sent to the Responsible Import Supplier as a warning. d. Note that if the Firmware Version returned by the Device is invalid (doesn't match an entry on the CPL) DCC Alert N51 will be sent to the Responsible Import Supplier as a warning and the Smart Metering Inventory Firmware Version will not be updated. e. Updates to the Smart Metering Inventory are carried out before the Service Response is generated. The other actions above are post-processing steps after the Service Response has been sent to the User. 4. The Firmware Hash value included in the Service Request shall be calculated by the DCC Service User using the algorithm as defined in the SEC definition of Firmware Hash. 5. Some specific ESME Devices have a known issue that causes power to be lost to the comms hub as a side effect of activating a firmware update. This causes the comms hub to generate a spurious power outage alert. To manage this issue, DCC Data System will track firmware activation commands sent to affected ESMes and will suppress any power outage message received from the comms hub that notifies an outage which started within [30 minutes] of such a firmware activation. The Devices affected are identified by Device ID and are limited to a subset of SMETS2 ESMes. See section 2.3.12 of the main DUGIDS document for more information about power outage alerts. 		
GBCS Cross Reference	Electricity (ESME)	Gas	HICALCS
GBCS prior to v4.1 Message Code	0x0012	0x0012	N/A

GBCS prior to v4.1 Use Case	CS06	CS06	N/A
GBCS prior to v4.1 Use Case Name	Activate Firmware	Activate Firmware	N/A
GBCS v4.1 or later Message Code	0x0012	0x0012	0x0012
GBCS v4.1 or later Use Case	CS06	CS06	CS06
GBCS v4.1 or later Use Case Name	Activate Firmware	Activate Firmware	Activate Firmware
SMETS1 Applicability	Yes for ESME, GSME, CHF and PPMID		
Service Request Narrative (SMETS1)	<p>The behaviour of DSP for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none">1. In addition to ESME and GSME, Firmware of a SMETS1 CHF or a SMETS1 PPMID can be updated by this Service Request (by the Responsible Supplier for the SMETS1 ESME which is connected to the same home area network as the SMETS1 CHF / PPMID; note that response code E4 would be returned if this is attempted by the GIS).2. For SMETS1 Devices the Alert Code 0x8F72 will be sent as a SMETS1 Alert rather than as a GBCS Alert.3. If the activation of the Firmware update to a SMETS1 CHF or SMETS1 PPMID is successful, then DCC Alert N57 will be sent to all Suppliers with an interest in the HAN except for the Supplier that originated the Service Request.4. Where the Device is a SMETS1 CHF, the behaviour documented in 3b above regarding returning from Device Status Suspended applies also to the corresponding GPF.5. For SMETS1 devices the SMI Firmware Version will be updated only where the response indicates success.		
GBCS Commands - Versioning Details			
DCC Data System creates the following GBCS Commands or Response Codes based on the following combinations			
Device Type		ESME	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI		GBCS v1.0 or later	
DEFAULT - No specific XML criteria		CS06	

Device Type	GSME	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS v1.0 or later	
DEFAULT - No specific XML criteria	CS06	
Device Type	HCALCS	
Device's firmware version for Business Target Device ID specified within SRV and contained within SMI	GBCS prior to v4.1	GBCS v4.1 or later
Prior to DUIS v5.0: DEFAULT - No specific XML criteria	Response Code - E57	Response Code - E57
DUIS v5.0 or later: DEFAULT - No specific XML criteria	Response Code - E57	CS06

Table 16 Activate Firmware Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

11.3.1 Service Request

11.3.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its ActivateFirmware XML element defines this Service Request and contains the Firmware Hash and, for Future Dated, the Execution Date and Time.

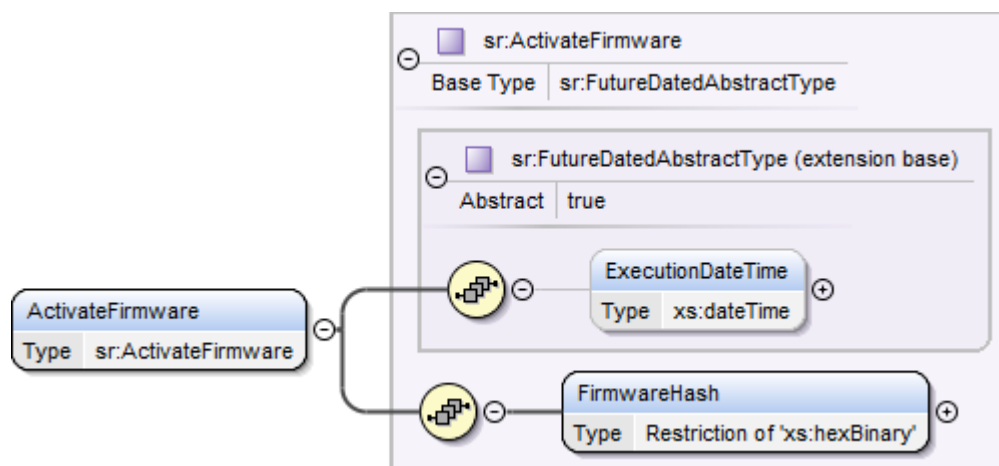


Figure 9 Activate Firmware Service Request Structure

11.3.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The date and time at which the firmware will be activated Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000 	xs:dateTime	No	None	N.A	Non-Sensitive
FirmwareHash	Hash calculated over the Firmware Image The Firmware hash as held in the CPL and presented in the format XX.XX (64 characters) where each X is one of the characters 0 to 9 or A to F. This data item must match the value on the CPL (excluding the colon separator between octet values) Note that a hexBinary value of length 32 is defined as 32 octets, an octet is represented as 2 characters.	Restriction of xs:hexBinary (minLength = 32, maxLength = 32)	Yes	None	N/A	Non-Sensitive

Table 17 Activate Firmware Service Request Data Items

11.3.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DC C Only	Future Dated	DSP Scheduled
SMETS2 or later	Yes	Yes	No	Device	No
SMETS1	No	Yes	No	DSP	No

Table 18 Activate Firmware Modes of Operation

11.3.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	Yes	Yes	Yes	Yes	No
SMETS1	No	No	No	Yes	No	No	No	No

Table 19 Activate Firmware Command Variant Values

11.3.1.5 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks and Annex section 17.2 for Execution Date Time validation.

11.3.1.6 Sample Request

There are three versions applicable to this Service Request

- Transform Service Request
- Signed Pre-command
- SMETS1 Service Request. Same format as Transform Service Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<ActivateFirmware>
  <FirmwareHash>0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF</FirmwareHash>
</ActivateFirmware>
```

Figure 10 Sample Activate Firmware Transform Request (Body) Format

11.3.2 Responses

The response messages for an “Activate Firmware” Request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Pre-command
- Acknowledgement
- Service Response (from Device) - GBCSPayload
- Service Response (from Device) - FutureDatedDeviceAlertMessage
- Command for Local Delivery
- Parse Output / SMETS1 Response

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

11.3.2.1 Device Responses and Future Dating

For SMETS2 or later Devices this Service Request’s Command contains a fixed number of instructions (‘n’ = 1) and activation date-time instructions (‘m’ = 1). See Main Document of this documentation set section 9.3.6 for details of the Device Responses returned in the different scenarios. Apart from in the exception cases described there, e.g. cancellation, the relationship between Mode of Operation and Response message types is as follows:

1. On Demand.
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command execution outcome containing ‘n’ results).
2. Future Dated (Device).
 - a. Service Response (from Device) – GBCSPayload
 - i. One Device Response (Command storage outcome containing ‘n’ results)
 - b. Service Response (from Device) – FutureDatedDeviceAlertMessage

- i. 'm' Device Alerts (Command instruction execution outcome). These Device Alerts are described in Annex section 15.4.4. The Device Alert payloads for this particular Service Request will be of the type described in Annex section 15.4.4.3.4.

For SMETS1 Devices this Service Request is only available for Mode of Operation On Demand or Future Dated (DSP). In both cases, the Response message type is a single SMETS1 Device Response.

11.3.2.2 Parse Output / SMETS1 Response Format

11.3.2.2.1 Format - ActivateFirmwareResp

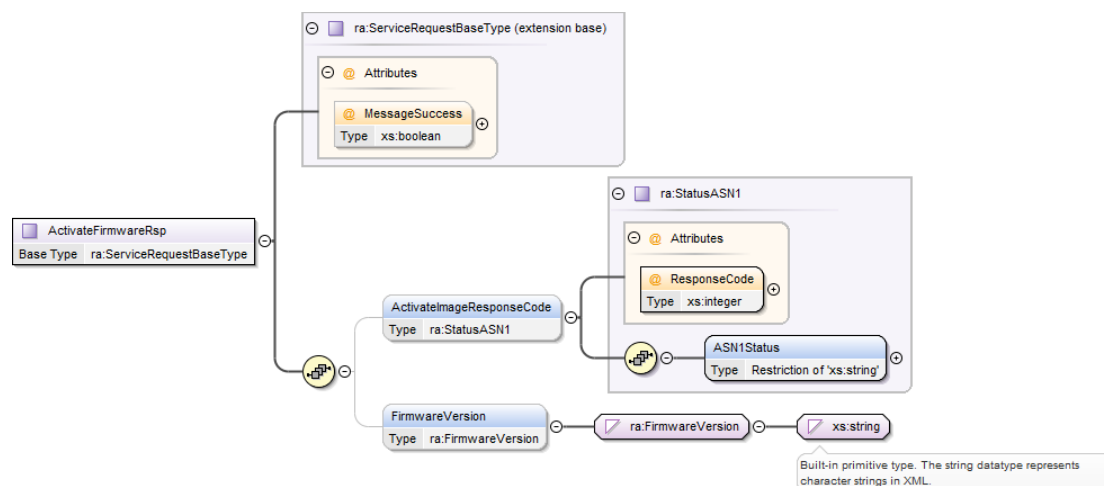


Figure 11 – Activate Firmware Parse Response / SMETS1 Response Structure

11.3.2.2.2 Specific Header Data Items Definition

Data Item	Electricity/HCALCS Response	Gas Response	CHF/PPMID Response (SMETS1 only)
GBCSHexadecimalMessageCode	0012	0012	0012
GBCS Use Case Number (for information only - not in header)	CS06	CS06	N/A
GBCS Use Case Name (for information only - not in header)	Activate Firmware	Activate Firmware	Activate Firmware
SupplementaryRemotePartyID	Not Present	Not Present	Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Present	Present	Present

Table 20 - Activate Firmware Parse Response Header Data Items

11.3.2.2.3 Specific Body Data Items

Responses to on demand execution requests will carry the data in the table below.

Parse Responses: See section 11.3.2.1 for description of the responses to Future Dated execution requests. Where an immediate response to a request for Future Dated execution indicates successful placing of the Command on the Device, it will be returned as a status-only response. Please see Annex section 18.9 for a description of how status-only responses are represented in the MMC XML schema.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActivateImageResponseCode	Outcome of the request for each replacement. Valid Set: <ul style="list-style-type: none"> success noImageHeld hashMismatch activationFailure Only present in responses to on demand execution requests. Not present in responses to requests for future dated execution.	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
FirmwareVersion	A unique identifier representing a firmware image that has been approved for release by the DCC User concerned. The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F. This data item matches the value on the CPL (excluding the colon separator between octet values) . Only present in responses to on demand execution requests. Not present in responses to requests for future dated execution.	ra:FirmwareVersion (restriction of xs:string, (maxLength = 8)			

Table 21 - Activate Firmware Parse Response / SMETS1 Response Body Data Items

11.3.2.2.4 Sample Response body

```
<ra:ActivateFirmwareRsp MessageSuccess="true">
  <ra:ActivateImageResponseCode ResponseCode="0">
    <ra:ASN1Status>success</ra:ASN1Status>
  </ra:ActivateImageResponseCode>
  <ra:FirmwareVersion>1100EEFF</ra:FirmwareVersion>
</ra:ActivateFirmwareRsp>
```

Figure 12 - Activate Firmware Parse Response Sample

11.4 Update PPMID Firmware (11.4)

Service Request Name	UpdatePPMIDFirmware
Service Reference	11.4
Service Request Variant Name	UpdatePPMIDFirmware
Service Reference Variant	11.4
Service Request Objective	To enable a DCC Service User to request that the DCC distribute a specified Firmware Image to a specified PPMID for storage and activation.
Business Context Statement	<p>The DCC Service User requires that an existing version of firmware operating on a specified PPMID is updated to the new specified version, e.g. following a firmware fix (or up-to-date version) being released for the PPMIDs.</p> <p>This Service Request is used to distribute and activate firmware to multiple PPMIDs. The Firmware image is included within the Service Request.</p>
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Gas Import Supplier (GIS)
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later: GBCS XREF: SME.C.NC</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> This Service can only be used for command delivery across the SM WAN. There are no local command delivery services for this service request. The maximum number of Device IDs that can be included in a Service Request is 50,000. Each Service Request has to include the Firmware Image and version. The Service Request Mode of Operation is “DCC Only” (see Main Document of this documentation set section 2.3.10 for details on Firmware Distribution Mode of Operation), i.e.: <ol style="list-style-type: none"> Business Target ID = DSP Broker ID Command Variant = 8 The DCC Data Systems apply the following specific authorisation and validation checks prior to the generation of the Service Response: <ol style="list-style-type: none"> The Firmware version specified in the Service Request matches an entry on the Central Products List, (approved Firmware version ID). The Firmware version is presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F, for example “1100EEFF” The DCC Service User is the Registered Import Supplier for one of the meters connected to the same home area network as each of the Device IDs in the list. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed Each Device ID in the list corresponds to a Device with a status of “Commissioned”. If this validation fails for at least one of the Devices, the

Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed.

Note: This validation will also allow Devices with a status of "Suspended".

- d. The Firmware Version is applicable to each "Commissioned" Device's Device ID in the list. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed.
 - e. Each Device in the list is not already the subject of an Update Firmware Request that is in progress (with a Firmware Distribution Tracking status of 'Accepted by DSP', 'Approved For Distribution' or 'Successful CH Transfer' as described in the Main Document of this documentation set, section 2.3.10). If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed.
 - f. The Firmware of the CHF on the same HAN must be GBCS v4.1 or later. If this validation fails for at least one of the Devices, the Service Response (from DCC) will include a warning and the list of all the Device IDs for which the validation failed.
5. If the validation succeeds at least for one Device ID and the Service Request doesn't fail any anomaly detection checks, the DCC Data Systems distribute the Firmware to the PPMIDs (via the appropriate CSPs) as described in the Main Document of this documentation set section 2.3.10.
 6. Update PPMID Firmware Service Requests are subject to threshold anomaly detection (see Main Document of this documentation set section 16.3) but with a slight variation on the rules. Since a single Update PPMID Firmware Service Request may result in messages to many Devices, the message count for the purposes of anomaly detection will be increased by the total number of Devices listed in the Service Request rather than simply being increased by one.
 7. Reporting of errors or Firmware Distribution Tracking status changes via DCC Alerts subsequent to DSP validation. Please note that, because one Update PPMID Firmware Service Request can be split into Commands to more than one CSP it is possible for one of the Commands to succeed and another to fail:
 - a. If the CSP detects a mismatch in Firmware Version / Hash, then the DCC Service User will be sent a DCC Alert N18.
 - b. If the CSP detects an invalid combination of Communications Hub / PPMID IDs then the DCC Service User will be sent a DCC Alert N19.
 - c. If the CSP detects that the Firmware Image is too large then the DCC Service Users will be sent a DCC Alert N20.
 - d. If the Firmware Version is not recognised by the CSP then the DCC Service User will be sent a DCC Alert N21.
 - e. If the DCC cannot deliver the firmware image to the CSP, then the DCC Service User will be sent a DCC Alert N22 / N23.
 - f. If the firmware image has not been rejected by the CSP, all the Responsible Suppliers to that Device other than the sender will be sent a DCC Alert N59.
 - g. If the CSP cannot deliver the firmware image to the CHF, then the DCC Service User will be sent a DCC Alert N60.
 - h. If the CSP successfully delivers the firmware image to the CHF, then the DCC Service User will be sent a DCC Alert N61.

- i. The Device Alerts received from the CHF indicating the following statuses will be sent to the DCC Service User using the DCC Alert N62:
 - i. CHF failed to deliver the firmware image to the target Device.
 - ii. The firmware image has been discarded at the CHF.
 - iii. The firmware image has been rejected due to hardware version mismatch of the target Device.
 - iv. The firmware image has been successfully delivered to the target Device by the CHF.
8. The Device Alert received from the PPMID indicating the activation outcome (8F8B) will be sent to all the Responsible Suppliers to that Device using the DCC Alert N39

If the firmware update for a PPMIDfirmware is successfully activated on the PPMID, then:

 - a. The DCC Data Systems shall update the DeviceFirmwareVersion data item within the Smart Metering Inventory to record the new DeviceFirmwareVersion value for the Device ID of the Device that sent the Device Alert.
 - b. If the Device Status was 'Suspended' and the Firmware Version in the Device Alert matches an entry on the CPL with a status of "Current" the DCC Data Systems shall update it to the status it held immediately prior to its Suspension and DCC Alert N29 will be sent to the Responsible Import Suppliers.
 - c. If the Firmware Version in the Device Alert matches an entry on the CPL with a status of "Removed", the SMI Firmware Version will be updated, but the Device Status will not be set to 'Suspended'. In this case DCC Alert N50 will be sent to the Responsible Import Suppliers as a warning.
 - d. Note that if the Firmware Version in the Device Alert is invalid (doesn't match an entry on the CPL) DCC Alert N51 will be sent to the Responsible Import Suppliers as a warning and the Smart Metering Inventory Firmware Version will not be updated.
 - e. Updates to the Smart Metering Inventory are carried out before the N39 DCC Alert is generated. The other actions above are post-processing steps after the DCC Alert N39 has been sent to the User.
 - f. Note that those Responsible Suppliers using a DUIS version prior to v5.0 will only receive the Device Alert Code 8F8B (without the activation outcome). In this case, Service Request 11.2 can be used to read the Firmware Version currently active on the device.
9. It is the DCC Service User's responsibility to resend an Update Firmware Service Request to those Devices for which DSP, CSP or Device validation has failed or for which no successful response from the Device has been received. Note that in order to distinguish the Firmware Distribution Tracking between the original Upgrade Firmware Requests and resubmissions for the same Device and the same Firmware, the DCC Service User should use a new Service Request ID for each request.
10. The Firmware Image (maximum size = 750 KB) has to be included in the Service Request in base 64 binary form (maximum length = 1024000). Please see GBCS section 11, for details of the Firmware Image contents, format and validation.
11. Where a User receives a warning that an Update PPMID Firmware Request is in progress and does not believe that this is correct, then a service management incident should be raised so that the DCC's Firmware Distribution Tracking Status

	<p>can be updated to 'Reset By DCC' to allow subsequent Update Firmware Requests to be accepted by the DCC.</p> <p>12. DCC Service Users are requested to maximise the efficiency of firmware distribution within the DCC by ensuring that as many Devices as possible are included within Update Firmware Service Requests. Sending Service Requests with single or low numbers of Devices reduces firmware download efficiencies and increases overall delivery timescales.</p> <p>13. DCC Service Users are requested to send Service Request 11.2 Read Firmware Version to each PPMID before attempting to update the firmware, in order to ensure that the Device is turned on and ready to accept firmware updates; following this good practice will minimise the likelihood of DCC Service Users needing to raise technical queries and wasting DCC capacity.</p> <p>14. DCC Data Systems will perform validation to check that the OTA header conforms to GBCS Table 11.2.3 requirements for the construction of the OTA Upgrade Image (ZigBee OTA Header + Upgrade Image), including the content of the OTA upgrade file identifier, OTA Header version, OTA Header length, OTA Header Field control and ZigBee Stack version, and that the total length of the OTA Upgrade Image matches the Total image size declared in the header.</p>
GBCS Cross Reference	PPMID
GBCS Message Code	N/A
GBCS Use Case	N/A
GBCS Use Case Name	N/A
SMETS1 Applicability	No

Table 22 Update PPMID Firmware Service Request

This section should be read in conjunction with the Main Document of this documentation set sections 9 (which describes the general formatting for all Service Requests and Service Responses) and 2.3.10 (which describes the Firmware Distribution and Activation process) and with the XSD (XML Schema - document 3 of this documentation set).

11.4.1 Service Request

11.4.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its UpdatePPMIDFirmware XML element defines this Service Request and contains the Firmware Image, its Version and the list of Device IDs the Firmware is to be distributed to.

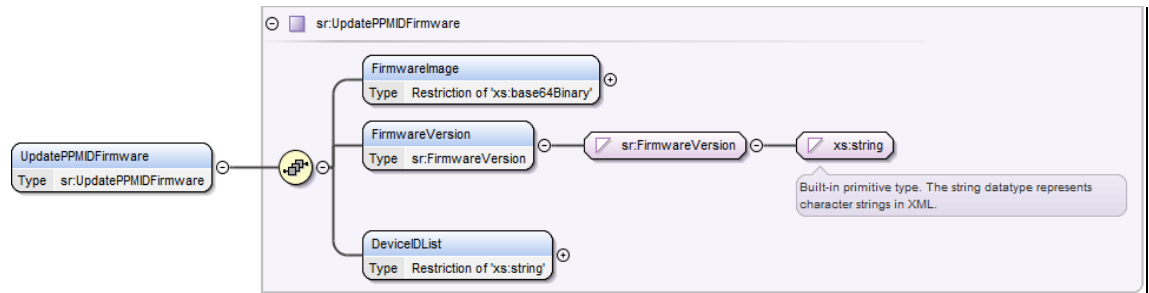


Figure 13 Update PPMID Firmware Service Request Structure

11.4.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FirmwareImage	<p>The Firmware Image corresponding to the Firmware Version</p> <p>The Firmware Image is the full OTA Upgrade Image as defined in GBCS. Note that this includes not only the Manufacturer Image but also additional signature and OTA Header information.</p> <p>Please see GBCS for details of how to construct the OTA Upgrade Image.</p> <p>The max length value in the XML schema is large enough to allow for SMETS1 Firmware images (for consistency with 11.1), whereas non-SMETS1 Firmware image size is restricted further; see validation error E110405.</p>	Restriction of xs:base64Binary (max Length = 10240000)	Yes	None	N/A	Non-Sensitive
FirmwareVersion	<p>A unique identifier representing a firmware image that has been approved for release by the DCC User concerned.</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This value must align with the firmware version value listed on the Central Products List (excluding the colon separator between octet values) pursuant to SEC Section F2.</p> <p>For avoidance of doubt, there is no direct comparison made between this FirmwareVersion value to the File Version value contained in the OTA Header (as defined by GBCS).</p>	sr::FirmwareVersion (Restriction of xs:string (minLength = 1, maxLength = 8))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceIDList	Comma separated list of Device IDs. Containing a minimum of 1 and a maximum of 50000 Device IDs, each as defined by sr:EUI (see Annex section 17)	Restriction of xs:string (min length = 23 max length = 1199999 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})*([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})")	Yes ¹	None	N/A	Non-Sensitive

Table 23 Update PPMID Firmware Service Request Data Items

¹ List of Device IDs. Minimum 1 and maximum 50000

11.4.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes ¹	No	No

Table 24 Update PPMID Firmware Modes of Operation

¹ See Main Document of this documentation set section 2.3.10 for details on Firmware Distribution Mode of Operation

11.4.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

[illegible]

Table 25 Update PPMID Firmware Command Variant Values

11.4.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Does the Firmware version ID match an entry on the Central Products List?	Check that the Firmware Version aligns with an entry on the Central Products List, i.e. it is an approved Firmware Version Id	E110401

Validation Check	Process	Response Code
Are all the Devices in the list valid? ³	Check that each Device ID in the list exists and the DCC Service User, in the User Role defined in the Service Request, is a Responsible Supplier for all the Devices in the list	W110401 ²
Are all Devices in the list in a Status of 'Commissioned' or 'Suspended'? ¹	Check that each Device ID in the list corresponds to a PPMID in a status of 'Commissioned' or 'Suspended'	W110401 ²
Is the Firmware Version applicable to each 'Commissioned' Device in the list?	Check that the Firmware Version is applicable to each 'Commissioned' Device ID in the list	W110401 ²
Is there another firmware upgrade request already in progress for the Device in the list?	Check that the Device does not have another active firmware upgrade request in progress.	W110401 ²
Does the CHF associated with the target Device have a Firmware Version that is GBCS v4.1 or later?	Check that the Firmware Version of the CHF associated with the Target Device is GBCS v4.1 or later.	W110401 ²
Check that the firmware status value as per CPL is active?	Check the status of the firmware image against the CPL.	E110402
Check that the Firmware Hash of the Manufacturer Image part of the firmware image contained within the Service Request is the same as the Firmware Hash for that firmware image contained within the CPL	DCC Data Systems to compute the hash of the Manufacturer Image part of the firmware image and check this against the hash held for this version of firmware from the stored Central Products List (CPL)	E110403
Is the FirmwareImage well formed?	Check that the FirmwareImage contains both an OTA Header and a Firmware Image concatenated together, conforms to GBCS requirements, and is within the size limit i.e. 1024000. Note that 1024000 is the base 64 equivalent of approx. 750kb.	E110405

Table 26 Update PPMID Firmware Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

² The same Response Code is returned to indicate the Response contains a warning

³ This check supersedes the generic Authorisation Check associated to Response Code E4. See Main Document of this documentation set section 7.4

11.4.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<UpdatePPMIDFirmware>
  <FirmwareImage>ZGVmYXVsdA==</FirmwareImage>
  <FirmwareVersion>1100EEFF</FirmwareVersion>
  <DeviceIDList>11-00-AA-BB-CC-DD-EE-FF,22-00-AA-BB-CC-DD-EE-FF</DeviceIDList>
</UpdatePPMIDFirmware>
```

Figure 14 Sample Update PPMID Firmware Service Request (Body) Format

11.4.2 Responses

The response messages for an “Update PPMID Firmware” Request follow the generic format for all “DCC Only” Service Responses. The generic responses applicable to this request are;

- Acknowledgement.
- Service Response (from DCC). Applicable if response includes a warning

See Main Document of this documentation set section 2.3.10 for details on the Firmware Distribution responses from the Devices.

11.4.2.1 Service Response (from DCC)

Applicable to cases where authorisation / validation failed for one or more of the Device IDs in the list to inform the DCC Service User of the Device IDs not included in the DCC Data Systems Request to the CSPs.

11.4.2.1.1 Format

This Service Request synchronous response is defined in the XSD DSPUpdatePPMIDFirmwareWarning XML element, which contains the list(s) of Device IDs that failed DCC Authorisation / Validation.

Note that when the image has been received by the target PPMID it shall activate the firmware and send an Alert to notify the successful activation.

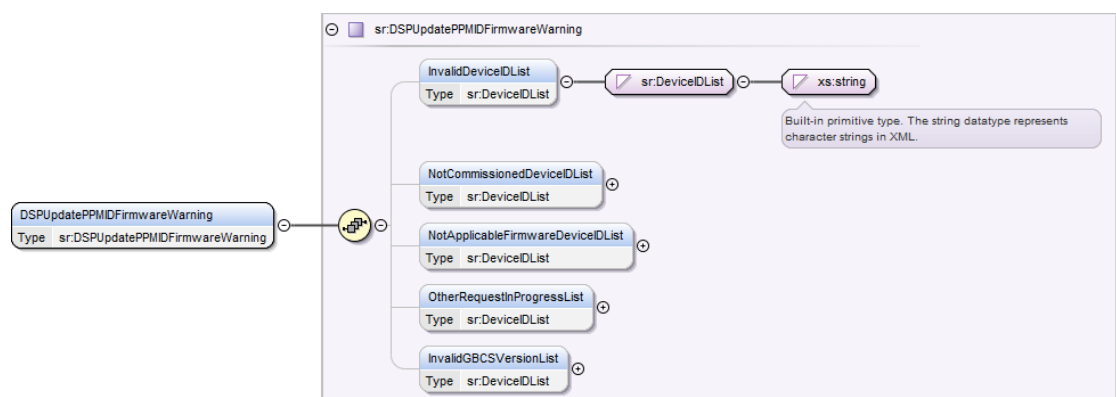


Figure 15 Update PPMID Firmware Service Response (from DCC) – Update PPMID Firmware Warning Structure

11.4.2.1.2 Specific Data Items

A DSPUpdateFirmwareWarning element is returned when ResponseCode is W110401.

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
InvalidDeviceIDList	Comma separated list of Device IDs for which the DCC Service User ID is not a Responsible Supplier or the Device IDs don't exist. Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})"*))	No ¹	None	N/A	Non-Sensitive
NotCommissionedDeviceIDList	Comma separated list of Device IDs which aren't in a status of "Commissioned" or "Suspended" or the Device is not a SMETS2 PPMID Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})"*))	No ¹	None	N/A	Non-Sensitive
NotApplicableFirmwareDeviceIDList	Comma separated list of Device IDs for which the Firmware is not applicable. Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})"*))	No ¹	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
OtherRequestInProgressList	Comma separated list of Device IDs for which another Firmware Update request is in progress. Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17)	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})*)")	No ¹	None	N/A	Non-Sensitive
InvalidGBCSVersionList	Comma separated list of Device IDs for which the associated CHF has a GBCS version prior to v4.1. Containing a minimum of 1 Device ID, each as defined by sr:EUI (see Annex section 17).	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})*)")	No ¹	None	N/A	Non-Sensitive

Table 27 Update PPMID Firmware Service Response (from DCC) – Update PPMID Firmware Warning Data Items

¹ The DSPUpdateFirmwareWarning will contain at least one of the 5 Lists and it could contain all of them

11.4.2.1.3 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```
<ResponseMessage>
  <ServiceReference>11.4</ServiceReference>
  <ServiceReferenceVariant>11.4</ServiceReferenceVariant>
  <DSPUpdatePPMIDFirmwareWarning>
    <NotCommissionedDeviceIDList>22-00-AA-BB-CC-DD-EE-FF</NotCommissionedDeviceIDList>
    <InvalidGBCSVersionList>22-00-AA-BB-CC-DD-EE-AA</InvalidGBCSVersionList>
  </DSPUpdatePPMIDFirmwareWarning>
</ResponseMessage>
```

Figure 16 Sample Update PPMID Firmware Service Response (from DCC) – Update PPMID Firmware Warning Format

11.4.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E110401	Failed Validation – Firmware Version not approved	Error	The Firmware Version is not approved, i.e. it doesn't align with an entry on the Central Products List
W110401	Failed Authorisation – Invalid User / Device Registration Status and / or Firmware Version not applicable to Device	Warning	<p>The Update PPMID Firmware Warning contains between one and five lists of Device IDs for which the validation failed:</p> <ul style="list-style-type: none"> InvalidDeviceIDList. The Device ID doesn't exist or the DCC Service User is not a Responsible Supplier of the Device. NotCommissionedDeviceIDList. The Device's status is not 'Commissioned' or 'Suspended' or the Device is not a SMETS2 PPMID NotApplicableFirmwareDeviceIDList. The Firmware Version is not applicable to the Device OtherRequestsInProgressList. The Device already has another Firmware update request in progress. InvalidCHFGBCSVersionList: The CHF associated with the Target Device has a GBCS Version prior to v4.1 (and so firmware updates are not supported).
E110402	Failed Validation – Firmware not active	Error	The firmware is not marked as active in the Central Products List and Smart Meter Inventory.
E110403	Failed Validation – Hash error	Error	The calculated hash value for the Manufacturer Image part of the firmware Image provided by the User within the Service Request differs from that held in the CPL for the specified FirmwareVersion.
E110405	Failed Validation – Firmware image not correctly formed	Error	The firmware image is not constructed as per the GBCS definition, e.g. the FirmwareImage does not contain both an OTA Header and a Firmware Image concatenated together, or the size is too large.

Table 28 Failed Update PPMID Firmware Service Request Response Codes

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 12 – Pre Device Installation Service

Author: DCC
Version: 5.2a
Date: June 2023

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12 Pre Device Installation Service (12 - PDIS)

This section sets out the full content of the DCC Pre Device Installation Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	PreDeviceInstallation	Service Id	12
Service Objective	To enable a DCC Service User to obtain or provide details to support the installation of Smart Metering Devices		
Business Context Statement	The DCC Service User wants to either check coverage information to support a perspective installation or provide device details to the Smart Metering Inventory to start the Smart Metering installation and commission process		
User Roles	<p>The following user roles have access to the list of service requests which make up the Pre Device Installation Service:</p> <ul style="list-style-type: none">Electricity Import Supplier (EIS)Electricity Export Supplier (EES)Gas Import Supplier (GIS)Supplier Nominated Agent (SNA)Electricity Network Operator (ENO)Gas Network Operator (GNO)Other User (OU)		

Table 1 Overview of Pre Device Installation Service

The mapping between the Pre Device Installation Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
12.1	12.1	Request WAN Matrix	DSP AccessControl Broker
12.2	12.2	Device Pre-notification	DSP AccessControl Broker

Table 2 PDIS - Service Requests / Devices

For each of the PDIS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

12.1 Request WAN Matrix (12.1)

Service Request Name	RequestWANMatrix	
Service Reference	12.1	
Service Request Variant Name	RequestWANMatrix	
Service Reference Variant	12.1	
Service Request Objective	To enable a DCC Service User to obtain details from the DCC relating to a) the likelihood of connectivity to the SM WAN and b) which WAN technology variant is recommended for the specified install location.	
Business Context Statement	The information provided by the response to this Service Requests will assist the DCC Service User in their installation of Smart Metering Equipment.	
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA) Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU) 	
Security Classification	Non-critical and non-sensitive: GBCS XREF: SME.C.NC	
Service Request Narrative	<ol style="list-style-type: none"> This Service Request returns data applicable to a single location (premises) only. In cases where no coverage is planned, the Coverage Availability will be set to false and the Anticipated Coverage Date will be set to 31/12/3000. The Self Service Interface Use Case 5.5 “CSP SMWAN Network Coverage” can be used by all DCC Service Users to more widely query the SMWAN (Smart Metering Wide Area Network) coverage data in a more interactive manner and at a wider less specific level across GB in each of the 3 CSP regions; North, Central and South to assist with rollout planning. 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A

GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	No	No

Table 3 Request WAN Matrix Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (see XML Schema – document 3 of this documentation set).

12.1.1 Service Request

12.1.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its RequestWANMatrix XML element defines this Service Request and contains either the UPRN or the Partial Address for which details are required.

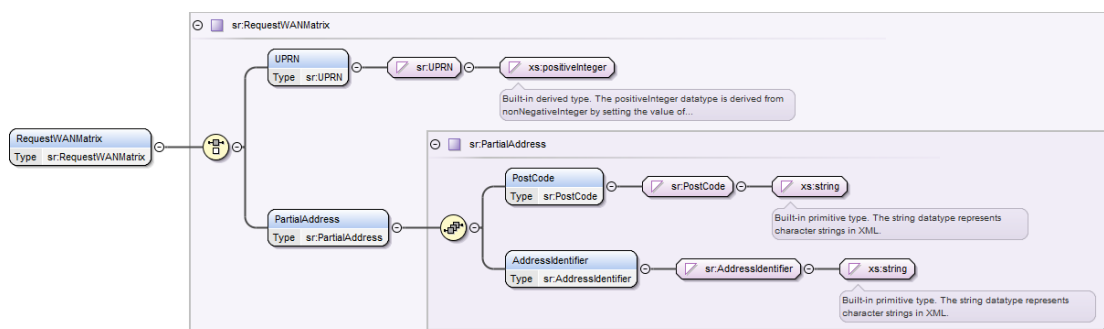


Figure 1 Request WAN Matrix Service Request Structure

12.1.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
UPRN	Unique Property Reference Number	sr:UPRN (Restriction of xs:positiveInteger (totalDigits = 12))	No	None	N/A	Non-Sensitive
PartialAddress	Postcode and Address Identifier that uniquely identify an address	sr:PartialAddress (see section 12.1.1.3)	No	None	N/A	Non-Sensitive

Table 4 Request WAN Matrix Service Request Data Items

¹ The Request is a choice, so must only include one Data Item

12.1.1.3 PartialAddress Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
PostCode	Postcode of Metering Point This search criteria is case insensitive.	sr:PostCode (Restriction of xs:string (minLength = 6 maxLength = 8))	Yes	None	N/A	Non-Sensitive
AddressIdentifier	Address Identifier (house number or house name), that combined with the Postcode, allows the identification of the premises This search criteria is case insensitive.	sr:AddressIdentifier (Restriction of xs:string (maxLength = 30))	Yes	None	N/A	Non-Sensitive

Table 5 Request WAN Matrix Service Request – PartialAddress Data Items

12.1.1.4 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	No	Yes	No	No

Table 6 Request WAN Matrix Modes of Operation

12.1.1.5 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
No	No	No	No	No	No	No	Yes

Table 7 Request WAN Matrix Command Variant Values

12.1.1.6 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Does the Request identify a unique set of coverage information?	Check that the Request identifies a unique set of coverage information	E120101
Is there SM WAN data for the location?	Check that there is SM WAN data for the location (property)	E120102

Table 8 Request WAN Matrix Service Request Validation

Note that this Service Request is available on the basis of Eligible User Role (rather than a User's status as an Eligible User in respect of a particular Smart Metering System or Device). In other words, the generic authorisation check associated to E4 is N/A. The generic authorisation check associated to E5 is N/A either. See Main Document of this documentation set section 7.4

12.1.1.7 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RequestWANMatrix>
  <PartialAddress>
    <PostCode>KT22 7LP</PostCode>
    <AddressIdentifier>17</AddressIdentifier>
  </PartialAddress>
</RequestWANMatrix>
```

Figure 2 Request WAN Matrix Service Request (Body) Format

12.1.2 Responses

The response messages for a "Request WAN Matrix" request follow the generic format for all "DCC Only" Service Responses.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

12.1.2.1 Service Response (from DCC)

Applicable to cases where the Request is successful and the WAN Matrix details are returned to the DCC Service User.

12.1.2.1.1 Format

This Service Request response is defined in the XSD ResponseMessage DSPWANMatrix element, which contains the WAN connectivity details.

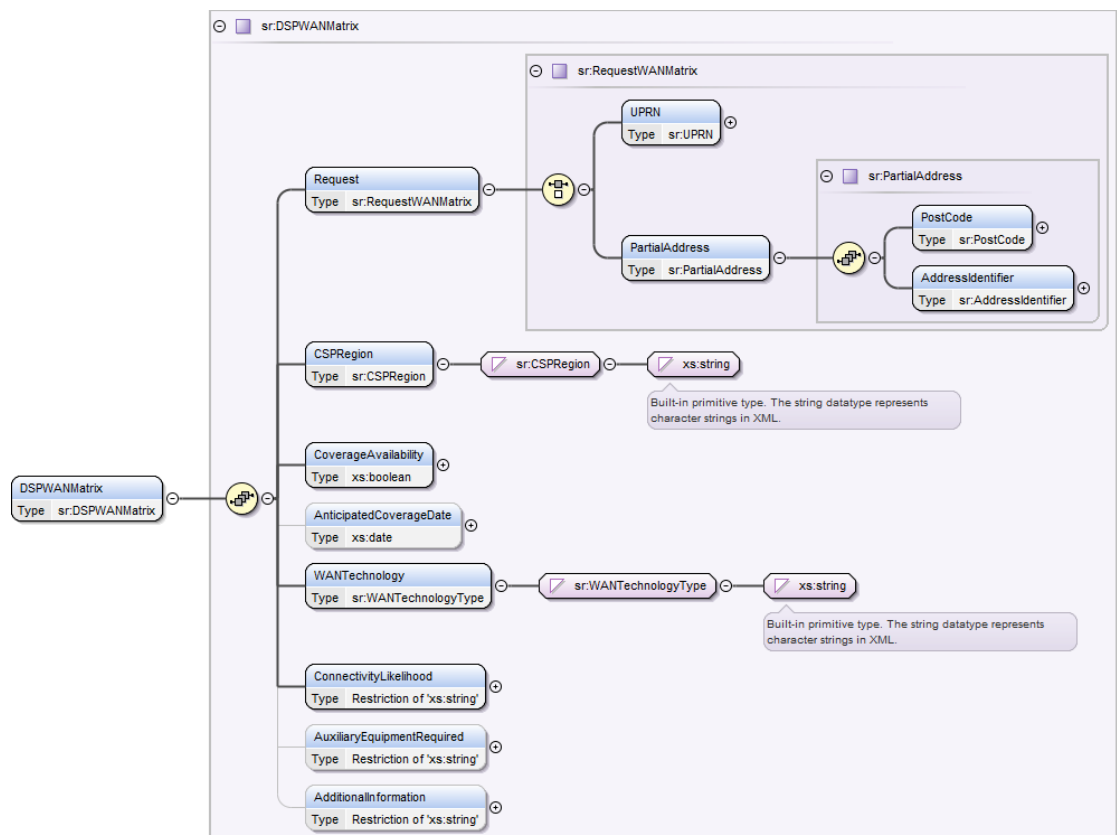


Figure 3 Request WAN Matrix Service Response (from DCC) Structure

12.1.2.1.2 Specific Data Items

Returned if the DCC Data Items successfully processed the Request.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Request	Input details of the Request, i.e. UPRN or Partial Address	sr:RequestWANMatrix (see section 12.1.1.2)	Yes	None	N/A	Non-Sensitive
CSPRegion	The CSP Region the address is associated with Valid set: <ul style="list-style-type: none"> North Central South 	sr:CSPRegion (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
CoverageAvailability	Coverage Availability Valid set: <ul style="list-style-type: none"> true. (Yes) false. (No) 	xs:boolean	Yes	None	N/A	Non-Sensitive
AnticipatedCoverageDate	If Coverage Availability is set to false, the anticipated date when Coverage will be available. If no Coverage is planned then this date will be set to 31/12/3000	xs:date	Coverage Availability = false: Yes Otherwise: N/A	None	N/A	Non-Sensitive
WANTechnology	The WAN technology to be used for this location The allowable values shall be in line with Equipment names as defined and maintained within Annex E of the CH INSTALLATION AND MAINTENANCE SUPPORT MATERIALS Typical values are; CSP South and Central <ul style="list-style-type: none"> Cellular Cellular + Mesh CSP North <ul style="list-style-type: none"> Standard 420 Variant 450 	sr:WANTechnologyType (Restriction of xs:string (maxLength = 30))	Yes	None	N/A	Non-Sensitive
ConnectivityLikelihood	The likely Connectivity strength Valid set: <ul style="list-style-type: none"> High Medium Low 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
AuxiliaryEquipmentRequired	Free text with details of any required auxiliary equipment, if any	Restriction of xs:string (maxLength = 50)	No ¹	None	N/A	Non-Sensitive
AdditionalInformation	Free text providing additional information	Restriction of xs:string (maxLength = 250)	No	None	N/A	Non-Sensitive

Table 9 Request WAN Matrix Service Request Response Data Items

¹ Only included if auxiliary equipment is required

12.1.2.1.3 Sample Responses

Sample responses are given in Annex Introduction Appendix 1. The specific information for this Service Request Response is as follows:

```
<ResponseMessage>
  <ServiceReference>12.1</ServiceReference>
  <ServiceReferenceVariant>12.1</ServiceReferenceVariant>
  <DSPWANMatrix>
    <Request>
      <PartialAddress>
        <PostCode>KT22 7LP</PostCode>
        <AddressIdentifier>17</AddressIdentifier>
      </PartialAddress>
    </Request>
    <CSPRegion>Central</CSPRegion>
    <CoverageAvailability>true</CoverageAvailability>
    <WANTechnology>Cellular</WANTechnology>
    <ConnectivityLikelihood>Medium</ConnectivityLikelihood>
  </DSPWANMatrix>
</ResponseMessage>
```

Figure 4 Sample Request WAN Matrix Service Response (from DCC) Format

12.1.2.2 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E120101	Failed Validation – No location identified	Error	No unique set of coverage information can be identified from the Request
E120102	Failed Validation – WAN Data not available	Error	No SM WAN data exists for the requested location (property)

Table 10 Failed Request WAN Matrix Service Request Response Codes

12.2 Device Pre-notification (12.2)

Service Request Name	DevicePrenotification
Service Reference	12.2
Service Request Variant Name	DevicePrenotification
Service Reference Variant	12.2
Service Request Objective	To enable a DCC Service User to provide the DCC with details of Devices (identifier, etc.) to be stored within the DCC Smart Metering Inventory) that they intend to install at some point in the future.
Business Context Statement	The DCC Service User wants to provide the DCC with a pre-notification of details for a device that is planned to be installed.
User Role Access	<ul style="list-style-type: none"> Electricity Import Supplier (EIS) Electricity Export Supplier (EES) Gas Import Supplier (GIS) Supplier Nominated Agent (SNA)

	<ul style="list-style-type: none"> Electricity Network Operator (ENO) Gas Network Operator (GNO) Other User (OU)
Security Classification	<p>Non-critical and non-sensitive</p> <p>SMETS2 or later:</p> <p>GBCS XREF: SME.C.NC</p>
Service Request Narrative (SMETS2 or later)	<ol style="list-style-type: none"> All Devices that are to be displayed to DCC Service Users via the Smart Metering Inventory must have a Device Pre-notification Service Request sent to the DCC. Each Device to be added to the Smart Metering Inventory must be notified by the DCC Service User with a separate Device Pre-notification Service Request with the exception of the CHF and GPF. The Communications Hub Function and Gas Proxy Function associated to the same physical Communications Hub are notified via a single Service Request. The Device ID in the Service Request has to be that of the CHF. If the Device ID is that of a Communications Hub Function, the Request has to include the Gas Proxy Function Device ID associated to it. The Device Manufacturer, Device Model and Firmware Version are shared by both Devices, so they only need to be provided once. The DCC Data Systems will record this data against both Device IDs within the Smart Metering Inventory and will set the Device Type of the Gas Proxy Function ID to GasProxyFunction. Only Devices not already in the Smart Metering Inventory and those with a status of 'Decommissioned' or 'Withdrawn' can be pre-notified. The result of a successful execution of this Service Request will be to add the Device to the Smart Metering Inventory if it didn't already exist and, if the Device has a Device Status, it will be set to 'Pending' to enable the Installation and Commissioning cycle to begin (these actions are carried out before the Service Response is generated). <ol style="list-style-type: none"> If the Device didn't already exist in the Smart Metering Inventory, it will be added and, if applicable, its Device status will be set to 'Pending'. <ol style="list-style-type: none"> If the Device Type was a Communications Hub Function, its associated Gas Proxy Function will also be added to the Smart Metering Inventory and its Device status set to 'Pending' Device status is not applicable to Type 2 Devices, i.e. IHD and CAD If the Device did already exist in the Smart Metering Inventory with a status of 'Decommissioned' or 'Withdrawn', its status will be set to 'Pending'. <ol style="list-style-type: none"> If the Device Type was a Communications Hub Function, its associated Gas Proxy

Function Device status will also be set to 'Pending'

6. Once a Device ID has been added to the Smart Metering Inventory via this Service Request, it cannot be amended by this Service Request. It must be updated or removed using Service Request 8.4 – Update Inventory (see Annex section 8.4) and, if required, a new Device Pre-notification sent to the DCC.
 - a. Please note that if an existing Device ID in a status of 'Decommissioned' or 'Withdrawn' is pre-notified using Service Request 12.2 it is possible to update its details, e.g. Firmware Version at the same time
7. For CHF / GPF this Service Request should only be used in cases where these Devices hadn't been Pre-notified by the DCC via a CSP Notification Report
8. Please note – It is expected that under normal circumstances the DCC shall populate the Smart Metering Inventory with Communications Hub Function and Gas Proxy Function details and there is no need for Users to pre-notify the DCC for these Device types. The option exists in the rare cases where pre notification has not occurred and it is preventing installation. In these scenarios the User has the ability to Pre Notify the DCC of these Device Types if required
9. For Hand Held Terminal devices to be used they must be pre-notified as an IHD using this Service Request.
10. The ESMEVariant data item added to the Smart Metering Inventory (SMI) may be different from the definition as stated in SMETS and held on an ESME. Meter Variant is stated in SMETS as 'A data item to indicate if ESME is Single Element Electricity Metering Equipment, Twin Element Electricity Metering Equipment or Polyphase Electricity Metering Equipment.' Thus, it can only have three values and not the wider range of enumeration values as defined within this Service Request.
11. Where a single Device has combined functionality such as PPMID, IHD and/or CAD functionality, this Device shall be pre-notified with a single Device ID and will correspond to a Device Model certified with a single Device Type. It is expected to comply with the security characteristics of the higher security classification, so e.g. in the case of a Device combining PPMID and IHD functionality it would be certified as a PPMID, i.e. a Type 1 Device, and would be pre-notified and displayed to all parties as a PPMID. Any joining of this device to other Devices on the HAN should follow the standard process for a Device Type to match the Device Type that is pre-notified.
12. A Standalone Auxiliary Proportional Controller (SAPC) Device is a specialised form of ESME and should be pre-notified as Device Type ESME with an appropriate ESME Variant combination including G (e.g. AG). Support for SAPC functionality is available from DUIS v4.0 and GBCS v4.0.

GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	N/A
GBCS Use Case	N/A	N/A
GBCS Use Case Name	N/A	N/A
SMETS1 Applicability	Yes for ESME (Single Element), GSME, CHF/GPF, PPMID, IHD and CAD	
Service Request Narrative (SMETS1)	<p>The behaviour of DCC for this Service Request with regard to SMETS1 Devices is equivalent to the behaviour for SMETS2 or later Devices except:</p> <ol style="list-style-type: none"> 1. The SMETS1 Device Types to be pre-notified using this Service Request. are: ESME, GSME, CHF, GPF, PPMID, IHD and CAD 2. The SMETSCHTSVersion of SMETS1 Device Type IHD should begin "SMETS1.", e.g. "SMETS1.2". 3. For CHF / GPF this Service Request should only be used in cases where these Devices hadn't been Pre-notified by an S1SP. 4. It is expected that for SMETS1 ESME Devices only Single Element variants will be available on the CPL. 5. Device Status Withdrawn does not apply to SMETS1 Devices. 6. ESME Variants D (ALCS), F (APC) and G (SAPC), and combinations including them, are not applicable to SMETS1 	

Table 11 Device Pre-notification Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (see XML Schema – document 3 of this documentation set).

The following table summarises the mapping between the CPL and the DUGIDS Device Type (and for ESME also the ESME Variant). Please note that an SAPC is managed as Device Type ESME with an ESME Variant combination including G.

CPL Device Type	DUGIDS Device Type		DUGIDS ESME Variant	
	SMETS2 or later	SMETS1	SMETS2 or later	SMETS1
Communications Hub	CHF and GPF	CHF and GPF	N/A	N/A
Single Element Electricity Metering Equipment	ESME	ESME	A, AD or ADE; From DUIS v4.0, also ¹ : ADEF, ADF,	A

CPL Device Type	DUGIDS Device Type		DUGIDS ESME Variant	
	SMETS2 or later	SMETS1	SMETS2 or later	SMETS1
			ADEG, ADG, AF, AEF, AG or AEG	
Twin Element Electricity Metering Equipment	ESME	N/A	B, BD or BDE; From DUIS v4.0, also ¹ : BDEF, BDF, BF or BEF	N/A
Polyphase Element Electricity Metering Equipment	ESME	N/A	C, CD or CDE; From DUIS v4.0, also ¹ : CDEF, CDF, CF or CEF	N/A
Gas Smart Meter	GSME	GSME	N/A	N/A
Prepayment Interface Device	PPMID	PPMID	N/A	N/A
HAN Connected Auxiliary Load Control Switch	HCALCS	N/A	N/A	N/A

Table 12 CPL / DUGIDS Device Type mapping

¹ Combinations introduced in DUIS v4.0. These combinations cannot be included in a request using a version of DUIS prior to DUIS v4.0

12.2.1 Request

12.2.1.1 Format

The ServiceRequest Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests. Its DevicePrenotification XML element defines this Service Request and contains the Device details to be updated in the Smart Metering Inventory.

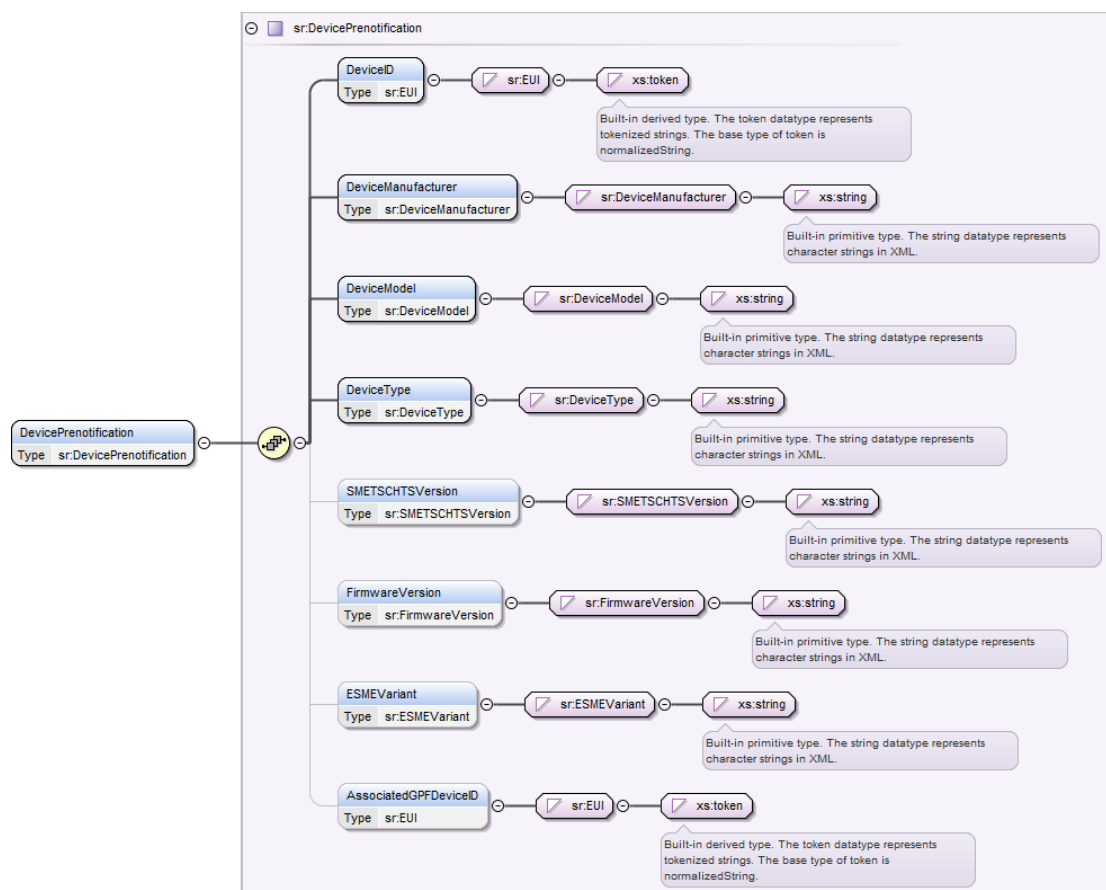


Figure 5 Device Pre-notification Service Request Structure

12.2.1.2 Specific Data Items Definition

The data items contained in the Service Request are defined as:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	A unique ID for the Device	sr:EUI (see Annex 17)	Yes	None	N/A	Non-Sensitive
DeviceManufacturer	<p>The name of the Device's manufacturer</p> <p>With the exception of IHD and CAD:</p> <ul style="list-style-type: none"> The Device Manufacturer is the <device_model_manufacturer_identifier> from the CPL and presented in the format XXXX where each X is one of the characters 0 to 9 or A to F This data item must match the value on the CPL (excluding the colon separator between octet values) otherwise a validation error is raised, see E120203. <p>For IHD and CAD this data item is free text</p>	sr:DeviceManufacturer (Restriction of xs:string (maxLength = 30))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceModel	<p>The specific model of the device, as used by the manufacturer</p> <p>With the exception of IHD and CAD:</p> <ul style="list-style-type: none"> The Device Model is the concatenation of <device_model.model_identifier><device_model.hardware_version.version><device_model.hardware_version.revision> from the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F Where: <ul style="list-style-type: none"> the first 4 characters are the model identifier the next 2 characters are the hardware version.version the final 2 characters are the hardware version.revision This data item must match the value on the CPL (excluding the colon separator between octet values) otherwise a validation error is raised, see E120203. <p>For IHD and CAD this data item is free text</p>	sr:DeviceModel (Restriction of xs:string (maxLength = 30))	Yes	None	N/A	Non-Sensitive
DeviceType	<p>The Type of device</p> <p>Valid set:</p> <ul style="list-style-type: none"> ESME GSME CHF HCALCS¹ PPMID IHD CAD <p>With the exception of IHD and CAD, this data item must match the value on the CPL otherwise a validation error is raised, see E120203.</p> <p>See Table 12 for mapping between XML enumerated values and CPL values</p>	sr:DeviceType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
SMETSCHTSVersion	<p>The version of SMETS or CHTS that the Device complies with. This should align with the CPL version</p>	sr:SMETSCHTSVersion (Restriction of xs:string (minLength = 1, maxLength = 20))	Device Type = CAD: N/A Otherwise: Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FirmwareVersion	<p>The operational version of Firmware of the Device.</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This data item must match the value on the CPL (excluding the colon separator between octet values) otherwise a validation error is raised, see E120203.</p>	<p>Restriction of xs:string (minLength = 1, maxLength = 8)</p>	<p>All Devices except Type 2: Yes</p> <p>Type 2: N/A</p>	None	N/A	Non-Sensitive
ESMEVariant	<p>Electricity Smart Metering Equipment Variant.</p> <p>Valid set:</p> <ul style="list-style-type: none"> • A. Single Element • B. Twin Element¹ • C. Polyphase¹ • AD. Single Element with ALCS¹ • BD. Twin Element with ALCS¹ • CD. Polyphase with ALCS¹ • ADE. Single Element with ALCS and Boost Function¹ • BDE. Twin Element with ALCS and Boost Function¹ • CDE. Polyphase with ALCS and Boost Function¹ • ADF. Single Element with ALCS and APC^{1, 2, 3} • BDF. Twin Element with ALCS and APC^{1, 2, 3} • CDF. Polyphase with ALCS and APC^{1, 2, 3} • ADEF. Single Element with ALCS, Boost Function and APC^{1, 2, 3} • BDEF. Twin Element with ALCS, Boost Function and APC^{1, 2, 3} • CDEF. Polyphase with ALCS, Boost Function and APC^{1, 2, 3} • ADG Single Element with ALCS and SAPC^{1, 2, 3} • ADEG. Single Element with ALCS, Boost Function and SAPC^{1, 2, 3} • AF. Single Element with APC^{1, 2, 3} • BF. Twin Element with APC^{1, 2, 3} 	<p>sr:ESMEVariant Restriction of xs:string (Enumeration)</p>	<p>DeviceType = ESME: Yes Otherwise: N/A</p>	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
	<ul style="list-style-type: none"> CF. Polyphase with APC^{1, 2, 3} AEF. Single Element with Boost Function and APC^{1, 2, 3} BEF. Twin Element with Boost Function and APC^{1, 2, 3} CEF. Polyphase with Boost Function and APC^{1, 2, 3} AG. Single Element with SAPC^{1, 2, 3} AEG. Single Element with Boost Function and SAPC^{1, 2, 3} <p>See Table 12 for mapping between XML enumerated values and CPL values</p>					
AssociatedGPFDeviceID	A unique ID for the Gas Proxy Function Device associated to the Communications Hub Function	sr:EUI (see Annex 17)	DeviceType = CommunicationsHubFunction: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 13 Device Pre-notification Service Request Data Items

¹ N/A to SMETS1

² N/A to Devices prior to GBCS v4.0

³ This combination cannot be included in a request using a version of DUIS prior to DUIS v4.0

12.2.1.3 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Service	Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
SMETS2 or later	No	No	Yes	No	No
SMETS1	No	No	Yes	No	No

Table 14 Device Pre-notification Modes of Operation

12.2.1.4 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS2 or later	No	No	No	No	No	No	No	Yes

Service	CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
SMETS1	No	No	No	No	No	No	No	Yes

Table 15 Device Pre-notification Command Variant Values

12.2.1.5 Validation

This Service Request specific validation is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the Device existence and / or status in inventory correct? ¹	Check that the Device ID: <ul style="list-style-type: none"> Didn't exist in Inventory or, if it existed in Inventory, its status was 'Decommissioned' or 'Withdrawn'. 	E120201
Is the Device valid as per the Certified Product List?	Check that the Device Type (and first character of ESME Variant for ESME) / Manufacturer / Model / Firmware Version data specified by the DCC User matches the DCC's list of equipment that has been approved for use (Certified Products List - CPL), if validation against certified products list is required for this Device Type. The CPL contains CHF, ESME, GSME and Type 1 devices.	E120203
Is the data in the Request consistent?	Check that all the optional data items applicable to the Device Type are included in the Request and not present otherwise: <ul style="list-style-type: none"> SMETSCHTSVersion. Included for Device Types ESME, GSME, CHF, HCALCS, PPMID, IHD. Not included for Device Type CAD FirmwareVersion. Included for Device Types that require firmware (i.e. CHF, ESME, GSME, HCALCS and PPMID) and not included otherwise ESMEVariant. Included for Device Type ESME and not included otherwise AssociatedGPFDDeviceID. Included for Device Type CHF and not included otherwise 	E120204
Is the Device Type valid?	Check that the Device Type is not GPF	E120207

Table 16 Device Pre-notification Service Request Validation

¹ This check supersedes the generic Authorisation Check associated to Response Code E5. See Main Document of this documentation set section 7.4

Note that this Service Request is available on the basis of Eligible User Role (rather than a User's status as an Eligible User in respect of a particular Smart Metering System or Device). In other words, the generic authorisation check associated to E4 is N/A. See Main Document of this documentation set section 7.4

12.2.1.6 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<DevicePrenotification>
  <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
  <DeviceManufacturer>AB02</DeviceManufacturer>
  <DeviceModel>D7A50E04</DeviceModel>
  <DeviceType>ESME</DeviceType>
  <SMETSCHTSVersion>SMETS V2.0</SMETSCHTSVersion>
  <FirmwareVersion>1100EEFF</FirmwareVersion>
  <ESMEVariant>A</ESMEVariant>
</DevicePrenotification>
```

Figure 6 Device Pre-notification Service Request (Body) Format

12.2.2 Responses

The response messages for a “Device Pre-notification” request follow the generic format for all “DCC Only” Service Responses, the generic responses applicable to this request are;

- Acknowledgement

Sample responses are given in Annex Introduction Appendix 1.

12.2.2.1 Unsuccessful Response

The Response Codes specific to this Service Request are:

Response Code	Response Code Name	Response Code Type	Description
E120201	Failed Validation – Invalid Device Status	Error	The Device ID already existed in Inventory and its Status wasn't 'Decommissioned' or 'Withdrawn'
E120203	Failed Validation – Invalid Request	Error	The Device Type / Manufacturer / Model / Firmware Version data specified by the DCC User does not match the DCC's list of equipment that has been approved for use
E120204	Failed Validation – Inconsistent Request	Error	Not all the applicable optional data items are included in the Request or not applicable data items are included in the Request
E120207	Failed Validation – Invalid Device Type	Error	This Device Type can't be Pre-notified

Table 17 Failed Device Pre-notification Service Request Response Codes

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

14 – Record Network Data Service

Author: DCC
Version: 5.2a
Date: June 2023

Contents

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14.1 Record Network Data (Gas) (14.1)..... 3

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14.1.2 Responses 6

14 Record Network Data Service (14 - RNDS)

This section sets out the full content of the DCC Record Network Data Service by providing the overarching service content that includes: service request and response message types, data content items and User access roles.

Service Name	RecordNetworkData(GAS)	Service Id	14
Service Objective	To enable a DCC Service User to initiate the recording of gas consumption data at 6 minute intervals over a 4 hour period, in the Gas Smart Metering Equipment Network Data Log as defined by SMETS.		
Business Context Statement	The Network Operator wishes to understand gas distribution network issues		
User Roles	Only the following DCC Service User roles will be able to use the Record Network Data (GAS) Service: <ul style="list-style-type: none">Gas Network Operator (GNO)		

Table 1 Overview of Record Network Data Service

The mapping between the Record Network Data Services and the Devices they apply to is defined as follows:

Service Reference	Service Reference Variant	Name	Business Target ID
14.1	14.1	Record Network Data (GAS)	GSME

Table 2 RNDS - Service Requests / Devices

For each of the RNDS Service Requests supported by the DCC User Gateway, this section details:

- the reference to the appropriate section of the XML Schema (see XML Schema – document 3 of this documentation set)
- the structure of each Service Request and Response with examples (if specific to the Service Request)
- if applicable, Service Request specific Validation and Response Codes

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

14.1 Record Network Data (Gas) (14.1)

Service Request Name	RecordNetworkData (GAS)
Service Reference	14.1
Service Request Variant Name	RecordNetworkData (GAS)
Service Reference Variant	14.1

Service Request Objective	To enable a DCC Service User to initiate the recording of gas consumption data at 6 minute intervals over a 4 hour period, in the Gas Smart Metering Equipment Network Data Log as defined by SMETS.	
Business Context Statement	The Gas Network Operator wishes to understand gas distribution network issues and so initiates an instruction to the GSME to begin logging network sampling data.	
User Role Access	<ul style="list-style-type: none"> Gas Network Operator 	
Security Classification	Non-critical and non-sensitive <i>GBCS XREF: SME.C.NC</i>	
Service Request Narrative	<ol style="list-style-type: none"> The <i>Network Data Log</i> as defined in SMETS is a log capable of storing four hours of UTC date and time stamped six minute Consumption data arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten This Service Request triggers the record on a specified Gas Smart Meter of the gas consumption data at 6 minute intervals over a four hour period. If the Service Request is successful, the required data is written in the Gas Smart Meter's Network Data Log, which can be read from the Gas Smart Meter using Service Request 4.10 Read Network Data. See Annex section 4.10 for details. If the Gas Smart Meter's Network Data Log is not read by the User before executing a subsequent SR14.1 then the data in the Network Data Log is overwritten with the contents of this new request This Service Request can be run Ad-hoc or be DSP Scheduled (via Service Request 5.1 - Create Schedule, see Annex section 5.1), the same User Role Access constraints apply in either case. The SampleID value in the Service Response indicates if a Network Data Log sampling session could be started or not. If the Service Request was part of a sequence, the DCC Data Systems use this information to find out if the Command succeeded (if the session could be started) or failed (if the session couldn't be started). If the Command failed the sequence would also be set to failed <ol style="list-style-type: none"> A value of 2 indicates the session was started. A value of 65535 (0xFFFF) indicates the session could not be started (for example because there was another one already running) 	
GBCS Cross Reference	Electricity	Gas
GBCS Message Code	N/A	0x0080
GBCS Use Case	N/A	GCS31
GBCS Use Case Name	N/A	Start Network Data Log on GSME

SMETS1 Applicability	No	No
----------------------	----	----

Table 3 Record Network Data (GAS) Service Request

This section should be read in conjunction with the Main Document of this documentation set section 9 (which describes the general formatting for all Service Requests and Service Responses) and with the XSD (XML Schema – document 3 of this documentation set).

14.1.1 Service Request

14.1.1.1 Format

The Request Body XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of all the Service Requests.

Ad-hoc: Its RecordNetworkDataGAS XML element defines this Service Request and it doesn't contain any data items.

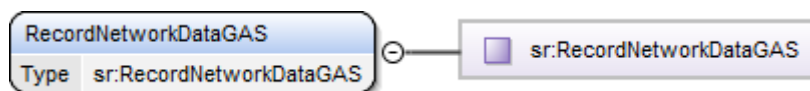


Figure 1 Record Network Data (GAS) Service Request Structure (Ad-hoc)

Create Schedule: Its DSPRecordNetworkDataGAS XML element defines this Service Request and it doesn't contain any data items.



Figure 2 Record Network Data (GAS) Service Request Structure (Create Schedule)

14.1.1.2 Applicable Modes of Operation

The Modes of Operation applicable to this Service Request are (see Main Document of this documentation set section 2.3 for Modes of Operation definitions):

Transform	On Demand	DCC Only	Future Dated	DSP Scheduled
No	Yes	No	No	Yes

Table 4 Record Network Data (GAS) Modes of Operation

14.1.1.3 Applicable Command Variant Values

The Command Variant values applicable to this Service Request are (see Main Document of this documentation set section 3 for Command Variant definitions):

CV = 1	CV = 2	CV = 3	CV = 4	CV = 5	CV = 6	CV = 7	CV = 8
Yes	Yes	Yes	No	No	No	No	No

Table 5 Record Network Data (GAS) Command Variant Values (Ad-hoc)

14.1.1.4 Validation

This Service Request has no specific validation. See Main Document of this documentation set section 7 for generic access control checks.

14.1.1.5 Sample Request

Sample requests are given in Annex Introduction Appendix 2. The specific information for this Service Request (Body) is as follows:

```
<RecordNetworkDataGAS/>
```

Figure 3 Record Network Data (GAS) Service Request (Body) Format (Ad-hoc)

14.1.2 Responses

The response messages for a “Record Network Data (GAS)” request follow the generic format for all “Device” response messages, the generic responses applicable to this request are;

- Acknowledgement
- Service Response (from Device) – GBCSPayload Service Response Specific Payload
- Command for Local Delivery
- Parse Output

See Main Document of this documentation set section 4 for Response IDs returned to DCC Service Users that are Unknown Remote Parties (URP) to the Device.

When this Service Request is run as DSP Scheduled, the Service Response (from Device) is a variation of the generic one and it is defined in Annex section 4.8.1.2.1.

Sample responses are given in Annex Introduction Appendix 1, response specific information details are given below.

14.1.2.1 Parse Output Format

14.1.2.1.1 Format – RecordNetworkDataGASRsp

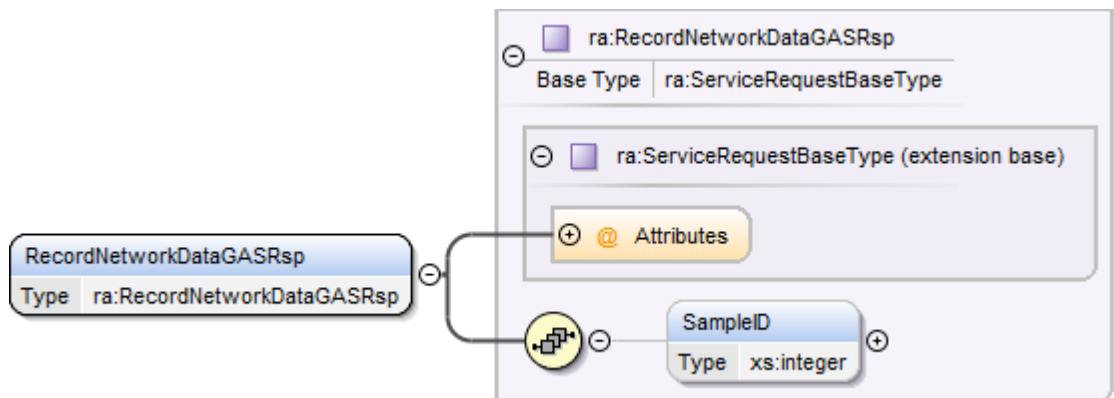


Figure 4 – Record Network Data Gas Response Structure

14.1.2.1.2 Specific Header Data Items

Data Item	Gas Response
GBCSHexadecimalMessageCode	0080

Data Item	Gas Response
<i>GBCS Use Case Number (for information only - not in header)</i>	GCS31
<i>GBCS Use Case Name (for information only - not in header)</i>	Start Network Data Log on GSME
SupplementaryRemotePartyID	Present
SupplementaryRemotePartyCounter	Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 6 – Record Network Data (GAS) Parse Response Header Items

14.1.2.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Units	Sensitivity
SampleID	The ID of the sampling session requested on the device. Defined by GBCS to be either, <ul style="list-style-type: none"> a value of 2 if a Network Data Log is returned as expected in the normal response a value of 65535 (0xFFFF) if a sampling session could not be started 	xs:integer	None	Non-sensitive

14.1.2.1.4 Sample Response

```
<ra:RecordNetworkDataGASRsp MessageSuccess="true">
  <ra:SampleID>2</ra:SampleID>
</ra:RecordNetworkDataGASRsp>
```

Figure 5 - Record Network Data (GAS) Parse Response Sample

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 15 - Device Alerts

Author: DCC
Version: 5.2a
Date: June 2023

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15 Device Alerts

Device Alerts are unsolicited messages generated by the Devices and forwarded by the DCC Data Systems to the DCC Service Users. The Alert recipient is defined in the Device response (Device Alert.. See GBCS for list of possible SMETS2 or later Device Alerts.

SMETS2 or later: The Device Alert GBCSPayload contains the Alert generated by the Device. For the "Billing Data Log" Device Alert, the GBCSPayload contains the Billing Data Log for the period specified in the Device's Billing Calendar.

The SMETS1 equivalent of a Device Alert is a SMETS1 Alert, as described in SEC.

This section should be read in conjunction with:

- SMETS2 or later: The Main Document of this documentation set section 9.3.2 (which describes the Device Alert Message Response format);
- SMETS1: The Main Document of this documentation set section 9.3.4, Annex 19 section 19.4 (which describe the SMETS1 Response Message format) and the SEC subsidiary document SMETS1 Supporting Requirements;
- the DUIS XML Schema XSD (document 3 of this documentation set);
- the MMC XML Schema XSD (document 4 of this documentation set).

15.1 Service Request

Service Requests are not applicable to Device Alerts, since they are unsolicited messages.

In the case of "Billing Data Log", Service Request "6.8 Update Device Configuration (Billing Calendar) sets the Billing Calendar on the Device (see Annex section 6) and this causes the Device to send "Billing Data Log" Device Alerts to the corresponding Supplier, according to the timetable defined in the Billing Calendar.

15.2 Responses

SMETS2 or later: The Service Response message for Device Alerts is defined by GBCS. The only response type applicable is

- Device Alert

SMETS1. The Service Response message for SMETS1 Alerts is defined in Annex 19 section 19.4.3.2. The only response type applicable is

- SMETS1 Response Message

For Device Alerts, the ResponseCode will always be I0. See Main Document of this documentation set section 12.3 for the full list of generic Error / Response Codes.

15.2.1 SMETS2 or later Device Alert Response – Sample XML

A sample SMETS2 or later Device Alert Response document is given in Annex Introduction Appendix 3. A sample of the body of the message is as follows:

```
<DeviceAlertMessage>
  <AlertCode>8F01</AlertCode>
  <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
</DeviceAlertMessage>
```

Figure 1 Sample Device Alert Response Format (SMETS2 or later) – Without Throttling

The Device Alert data sent by the SMETS2 or later Device is contained in the GBCSPayload. See GBCS for details.

A sample SMETS2 or later Device Alert Response document body for a "Billing Data Log" Alert is as follows:

```
<DeviceAlertMessage>
  <AlertCode>8F0A</AlertCode>
  <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
</DeviceAlertMessage>
```

Figure 2 Sample Device Alert (Billing Data Log) Response Format (SMETS2 or later) – Without Throttling

The SMETS2 or later Device Alert data, including the Billing Data Log, sent by the Device is contained in the GBCSPayload. See GBCS for details.

15.2.2 SMETS1 Alert Response – Sample XML

A sample SMETS1 Alert Response document is given in Annex Introduction Appendix 5. A sample of the body of the message is as follows:

```
<SMETS1ResponseMessage>
  <SMETS1SignedResponse schemaVersion="3.0">
    <SMETS1Response>
      <Header>
        <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
        <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
        <ra:OriginatorCounter>50</ra:OriginatorCounter>
      </Header>
      <Body>
        <DeviceAlertMessage>
          <ra:DeviceAlertContent>
            <ra:GBCSHexAlertCode>8F1C</ra:GBCSHexAlertCode>
            <ra:AlertDescription>xx fault</ra:AlertDescription>
            <ra:Timestamp>2017-08-25T03:04:05.00</ra:Timestamp>
          </ra:DeviceAlertContent>
        </DeviceAlertMessage>
      </Body>
    </SMETS1Response>
    <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
      <SignedInfo>
        <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
        <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
        <Reference URI="">
          <Transforms>
            <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
          </Transforms>
          <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig#sha256" />
          <DigestValue>ZGVmYXVsdA==</DigestValue>
        </Reference>
      </SignedInfo>
      <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    </KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>7432112348</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Signature>
</SMETS1SignedResponse>
</SMETS1ResponseMessage>
```

Figure 3 Sample SMETS1 Alert Response Format (SMETS1) – Without Throttling

15.2.3 Throttling of Device and SMETS1 Alert Messages

The sending of Device Alerts and SMETS1 Alerts to DCC Service Users may be limited by throttling. See DUGIDS main document section 2.12 for a description of the throttling of Alerts.

The following is a sample of the body of a SMETS2 Device Alert where the sending of Device Alerts to a DCC Service User has been reduced by throttling.

```
<DeviceAlertMessage>
  <AlertCode>8F01</AlertCode>
  <ThrottledAlertSequenceId>97311</ThrottledAlertSequenceId>
  <ThrottledAlertCount>499</ThrottledAlertCount>
  <GBCSPayload>ZGVmYXVsdA==</GBCSPayload>
</DeviceAlertMessage>
```

Figure 3.2 Sample Device Alert – With Throttling

The following is a sample of a SMETS1 Alert where throttling has been used to reduce the number of SMETS1 Alerts being sent to a DCC Service User. Where SMETS1 Alerts are throttled, the throttling information is added inside the SMETS1ResponseMessage element,

```
<SMETS1ResponseMessage>
  <ThrottledAlertSequenceId>97311</ThrottledAlertSequenceId>
  <ThrottledAlertCount>499</ThrottledAlertCount>
  <SMETS1SignedResponse schemaVersion="3.0">
    <SMETS1Response>
      <Header>
        <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
        <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
        <ra:OriginatorCounter>50</ra:OriginatorCounter>
      </Header>
      <Body>
        <DeviceAlertMessage>
          <ra:DeviceAlertContent>
            <ra:GBCSHexAlertCode>8134</ra:GBCSHexAlertCode>
            <ra:AlertDescription>xx fault</ra:AlertDescription>
            <ra:Timestamp>2017-08-25T03:04:05.00</ra:Timestamp>
          </ra:DeviceAlertContent>
        </DeviceAlertMessage>
      </Body>
    </SMETS1Response>
    <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
      <SignedInfo>
        <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"></CanonicalizationMethod>
        <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256"></SignatureMethod>
        <Reference URI="">
          <Transforms>
            <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"></Transform>
          </Transforms>
          <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256"></DigestMethod>
          <DigestValue>ZGVmYXVsdA==</DigestValue>
        </Reference>
      </SignedInfo>
      <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    </KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>7432112348</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </SMETS1SignedResponse>
</SMETS1ResponseMessage>
```

Figure 3.3 Sample SMETS1 Alert – With Throttling

15.3 SMETS2 or later Parse Output Format

This section describes the information which will be sent with SMETS2 or later Device Alerts in GBCS payload to DCC Service Users.

There are some Device Alerts defined in GBCS which are sent to the DCC for other purposes and are not forwarded to DCC Service Users as GBCS payload, so those are not in the Parse Output and are not included here.

15.3.1 Message codes for Device Alerts

All Device Alerts will have both a Message Code and an Alert Code. Most Device Alerts will use one of the generic Message Codes 0x1000 (Critical) or 0x1001 (Non Critical).

A small number of Device Alerts use a specific Message Code instead of one of the generic ones, as defined in GBCS. Where this is the case they are listed in the table below. This table identifies the Message Codes which correspond to Device Alerts rather than GBCS Commands.

The Device Alerts which have specific Message Codes rather than the generic ones in the table all carry additional payload, and there are also some Device Alerts which use the generic Message Codes in the table below and carry additional payload. See section 15.3.3 for details of Device Alerts that carry additional payload. Note that a given version of MMC only supports those Device Alerts with additional payload included in the GBCS version it aligns to. For example MMC version 1.0 doesn't include Device Alert 81A0.

MMC XSD Version	GBCS Version	Message Code	Purpose	Alert Codes
>= 1.0	>= 1.0	0061	GBCS use case ECS68 ESME Critical Sensitive Alert (Billing Data Log)	8F0A
>= 1.0	>= 1.0	0067	GBCS use case ECS80 Supply Outage Restore Alert from ESME	8F35, 8F36, 8F37, 8F38, 8F39, 8F3A, 8F3B, 8F3C
>= 1.0	>= 1.0	008B	GBCS use case GCS53, GSME Push Billing Data Log as an Alert	8F0A
>= 1.0	>= 1.0	00CA	Future Dated Firmware Activation Alert	8F66, 8F67
>= 1.0	>= 1.0	00CB	Future Dated Updated Security Credentials Alert ¹	8F66, 8F67
>= 1.0	>= 1.0	00CC	Future Dated Execution Of Instruction Alert (DLMS COSEM)	8F66, 8F67
>= 1.0	>= 1.0	00CD	Future Dated Execution Of Instruction Alert (GBZ)	8F66, 8F67
>= 1.0	>= 1.0	00CE	Firmware Distribution Receipt Alert (ESME)	8F72, 8F1C
>= 1.0	>= 1.0	00CF	Firmware Distribution Receipt Alert (GSME)	8F72, 8F1C
>= 2.0	>= 2.0	00F0	Meter Integrity Issue Warning Alert - ESME	81A0
>= 2.0	>= 2.0	00F2	Meter Integrity Issue Warning Alert - GSME	81A0
>= 1.0	>= 1.0	1000	Generic Critical Alert	See GBCS for full list of Device Alert Codes
>= 1.0	>= 1.0	1001	Generic Non Critical Alert	See GBCS for full list of Device Alert Codes
>= 4.0	>= 4.0	0120	GBCS Use Case ECS100 Command not supported by Device.	8F85

MMC XSD Version	GBCS Version	Message Code	Purpose	Alert Codes
>= 4.0	>= 4.0	0123	GBCS Use Case ECS200 Operational Update.	8F88
>= 4.0	>= 4.0	0124	Future Dated Updated Security Credentials Alert ²	8F66, 8F67
>= 4.0	>= 4.0	0121	GBCS Use Case ECS101 Limit APC [n] Level Command processed	8F86
>= 4.0	>= 4.0	0122	GBCS Use Case ECS102 Limit APC [n] Level ended or cancelled	8F87
>= 1.0	>= 4.1	012C	Firmware Distribution Receipt Alert (HCALCS)	8F72, 8F1C

Table 1 Device Alert GBCS Message Codes

¹ Excluding Load Controller

² Load Controller only

³ GBCS 4.1 or later

Note on representation of Message Codes and Alert Codes in this document set: In GBCS, codes of this type, which are made up of 2 octets of data, are referred to in the format "0xnnnn", with the leading "0x" indicating that it is a hexadecimal number followed by 4 hexadecimal values, and that convention is also used in narrative text in this document set. However where showing how they would appear in XML samples they are shown using the XML representation, and since they use the "xs:hexBinary" XML type they will appear in the format "nnnn", i.e. without the leading "0x".

15.3.2 Device Alerts With No Additional Payload

Most Device Alerts consist of just an Alert Code without any substantial additional data. The Parse Output Format for these is described in Annex 18, section 18.4.3.

15.3.3 Device Alerts With Additional Payload

The Device Alerts which have additional payload are listed in the table below. These are either Alerts which have specific GBCS use cases associated with them, which are listed below, or Alerts sent as execution outcomes following Device Future Dated execution, for which there is information in the table below, and they are itemised in the table in Table 19, section 15.4.4.5.

GBCS Version	Alert Code	Purpose	GBCS Use Case (where applicable)	Message Code	Section In This Document
>= 1.0	8F0A	Billing Data Log Updated (Electricity)	ECS68 ESME Critical Sensitive Alert (Billing Data Log)	0061	15.4.2
>= 1.0	8F0A	Billing Data Log Updated (Gas)	GCS53, GSME Push Billing Data Log as an Alert	008B	15.4.2

GBCS Version	Alert Code	Purpose	GBCS Use Case (where applicable)	Message Code	Section In This Document
>= 1.0 and modified in 4.1	8F1C	Firmware Verification Failed	CS05b	00CE (Firmware Distribution Receipt Alert (ESME)), 00CF (Firmware Distribution Receipt Alert (GSME)), 012C (Firmware Distribution Receipt Alert (HCALCS) ³)	15.4.1
>= 1.0	8F35 to 8F3C inclusive	Supply Outage Restored Alert	ECS80 Supply Outage Restore Alert from ESME	0067	15.4.3
>= 1.0 and modified in 4.0	8F66	Future-Dated Command Outcome Action Successful	Any GBCS Use Case that supports Device Future Dating	00CA (Future Dated Firmware Activation Alert), 00CB (Future Dated Updated Security Credentials Alert) ¹ , 00CC (Future Dated Execution Of Instruction Alert (DLMS COSEM)), 00CD (Future Dated Execution Of Instruction Alert (GBZ)), <i>GBCS v4.0 or later:</i> 0124 (Future Dated Update Load Controller Security Credentials Alert) ²	15.4.4
>= 1.0	8F67	Future-Dated Command Outcome Action Failed	Any GBCS Use Case that supports Device Future Dating	Same possibilities as for Alert Code 8F66	15.4.4
>= 1.0 and modified in 4.1	8F72	Firmware Verification Successful	CS05b	00CE (Firmware Distribution Receipt Alert (ESME/)), 00CF (Firmware Distribution Receipt Alert (GSME)), 012C (Firmware Distribution Receipt Alert (HCALCS) ³)	15.4.1
>= 2.0	81A0	Smart Meter Integrity Issue – Warning	Smart Meter Integrity Issue – Warning from ESME or GSME	00F0 (Meter Integrity Issue Warning Alert – ESME) 00F2 (Meter Integrity Issue Warning Alert – GSME)	15.4.5

GBCS Version	Alert Code	Purpose	GBCS Use Case (where applicable)	Message Code	Section In This Document
>= 4.0	8F85	Sent by an ESME to indicate it has received a Command which it cannot support. This could happen for SAPCs since they are not required to implement all ESME commands	ECS100 Command not supported by Device.	0120	15.4.6
>= 4.0	8F88	Sent by a Device to indicate a change in operational status, e.g. an ESME has executed a change to an Auxiliary Controller's state	ECS200 Operational Update.	0123	15.4.7
>= 4.0	8F86	Sent by an ESME/ SAPC Device to indicate that the Device has processed a Limit APC Command	ECS101 Limit APC Level Command Processed	0x0121	15.4.8
>= 4.0	8F87	Sent by an ESME/ SAPC Device to indicate that an APC Limit Period has ended	ECS102 Limit APC Level Ended or Cancelled	0x0122	15.4.9

Table 2 Device Alert Codes with Additional Payload

¹ Excluding Load Controller

² Load Controller only

³ GBCS 4.1 or later

15.4 SMETS2 or later Payload Structures of Additional Alert Payload

This section provides details of additional payload in the Parse Output formats for SMETS2 or later Device Alerts. See section 15.5 for details of additional payload for SMETS1 Alerts, where applicable.

The Device Alert message structure described in Annex 18 section 18.4.3 includes an optional payload for the small number of Device Alerts which have additional payload above the Alert Code and header information. The "Payload" item described in section 18.4.3 has a choice of structures depending on the Alert Code, as shown in the following diagram.

Please note that the existing samples included in this section have not been updated to reflect the change in schemaVersion number.

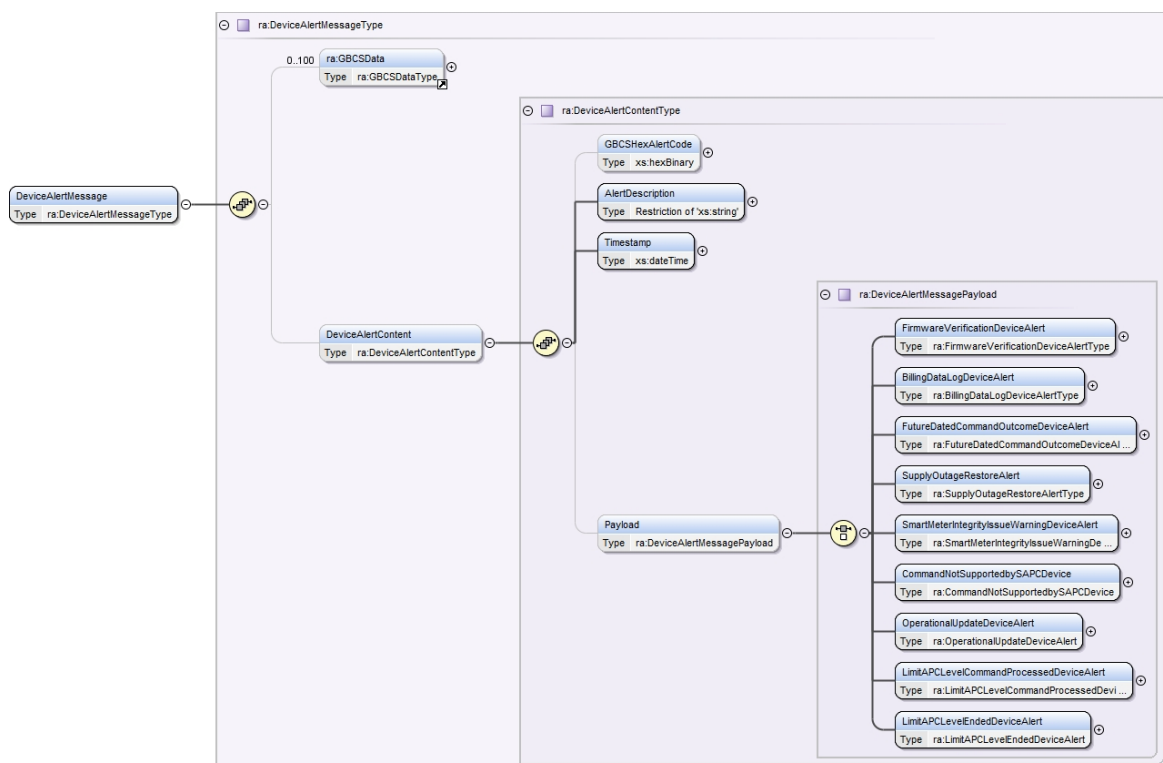


Figure 4 – Device Alert Additional Payload XML Structure

The individual types, dependent on the Alert Code, are described in the following sections.

XML samples in this annex are shown as full XML documents including the headers, even though in most annexes in this document set the headers are not shown. This is to illustrate the additional complexity introduced by the variation in Message Codes and GBCS Use Case references for Device Alerts.

15.4.1 Device Alert 0x8F1C and 0x8F72 Firmware Verification Status

These two Device Alerts returns the result of Firmware verification as part of the distribution of Firmware upgrades, as follows:

- Device Alert 0x8F1C indicates that it failed
- Device Alert 0x8F72 indicates that it was successful

The same additional payload is conveyed in each case.

See GBCS section 11.2.6 for more details. Note that this Alert type is also referred to in GBCS as “Firmware Distribution Receipt Alert”.

15.4.1.1 Format - FirmwareVerificationDeviceAlertType

The diagram shows the structure of FirmwareVerificationDeviceAlertType, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

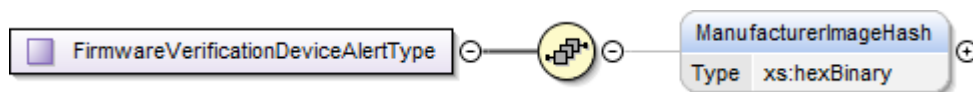


Figure 5 – Firmware Verification Device Alerts Parse Response Structure Detail

15.4.1.2 Specific Header Data Items

Data Item	Electricity Alert (ESME)	Gas Alert	Electricity Alert (HCALCS)
GBCSHexadecimalMessageCode	00CE	00CF	012C
<i>GBCS Use Case Number (for information only - not in header)</i>	N/A	N/A	N/A
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Firmware Distribution Receipt Alert (ESME)</i>	<i>Firmware Distribution Receipt Alert (GSME)</i>	<i>Firmware Distribution Receipt Alert (HCALCS)</i>
SupplementaryRemotePartyID	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present

Table 3 Firmware Verification Device Alerts Header Data

15.4.1.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F1C or 8F72	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Firmware verification failed, or Firmware verification succeeded	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
ManufacturerImageHash	Information associated with the firmware update. The Firmware hash as held in the CPL and presented in the format XX..XX (64 characters) where each X is one of the characters 0 to 9 or A to F. This data item should match the value on the CPL (excluding the colon separator between octet values) Note that a hexBinary value of length 32 is defined as 32 octets, an octet is represented by 2 characters.	xs:hexBinary (maxLength = 32)	N/A	N/A	Non-Sensitive

Table 4 Firmware Verification Device Alerts Parse Response Data Items

15.4.1.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>00CE</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F1C</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Firmware verification failed</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:FirmwareVerificationDeviceAlert>
            <ra:ManufacturerImageHash>0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
          </ra:ManufacturerImageHash>
          <ra:FirmwareVerificationDeviceAlert>
            <ra:Payload>
              <ra:DeviceAlertContent>
                <ra:DeviceAlertMessage>
                  <ra:Body>
                    </ra:GBCSResponse>
```

Figure 6 - Device Alert 0x8F1C Firmware Verification Failed Parse Response Sample

15.4.2 Device Alert 0x8F0A Billing Data Log Updated

This Device Alert returns the billing data log from a meter for one billing period only, triggered by reaching the end of a billing period.

The data is similar in structure to the data returned by Service Request 4.4.3 (see Annex section 4.4.3).

Note that two different GBCS use cases share the same Alert Code, but they are distinguished by having different Message Codes. This is shown in the following table.

GBCS Use Case	Message code	Alert Code
ECS68 ESME Critical Sensitive Alert (Billing Data Log)	0x0061	0x8F0A
GCS53, GSME Push Billing Data Log as an Alert	0x008B	0x8F0A

Table 5 Device Alert 0x8F0A Message Codes

Note that the billing data log is sensitive data, so is encrypted by the Device.

SMETS1: Although SMETS1 Devices do not generate these Device Alerts, there are SMETS1-specific comments in the payload descriptions in this section because the same XML elements are used to deliver responses to SRV 4.4.3.

15.4.2.1 Format - BillingDataLogDeviceAlertType

The diagram shows the structure of BillingDataLogDeviceAlert, which is the XML type used for this Alert in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

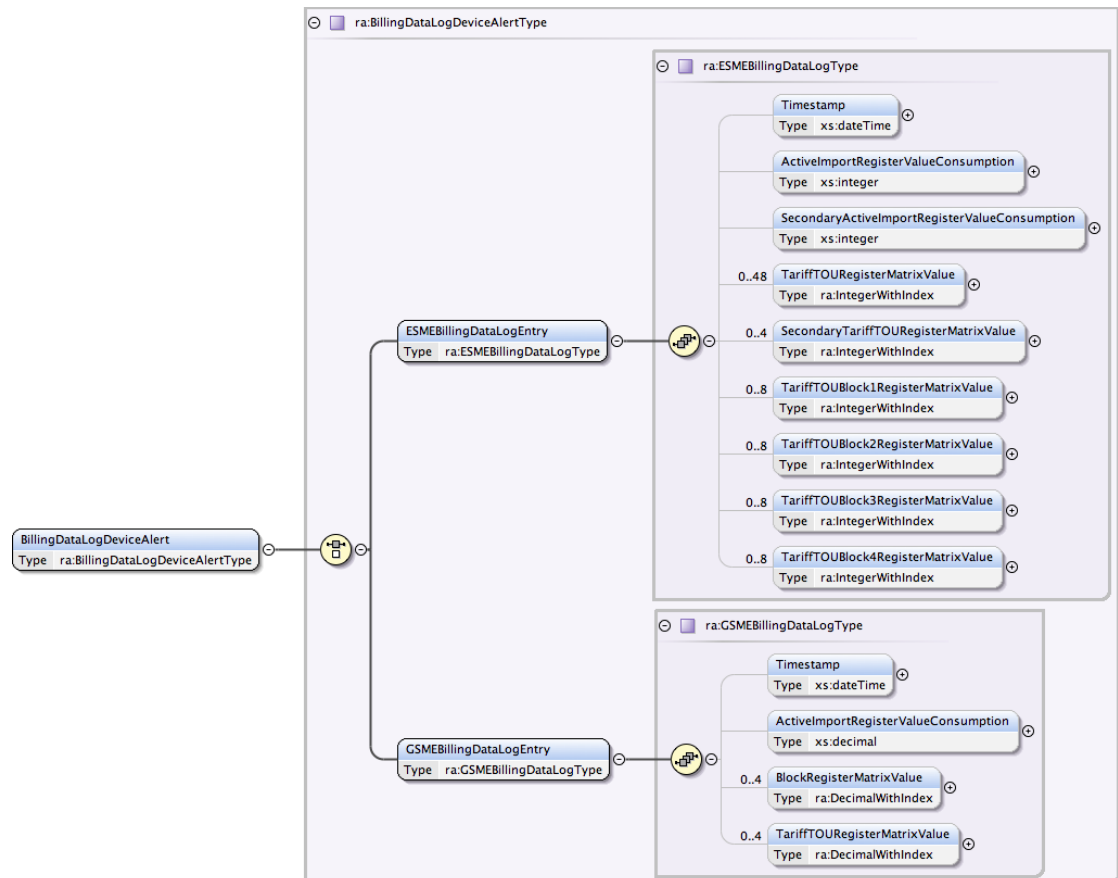


Figure 7 - Device Alert 0x8F0A Billing Data Log Updated Structure - Detail

15.4.2.2 Specific Header Data Items

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	0061	008B
GBCS Use Case Number (for information only - not in header)	ECS68	GCS53
GBCS Use Case Name (for information only - not in header)	ESME Push Billing Data Log as an Alert	GSME Push Billing Data Log as an Alert
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Present	Present

Table 6 Device Alert 0x8F0A Billing Data Log Updated Header Data

15.4.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F0A	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	ESME Push Billing Data Log as an Alert GSME Push Billing Data Log as an Alert	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	Yes	UTC Date-Time	Non-Sensitive
ESMEBillingDataLogEntry	Electricity Smart Meter Billing Data Log Entry	ra:ESMEBillingDataLogType (see section 15.4.2.4)	N/A	N/A	Sensitive
GSMEBillingDataLogEntry	Gas Smart Meter Billing Data Log Entry	ra:GSMEBillingDataLogType (see section 15.4.2.5)	N/A	N/A	Sensitive

Table 7 Device Alert 0x8F0A Billing Data Log Updated Data Items

15.4.2.4 ESMEBillingDataLogType Data Items

SMETS1: This definition is applicable to SMETS1 only where it is used in responses to Service Requests, since Billing Data Log Updated information is not supported as Alerts for SMETS1 Devices.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
Timestamp	Date and time when the end of billing period snapshot was taken	xs:dateTime	None	UTC Date-Time	Sensitive
ActiveImportRegisterValueConsumption	Register that records the Primary Element cumulative Active Energy Imported SMETS1: Where the Device is not capable of recording this value, the DCC shall set the value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:integer	None	Wh	Sensitive
SecondaryActiveImportRegisterValueConsumption	Register that records the Secondary Element cumulative Active Energy Imported. Optional, as only applicable to Electricity Smart Meters with a Secondary Element.	xs:integer	None	Wh	Sensitive
TariffTOURegisterMatrixValue ¹	Each of the values in the 1 x 48 matrix for storing Primary Element Tariff Registers for Time-of-use Pricing	ra:IntegerWithIndex	None	Wh	Sensitive
SecondaryTariffTOURegisterMatrixValue ²	Each of the values in the 1 x 4 matrix for storing Secondary Element Tariff Registers for Time-of-use Pricing. Optional, as only applicable to Electricity Smart Meters with a Secondary Element.	ra:IntegerWithIndex	None	Wh	Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
TariffTOUBlock1RegisterMatrixValue ³	Each of the values in the first row of the 4 x 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock2RegisterMatrixValue ³	Each of the values in the second row of the 4 x 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock3RegisterMatrixValue ³	Each of the values in the third row of the 4 x 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra:IntegerWithIndex	None	Wh	Sensitive
TariffTOUBlock4RegisterMatrixValue ³	Each of the values in the fourth row of the 4 x 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing SMETS1: This value shall be populated by Tariff Block Counter Matrix values from the SMETS1 Device's Billing Data Log.	ra:IntegerWithIndex	None	Wh	Sensitive

Table 8 Device Alert 0x8F0A Billing Data Log Updated - ESMEBillingDataLogType Data Items

¹ Minimum 0, maximum 48

² Minimum 0, maximum 4

³ Minimum 0, maximum 8

15.4.2.5 GSMEBillingDataLogType Data Items

SMETS1: This definition is applicable to SMETS1 only where it is used in responses to Service Requests, since Billing Data Log Updated information is not supported as Alerts for SMETS1 Devices.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActiveImportRegisterValueConsumption	Register that records the Primary Element cumulative Active Energy Imported Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS SMETS1: Where the Device is not capable of recording this value, the DCC shall set the value to the relevant Unsupported Value (see section 19.9) to indicate that the Device does not support that parameter.	xs:decimal	None	m ³	Sensitive
BlockRegisterMatrixValue ¹	Each of the values in the 1 x 4 matrix for storing Tariff Registers for Time-of-use with Block Pricing Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS	ra:DecimalWithIndex	None	m ³	Sensitive
TariffTOURegisterMatrixValue ¹	Each of the values in the A 1 x 4 matrix for storing Tariff Registers for Time-of-use Pricing Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS	ra:DecimalWithIndex	None	m ³	Sensitive
Timestamp	Date and time when the end of billing period snapshot was taken	xs:dateTime	None	UTC Date-Time	Sensitive

Table 9 Device Alert 0x8F0A Billing Data Log Updated - GSMEBillingDataLogType Data Items

¹ Minimum 0, maximum 4

15.4.2.6 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0061</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F0A</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Billing Data Log Updated</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:BillingDataLogDeviceAlert>
            <ra:ESMEBillingDataLogEntry>
              <ra:Timestamp>2014-05-04T18:12:51.00</ra:Timestamp>
              <ra:ActiveImportRegisterValueConsumption>2345</ra:ActiveImportRegisterValueConsumption>
              <ra:TariffTOURegisterMatrixValue index="1">20123</ra:TariffTOURegisterMatrixValue>
              <ra:TariffTOURegisterMatrixValue index="2">10456</ra:TariffTOURegisterMatrixValue>
              <ra:TariffTOUBlock1RegisterMatrixValue index="1">5678</ra:TariffTOUBlock1RegisterMatrixValue>
            </ra:ESMEBillingDataLogEntry>
          </ra:BillingDataLogDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 8 - Device Alert 0x8F0A Billing Data Log Updated Parse Response Sample (Electricity)

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>30-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>008B</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F0A</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Billing Data Log Updated</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:BillingDataLogDeviceAlert>
            <ra:GSMEBillingDataLogEntry>
              <ra:Timestamp>2014-05-04T18:12:51.00</ra:Timestamp>
              <ra:ActiveImportRegisterValueConsumption>2.345</ra:ActiveImportRegisterValueConsumption>
              <ra:BlockRegisterMatrixValue index="1">20.123</ra:BlockRegisterMatrixValue>
              <ra:TariffTOURegisterMatrixValue index="2">10.456</ra:TariffTOURegisterMatrixValue>
            </ra:GSMEBillingDataLogEntry>
          </ra:BillingDataLogDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 9 - Device Alert 0x8F0A Billing Data Log Updated Parse Response Sample (Gas)

15.4.3 Supply Outage Restored Device Alerts

These Alerts are sent after the restoration of supply to an Electricity Smart Meter. They have slightly different meanings, as in the following table.

Alert Code	Purpose According to GBCS
0x8F35	Supply Outage Restored
0x8F36	Supply Outage Restored - Outage >= 3 minutes
0x8F37	Supply Outage Restored on Phase 1
0x8F38	Supply Outage Restored on Phase 1 Restored - Outage >= 3 minutes
0x8F39	Supply Outage Restored on Phase 2 Restored
0x8F3A	Supply Outage Restored on Phase 2 Restored - Outage >= 3 minutes
0x8F3B	Supply Outage Restored on Phase 3 Restored
0x8F3C	Supply Outage Restored on Phase 3 Restored - Outage >= 3 minutes

Table 10 Supply Outage Restored Alert Purposes

15.4.3.1 Format - SupplyOutageRestoreAlertType

The diagram shows the structure of SupplyOutageRestoreAlert, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

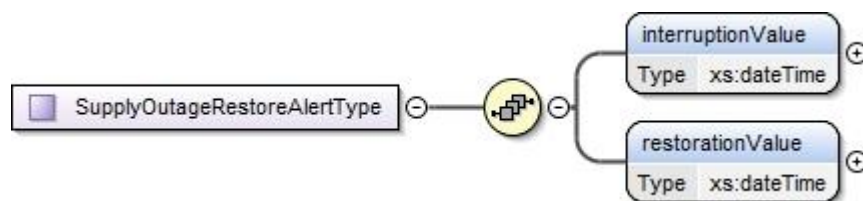


Figure 10 - Supply Outage Restored Alert Parse Response Structure - Detail

15.4.3.2 Specific Header Data Items

Data Item	Electricity Alert
GBCSHexadecimalMessageCode	0067
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS80</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Supply Outage Restore Alert from ESME</i>
SupplementaryRemotePartyID	Not Present
SupplementaryRemotePartyCounter	Not Present
SupplementaryOriginatorCounter	Not Present
Timestamp	Not Present

Table 11 Supply Outage Restored Alert Header Data Items

15.4.3.3 Specific Body Data Items

All of the 4 Device Alerts above carry the same type of payload, as in the following table.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F35 to 8F3C	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Supply Outage Restored Supply Outage Restored - Outage >= 3 minutes Supply Outage Restored on Phase 1 Supply Outage Restored on Phase 1 Restored - Outage >= 3 minutes Supply Outage Restored on Phase 2 Restored Supply Outage Restored on Phase 2 Restored - Outage >= 3 minutes Supply Outage Restored on Phase 3 Restored Supply Outage Restored on Phase 3 Restored - Outage >= 3 minutes	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	Yes	UTC Date-Time	Non-Sensitive
interruptionValue	The date-time at which power was interrupted	xs:dateTime	None	UTC Date-Time	Non-Sensitive
restorationValue	The date-time at which power was restored	xs:dateTime	None	UTC Date-Time	Non-Sensitive

Table 12 Supply Outage Restored Alert Data Items

15.4.3.4 Sample Response

This XML sample is for Device Alert 0x8F37, which means supply has been restored to phase 1 of a 3 phase Electricity Smart Meter.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0067</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F37</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Supply Outage Restored on Phase 1</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:SupplyOutageRestoreAlert>
            <ra:interruptionValue>2014-05-04T17:13:51.0</ra:interruptionValue>
            <ra:restorationValue>2014-05-04T18:14:51.0</ra:restorationValue>
          </ra:SupplyOutageRestoreAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 11 - Device Alert 0x8F37 Supply Outage Restored on Phase 1

15.4.4 Device Alert 0x8F66 and 0x8F67 Future Dated Command Outcome

These Device Alerts return the result of all or part of a Device future-dated command, which may be:

- Device Alert 0x8F66, indicating that it was successful
- Device Alert 0x8F67, indicating that it failed

These apply to Device Future Dated commands, i.e. those where the “Future Dated” column in the Service Request Matrix in the DUGIDS main document section 9.4 is set to “Device”. The XML type of the payload is the same for both 0x8F66 and 0x8F67.

It is necessary for the XML structures carrying these Alerts to vary according to the underlying GBCS protocol used, because where the underlying GBCS protocol is DLMS/COSEM or GBZ (ZigBee) one Alert will be generated for each protocol-specific instruction within the corresponding command, so it is necessary to convey protocol-specific information to distinguish them.

As a GBCS command can contain multiple individual instructions within the same GBCS command, there may be multiple Alerts following the execution of a Device Future Dated Service Request. These will be sent to Service Users as separate Device Alerts by the DSP.

It is possible for an instruction to fail after earlier instructions have completed successfully, so there may be a mixture of 0x8F66 Alerts and 0x8F67 Alerts corresponding to different parts of the same Future Dated Service Request.

Devices will follow Break On Error processing, meaning that if an instruction fails no more instructions will be processed, however in these cases a Device Alert will be sent for each non-executed instruction as well, to show the status. The communications networks will not be able to guarantee that Alerts arrive at the DSP in the order they were sent, so although Alerts indicating success will not be generated by the Device after a failure within the same command, it is possible they will be received by a Service User in the reverse order.

The number of these Alerts which will be received for each Future Dated Service Request, which in some cases can vary depending on the data in the Service Request, is specified in the Annex sections covering individual Service Requests.

The Service Response wrapper contains additional information to indicate which instruction the Alert relates to, and how many are expected for that Command in total, though there will be no indication of that in the XML produced by Parse software from the GBCS payload of the Alert, since that information is not part of the GBCS payload.

The overall pattern of Responses and Alerts for Future Dated Service Requests is described in the main document section 9.3.6.

See GBCS section 9.2.2.6 for more information.

15.4.4.1 Format - FutureDatedCommandOutcomeDeviceAlertType

The diagram shows the structure of FutureDatedCommandOutcomeDeviceAlertType, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

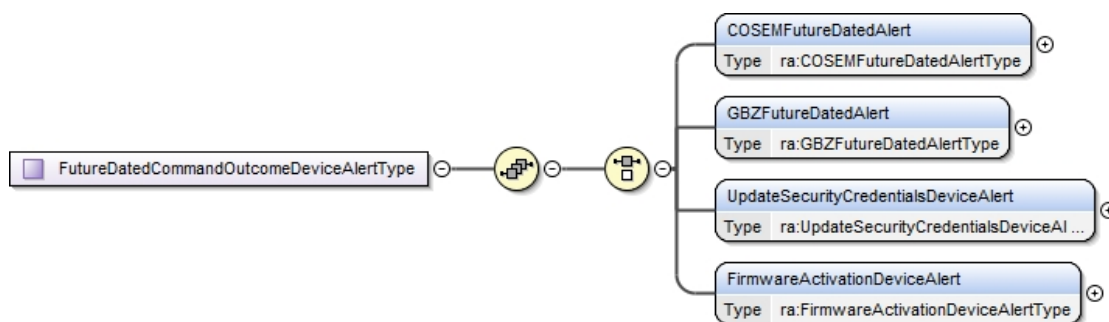


Figure 12 – Device Alert Future-Dated Command Outcome Parse Response Structure – High Level

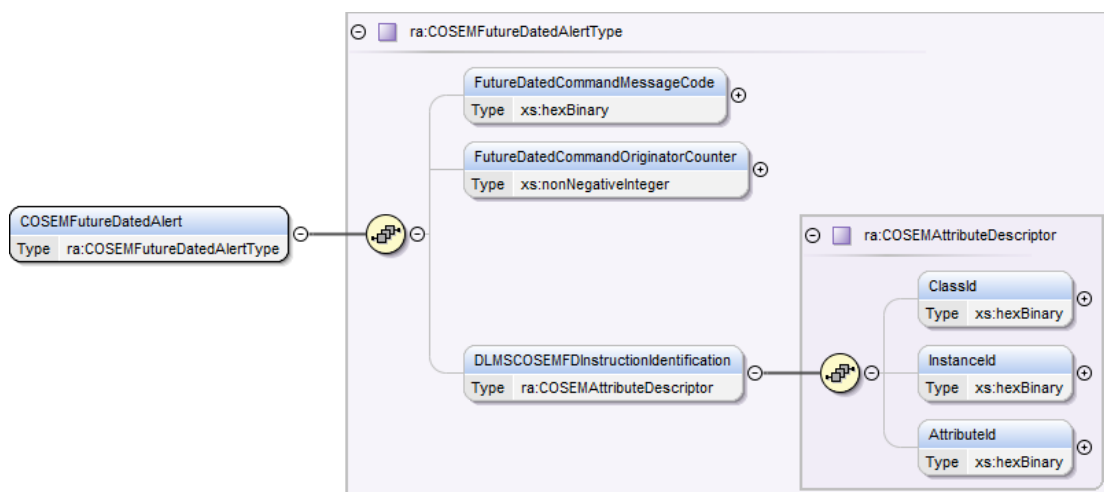


Figure 13 – DLMS/COSEM Future Dated Command Outcome Alert Structure

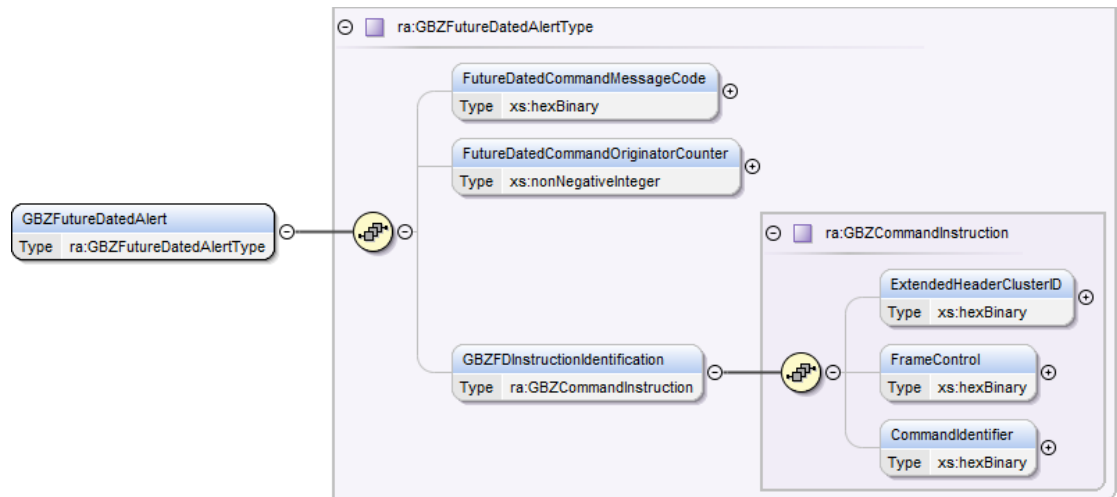


Figure 14 – GBZ (ZigBee) Future Dated Command Outcome Alert Structure

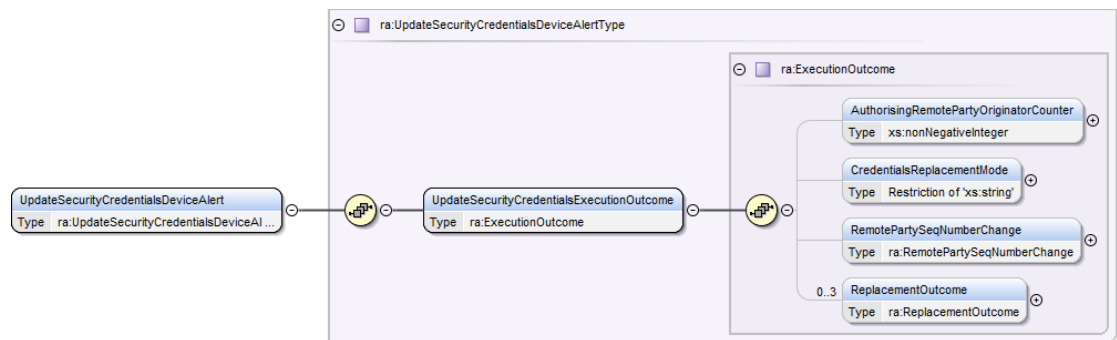


Figure 15 – Update Security Credentials Future Dated Command Alert Structure

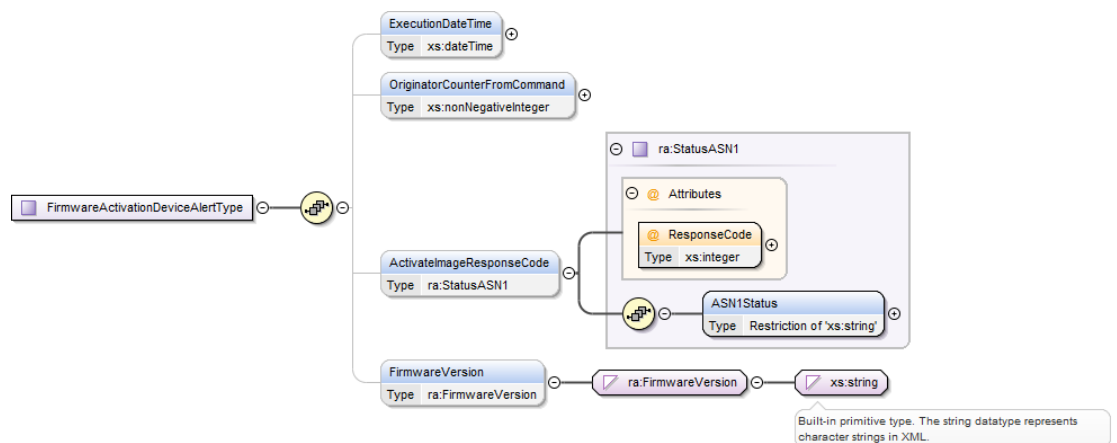


Figure 16 – Firmware Activation Future Dated Command Alert Structure

15.4.4.2 Specific Header Data Items

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	00CA (Future Dated Firmware Activation Alert), 00CB (Future Dated Updated Security Credentials Alert), 00CC (Future Dated Execution Of Instruction Alert (DLMS COSEM)) GBCS v4.0 or later: 0124 (Future Dated Update Load Controller Security Credentials Alert)	00CA (Future Dated Firmware Activation Alert), 00CB (Future Dated Updated Security Credentials Alert), 00CD (Future Dated Execution Of Instruction Alert (GBZ))
GBCS Use Case Number (for information only - not in header)	N/A	N/A
GBCS Use Case Name (for information only - not in header)	N/A	N/A
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 13 Device Alert Future-Dated Command Outcome Header Data

15.4.4.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F66 or 8F67	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Future-Dated Command Action Successful Future-Dated Command Action Failed	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	Yes	UTC Date-Time	Non-Sensitive
COSEMFutureDatedAlert	Alert payload for an Alert where underlying GBCS protocol is DLMS/COSEM. Present only for Alerts relating to DLMS/COSEM commands.	ra:COSEMFutureDatedAlertType (see section 15.4.4.3.1)	N/A	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBZFutureDatedAlert	Alert payload for an Alert where underlying GBCS protocol is GBZ. Present only for Alerts relating to GBZ (ZigBee Smart Energy) commands.	ra: GBZFutureDatedAlertType (see section 15.4.4.3.2)	N/A	N/A	Non-Sensitive
UpdateSecurityCredentialsDeviceAlert	Alert payload for the outcome of a Future Dated Update Security Credentials request. Present only for Alerts relating to Future Dated Update Security Credentials requests.	ra: UpdateSecurityCredentialsDeviceAlertType (see section 15.4.4.3.3)	N/A	N/A	Non-Sensitive
FirmwareActivationDeviceAlert	Alert payload for the outcome of a Future Dated Firmware Activation request. Present only for Alerts relating to Future Dated Firmware Activation requests.	ra: FirmwareActivationDeviceAlertType (see section 15.4.4.3.4)	N/A	N/A	Non-Sensitive

Table 14 Device Alert Future-Dated Command Outcome Data Items

15.4.4.3.1 COSEMFutureDatedAlertType Data Items

This is returned only for Alerts where the underlying GBCS protocol of the corresponding Future Dated command was DLMS/COSEM.

It identifies the instruction to which the Alert relates, which could be one of multiple instructions in the command. Each Alert of this type relates only to one instruction.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
FutureDatedCommandMessageCode	The message code of the future-dated command for which this is the Device Alert conveying the outcome.	xs:hexBinary	N/A	N/A	Non-sensitive
FutureDatedCommandOriginatorCounter	The originator counter from the future-dated command for which this is the Device Alert conveying the outcome.	xs:nonNegativeInteger	N/A	N/A	Non-sensitive
ClassId	DLMS/COSEM class ID	xs:hexBinary	N/A	N/A	Non-Sensitive
InstanceId	DLMS/COSEM instance ID (OBIS code)	xs:hexBinary	N/A	N/A	Non-Sensitive
AttributeId	DLMS/COSEM attribute ID	xs:hexBinary	N/A	N/A	Non-Sensitive

Table 15 DLMS/COSEM Future Dated Command Outcome Alert Structure Data Items

15.4.4.3.2 GBZFutureDatedAlertType Data Items

This is returned only for Alerts where the underlying GBCS protocol of the corresponding Future Dated command was GBZ (ZigBee Smart Energy).

It identifies the instruction to which the Alert relates, which could be one of multiple instructions in the command. Each Alert of this type relates only to one instruction.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
FutureDatedCommandMessageCode	The message code of the future-dated command for which this is the Device Alert conveying the outcome.	xs:hexBinary	N/A	N/A	Non-sensitive
FutureDatedCommandOriginatorCounter	The originator counter from the future-dated command for which this is the Device Alert conveying the outcome.	xs:nonNegativeInteger	N/A	N/A	Non-sensitive
ExtendedHeaderClusterID	ZigBee Smart Energy Cluster ID	xs:hexBinary	N/A	N/A	Non-Sensitive
FrameControl	ZigBee Smart Energy Frame Control identifier	xs:hexBinary	N/A	N/A	Non-Sensitive
CommandIdentifier	ZigBee Smart Energy Command ID	xs:hexBinary	N/A	N/A	Non-Sensitive

Table 16 GBZ Future Dated Command Outcome Alert Structure Data Items

15.4.4.3.3 UpdateSecurityCredentialsDeviceAlert Data Items

This is returned only for Alerts relating to Future Dated Update Security Credentials requests.

The detail of the Alert is carried in the XML type ExecutionOutcome. For full details of the data contained within this data type, see Annex 6, section 6.15.1.2.2, "ExecutionOutcome Data Items".

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
UpdateSecurityCredentialsExecutionOutcome	Type defined for response to update security credentials use case. See Annex 6 section 6.15.1.2.3, "ExecutionOutcome Data Items", for details of this XML type.	ra:ExecutionOutcome (see section 6.15.1.2.3)	N/A	N/A	Non-sensitive

Table 17 Update Security Credentials Future Dated Command Alert Data Items

15.4.4.3.4 FirmwareActivationDeviceAlert Data Items

This is returned only for Alerts relating to Future Dated Firmware Activation requests.

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ExecutionDateTime	The date & time of the execution of the command to activate firmware on the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
OriginatorCounterFromCommand	Originator counter in the command which requested activation of firmware.	xs:nonNegativeInteger	N/A	N/A	Non-sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ActivateImageResponseCode	Outcome of the request for each replacement. Valid Set: <ul style="list-style-type: none"> success noImageHeld hashMismatch activationFailure 	Restriction base xs:string (Enumeration)	None	N/A	Non-Sensitive
FirmwareVersion	A unique identifier representing a firmware image that has been approved for release by the DCC User concerned. The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F. This data item should match the value on the CPL (excluding the colon separator between octet values)	ra:FirmwareVersion (restriction of xs:string, maxLength = 8)	None	N/A	Non-Sensitive

Table 18 Firmware Activation Future Dated Command Alert Data Items

15.4.4.4 Sample Response

The following example shows an Alert for a Future Dated command where the underlying protocol is DLMS/COSEM and for which the instruction was successful.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>150</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>00CC</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F66</ra:GBCSHexAlertCode>
        <ra:AlertDescription> Future Dated Command Successful Device Alert</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:FutureDatedCommandOutcomeDeviceAlert>
            <ra:COSEMFutureDatedAlert>
              <ra:FutureDatedCommandMessageCode>00B7</ra:FutureDatedCommandMessageCode>
              <ra:FutureDatedCommandOriginatorCounter>130</ra:FutureDatedCommandOriginatorCounter>
              <ra:DLMSCOSEMFDInstructionIdentification>
                <ra:ClassId>0014</ra:ClassId>
                <ra:InstanceId>00000D0001FF</ra:InstanceId>
                <ra:AttributeId>09</ra:AttributeId>
              </ra:DLMSCOSEMFDInstructionIdentification>
            </ra:COSEMFutureDatedAlert>
          </ra:FutureDatedCommandOutcomeDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 17 Device Alert 0x8F66 Future-Dated Command Successful DLMS/COSEM Instruction Parse Response Sample

The following example shows an Alert for a Future Dated command where the underlying protocol is GBZ (ZigBee) and for which the instruction was successful.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>150</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>00CD</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F66</ra:GBCSHexAlertCode>
        <ra:AlertDescription> Future Dated Command Successful Device Alert</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:FutureDatedCommandOutcomeDeviceAlert>
            <ra:GBZFutureDatedAlert>
              <ra:FutureDatedCommandMessageCode>006B</ra:FutureDatedCommandMessageCode>
              <ra:FutureDatedCommandOriginatorCounter>130</ra:FutureDatedCommandOriginatorCounter>
              <ra:GBZFDInstructionIdentification>
                <ra:ExtendedHeaderClusterID>0707</ra:ExtendedHeaderClusterID>
                <ra:FrameControl>01</ra:FrameControl>
                <ra:CommandIdentifier>02</ra:CommandIdentifier>
              </ra:GBZFDInstructionIdentification>
            </ra:GBZFutureDatedAlert>
          </ra:FutureDatedCommandOutcomeDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 18 Device Alert 0x8F66 Future-Dated Command Successful GBZ Instruction Parse Response Sample

The following example shows an Alert for a Future Dated Firmware Activation request for which the outcome was successful.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>00CA </ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F66</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Update Security Credentials Device Alert</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:FutureDatedCommandOutcomeDeviceAlert >
            <ra:FirmwareActivationDeviceAlert>
              <ra:ExecutionDateTime>2014-05-04T18:13:41.00</ra:ExecutionDateTime>
              <ra:OriginatorCounterFromCommand>12345</ra:OriginatorCounterFromCommand>
              <ra:ActivateImageResponseCode ResponseCode="0">
                <ra:ASN1Status>success</ra:ASN1Status>
              </ra:ActivateImageResponseCode>
              <ra:FirmwareVersion>1100EEFF</ra:FirmwareVersion>
            </ra:FirmwareActivationDeviceAlert>
          </ra:FutureDatedCommandOutcomeDeviceAlert >
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 19 Device Alert 0x8F66 Future-Dated Firmware Activation Parse Response Sample

The following example shows an Alert for a Future Dated Update Security Credentials request for which the outcome was unsuccessful.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>00CB</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F67</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Update Security Credentials Device Alert</ra:AlertDescription>
        <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:FutureDatedCommandOutcomeDeviceAlert >
            <ra:UpdateSecurityCredentialsDeviceAlert>
              <ra:UpdateSecurityCredentialsExecutionOutcome>
                <ra:AuthorisingRemotePartyOriginatorCounter>50</ra:AuthorisingRemotePartyOriginatorCounter>
                <ra:CredentialsReplacementMode>SupplierBySupplier</ra:CredentialsReplacementMode>
                <ra:RemotePartySeqNumberChange>
                  <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
                  <ra:RemotePartyFloorSeqNumber>50</ra:RemotePartyFloorSeqNumber>
                </ra:RemotePartySeqNumberChange>
                <ra:ReplacementOutcome>
                  <ra:StatusCode ResponseCode="0">
                    <ra:ASN1Status>success</ra:ASN1Status>
                  </ra:StatusCode>
                  <ra:CertificateType>DigitalSigning</ra:CertificateType>
                  <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
                  <ra:ExistingRemotePartyID>00-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
                  <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
                </ra:ReplacementOutcome>
                <ra:ReplacementOutcome>
                  <ra:StatusCode ResponseCode="5">
                    <ra:ASN1Status>badCertificate</ra:ASN1Status>
                  </ra:StatusCode>
                  <ra:CertificateType>DigitalSigning</ra:CertificateType>
                  <ra:RemotePartyRole>Supplier</ra:RemotePartyRole>
                  <ra:ExistingRemotePartyID>00-00-00-00-00-00-00-00</ra:ExistingRemotePartyID>
                  <ra:ExistingCertificateHash>ZGVmYXVsdA==</ra:ExistingCertificateHash>
                </ra:ReplacementOutcome>
              </ra:UpdateSecurityCredentialsExecutionOutcome>
            </ra:UpdateSecurityCredentialsDeviceAlert>
          </ra:FutureDatedCommandOutcomeDeviceAlert >
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 20 Device Alert 0x8F67 Future-Dated Update Security Credentials Parse Response Sample

15.4.4.5 Summary of Device Alert Payloads in Device Future Dated Service Requests

As described above, the payload of Device Alerts 0x8F66 and 0x8F67 is variable according to the Service Request type and input data. The following table summarises the expected number of Alerts for each Future Dated Service Request. Note that the number of Alerts is fixed in the majority of cases, with the exception of Service Request 1.1.1 for the GSME, in this instance the number of Alerts varies depending on whether it is a block Tariff or TOU Tariff.

Service Request	Device Alerts Payload Data Type - Electricity	Number of Device Alerts – Electricity	Device Alerts Payload Data Type - Gas	Number of Device Alerts – Gas
1.1.1	COSEMFutureDatedAlert <ul style="list-style-type: none"> TariffSwitchingTable TariffSwitchingTable(SpecialDays) TariffThresholdMatrix CurrencyUnit StandingCharge TariffBlockPriceMatrixTOU 	6	GBZFutureDatedAlert <ul style="list-style-type: none"> TariffThresholdMatrix (optional) TariffSwitchingTable TariffSwitchingTable (SpecialDays) TariffBlockPriceMatrixTOU StandingCharge 	4 to 5
1.1.2	COSEMFutureDatedAlert <ul style="list-style-type: none"> TariffSwitchingTable(SecondaryElement) TariffSwitchingTable(SecondaryElement)(SpecialDays) SecondaryTariffTOUPriceMatrix 	3	N/A	N/A
1.2.1	COSEMFutureDatedAlert <ul style="list-style-type: none"> StandingCharge TariffBlockPriceMatrixTOU 	2	GBZFutureDatedAlert <ul style="list-style-type: none"> StandingCharge TariffBlockPriceMatrixTOU 	2
1.2.2	COSEMFutureDatedAlert	1	N/A	N/A
1.6	COSEMFutureDatedAlert Credit <ul style="list-style-type: none"> SuspendDebtDisabled / SuspendDebtEmergency / Payment Mode Prepayment <ul style="list-style-type: none"> SuspendDebtDisabled / SuspendDebtEmergency / Payment Mode DisablementThreshold(MeterBalance) 	1 (credit), 2 (pre-payment)	GBZFutureDatedAlert	1
2.1	COSEMFutureDatedAlert <ul style="list-style-type: none"> Non-DisablementCalendar DebtRecoveryRateCap(amount) DebtRecoveryRateCap(period) EmergencyCreditLimit EmergencyCreditThreshold LowCreditThreshold PrepaymentCredit(MaximumCreditThreshold) PrepaymentCredit(MaxMeterBalance) Non-DisablementCalendar(SpecialDays) 	9	GBZFutureDatedAlert <ul style="list-style-type: none"> EmergencyCreditLimit LowCreditThreshold Non-DisablementCalendar Non-DisablementCalendar(SpecialDays) PrepaymentCredit(MaximumCreditThreshold) DebtRecoveryRateCap 	6
6.4.1	COSEMFutureDatedAlert <ul style="list-style-type: none"> LoadLimitPeriod(Timer) LoadLimitPowerThreshold LoadLimitRestorationPeriod(Timer) LoadLimitSupplyState 	4	N/A	N/A

Service Request	Device Alerts Payload Data Type - Electricity	Number of Device Alerts – Electricity	Device Alerts Payload Data Type - Gas	Number of Device Alerts – Gas
6.14.2	COSEMFutureDatedAlert <ul style="list-style-type: none"> AuxiliaryLoadControlSwitchesCalendar AuxiliaryLoadControlSwitchesCalendar(SpecialDays) 	2	N/A	N/A
6.14.3	COSEMFutureDatedAlert <ul style="list-style-type: none"> AuxiliaryControllerCalendar AuxiliaryControllerCalendar(SpecialDays) 	2	N/A	N/A
6.15.1	UpdateSecurityCredentialsDeviceAlert	1	UpdateSecurityCredentialsDeviceAlert	1
6.23	UpdateSecurityCredentialsDeviceAlert	1	UpdateSecurityCredentialsDeviceAlert	1
11.3	FirmwareActivationDeviceAlert	1	FirmwareActivationDeviceAlert	1

Table 19 Future Dated Device Alert Payload Data Types

15.4.5 Device Alert 0x81A0 Smart Meter Integrity Issue – Warning

This Device Alert (new in GBCS v2.0) returns a warning indicating potential integrity issue reason.

See GBCS section 16.4 for more details.

15.4.5.1 Format - SmartMeterIntegrityIssueWarningDeviceAlertType

The diagram shows the structure of SmartMeterIntegrityIssueWarningDeviceAlertType, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

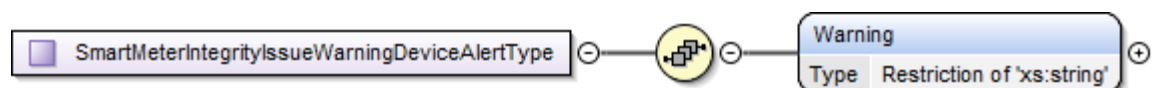


Figure 21 – Smart Meter Integrity Issue - Warning Device Alerts Parse Response Structure Detail

15.4.5.2 Specific Header Data Items

GBCS v2.0:

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	00F0	00F2
GBCS Use Case Number (for information only - not in header)	N/A	N/A

Data Item	Electricity Alert	Gas Alert
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Meter Integrity Issue Warning Alert - ESME</i>	<i>Meter Integrity Issue Warning Alert - GSME</i>
SupplementaryRemotePartyID	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present
Timestamp	Not Present	Not Present

Table 20 Smart Meter Integrity Issue - Warning Device Alerts Header Data – GBCS v2.0

15.4.5.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	81A0	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Smart Meter Integrity Issue – Warning	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
Warning	Information associated with the reason for the warning. Valid Set: <ul style="list-style-type: none"> Other Error Non Volatile Memory Error Program Execution Error Program Storage Error RAM Error Unexpected Hardware Reset Error Watchdog Error Metrology Firmware Verification Failure Error Measurement Fault Unspecified Smart Meter Operational Integrity Error 	Restriction of xs:string (enumeration)	N/A	N/A	Non-Sensitive

Table 21 Smart Meter Integrity Issue - Warning Device Alerts Parse Response Data Items

15.4.5.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="2.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>00F0</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>81A0</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Smart Meter Integrity Issue – Warning</ra:AlertDescription>
        <ra:Timestamp>2017-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:SmartMeterIntegrityIssueWarningDeviceAlert>
            <ra:Warning>Error Program Execution</ra:Warning>
          </ra:SmartMeterIntegrityIssueWarningDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 22 - Device Alert 0x81A0 Smart Meter Integrity Issue - Warning Parse Response Sample

15.4.6 Device Alert 0x8F85 Command not supported by Device

This Device Alert (new in GBCS v4.0) is sent by an ESME Device to indicate that it has received a GBCS Command which it cannot support because it does not support all ESME commands. This may be sent by an SAPC (ESME variant G) since they are not required to implement all ESME Commands.

See GBCS section 7.2.9.1 for more details.

15.4.6.1 Format – CommandNotSupportedbyDevice

The diagram shows the structure of CommandNotSupportedbyDevice, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

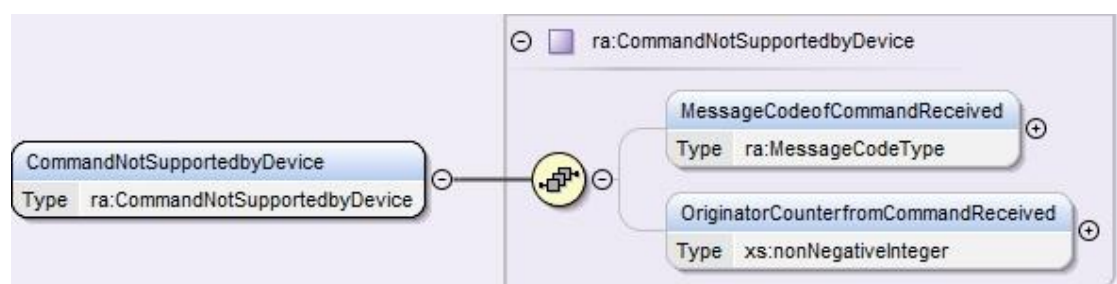


Figure 22.2 – Command not supported by Device - Device Alerts Parse Response Structure Detail

15.4.6.2 Specific Header Data Items

GBCS v4.0 or later:

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	0120	N/A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS100</i>	<i>N/A</i>
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Command not supported by Device</i>	<i>N/A</i>
SupplementaryRemotePartyID	This field shall be included in the Alert if Supplementary Remote Party ID is present in the corresponding Command, and it shall take the same value as in the Command	N/A
SupplementaryRemotePartyCounter	This field shall be included in the Alert if Supplementary Remote Party Counter is present in the corresponding Command, and it shall take the same value as in the Command	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 21.1 Command not supported by Device - Device Alert Header Data Items

15.4.6.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F85	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Command not supported by Device	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
MessageCodeofCommandReceived	The Message Code of the Command which the Device cannot support. Valid set: A GBCS Message Code that is valid for an ESME	xs:hexBinary	N/A	N/A	Non-Sensitive
OriginatorCounterfromCommandandReceived	The originator counter from the Command which the Device cannot support.	xs:nonNegativeInteger	N/A	N/A	Non-Sensitive

Table 21.2 Command not supported by Device - Device Alert Parse Response Data Items

15.4.6.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="4.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:SupplementaryRemotePartyID>10-00-20-00-30-00-70-00</ra:SupplementaryRemotePartyID>
    <ra:GBCSHexadecimalMessageCode>0120</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F85</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Command not supported by Device</ra:AlertDescription>
        <ra:Timestamp>2021-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:CommandNotSupportedbyDevice>
            <ra:MessageCodeofCommandReceived>001B</ra:MessageCodeofCommandReceived>
            <ra:OriginatorCounterfromCommandReceived>1501</ra:OriginatorCounterfromCommandReceived>
          </ra:CommandNotSupportedbyDevice>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 22.3 - Device Alert 0x8F85 Command not supported by Device Parse Response Sample

15.4.7 Device Alert 0x8F88 Operational Update

This Device Alert is sent by a Device to indicate that there has been a change in operational status, e.g. where an ESME has executed a change to the commanded state of an Auxiliary Controller. This Device Alert is introduced in GBCS v4.0. See GBCS section 7.2.9.1 for more details.

15.4.7.1 Format - Operational Update

The diagram shows the structure of OperationalUpdateDeviceAlert, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

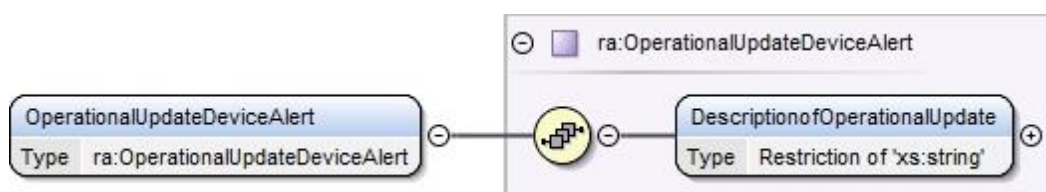


Figure 22.4 – Operational Update - Device Alerts Parse Response Structure Detail

15.4.7.2 Specific Header Data Items

GBCS v4.0 or later:

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	0123	N/A
GBCS Use Case Number (for information only - not in header)	ECS200	N/A

Data Item	Electricity Alert	Gas Alert
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>OperationalUpdate</i>	N/A
SupplementaryRemotePartyID	If included, the Entity Identifier of either the Supplier, Network Operator or Load Controller	N/A
SupplementaryRemotePartyCounter	Not Present	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 21.3 Operational Update - Device Alert Header Data Items

15.4.7.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F88	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Device Operational Update	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
OperationalUpdateDeviceAlert	Information from the Device regarding the operational update change made.	OperationalUpdateDeviceAlert (see section 15.4.7.3.1)	N/A	N/A	Non-Sensitive

Table 21.4 Operational Update - Device Alert Parse Response Data Items

15.4.7.3.1 OperationalUpdateDeviceAlert Data Items Definition

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
OutputState	<p>An integer indicating the output level of an Auxiliary Controller. This value is applicable to output energy, i.e. where the direction of energy flow is from the meter to the controlled load.</p> <p>Where the Auxiliary Controller is an APC, the number reflects the enabled percentage level of energy flow.</p> <p>Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow).</p> <p>Valid set: Integer in the range 0 to 100</p>	<p>ra:AuxiliaryControllerLevel</p> <p>(Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)</p>	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
InputState	<p>An integer indicating the input level of an Auxiliary Controller. This value is applicable to input energy, i.e. where the direction of energy flow is from the controlled load to the meter.</p> <p>This value is only applicable to an Auxiliary Controller that is an APC, and is not applicable to an ALCS or HCALCS. The number reflects the enabled percentage level of energy flow.</p> <p>Valid set: Integer in the range 0 to 100</p>	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	None	N/A	Non-Sensitive
StateAndAssociatedInformation	<p>Information from the Auxiliary Controller which is in JavaScript Object Notation (JSON) as defined by IETF RFC8259.</p> <p>This provides associated information and incorporates the input and output state, which are also identified separately above.</p>	xs:string (maxLength=1200)	None	N/A	Non-Sensitive

Table 21.5 OperationalUpdateDeviceAlert Data Items

15.4.7.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="4.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:SupplementaryRemotePartyID>10-00-20-00-30-00-70-00</ra:SupplementaryRemotePartyID>
    <ra:GBCSHexadecimalMessageCode>0123</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F88</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Device Operational Update</ra:AlertDescription>
        <ra:Timestamp>2021-05-04T18:13:51.00</ra:Timestamp>
        <ra:Payload>
          <ra:OperationalUpdateDeviceAlert>
            <ra:OutputState>50</ra:OutputState>
            <ra:InputState>75</ra:InputState>
            <ra:StateAndAssociatedInformation>{"outputState": 50, "inputState": 75 other-data
          }</ra:StateAndAssociatedInformation>
          <ra:OperationalUpdateDeviceAlert>
            <ra:Payload>
              <ra:DeviceAlertContent>
                <ra:DeviceAlertMessage>
                  <ra:Body>
                    </ra:GBCSResponse>
```

Figure 22.5 - Device Alert 0x8F88 OperationalUpdate Parse Response Sample

15.4.8 Device Alert 0x8F86 Limit APC Level Command Processed

This Device Alert is sent by a Device to indicate that the Device has processed a Command to create an APC [n] Limit Period, which is established by Service Request 7.16 Limit APC Level. An APC [n] Limit Period may be applied to energy flow for output to or input from the controlled load.

This Device Alert is introduced in GBCS v4.0. See GBCS section 7.2.9.1 for more details.

15.4.8.1 Format - Limit APC Level Command Processed

The diagram shows the structure of LimitAPCLevelCommandProcessedDeviceAlert, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

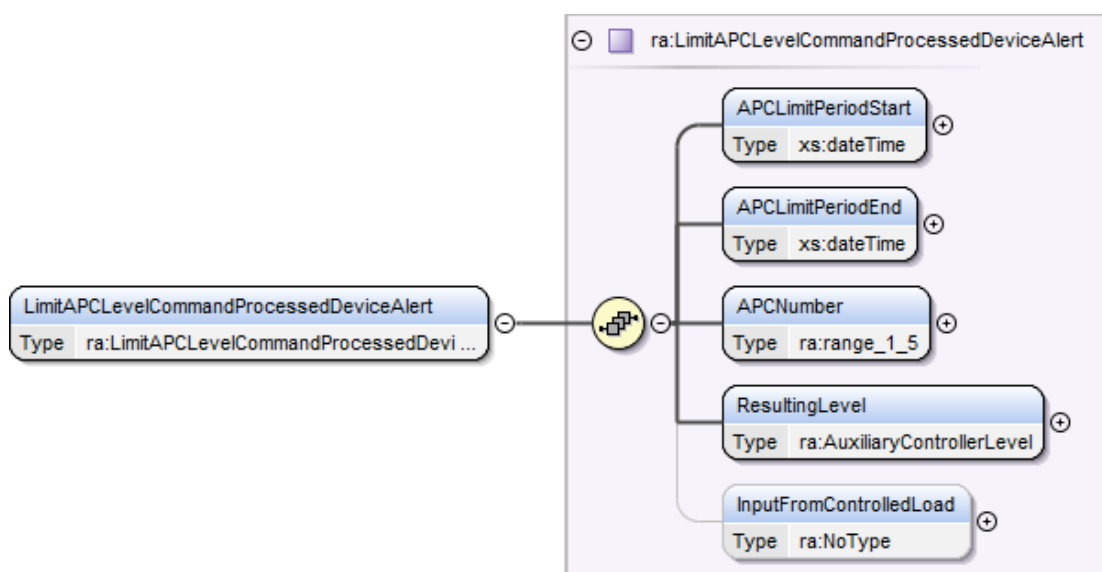


Figure 22.6 – Limit APC Level Command Processed - Device Alerts Parse Response Structure Detail

15.4.8.2 Specific Header Data Items

GBCS v4.0 or later:

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	0121	N/A
GBCS Use Case Number (for information only - not in header)	ECS101	N/A
GBCS Use Case Name (for information only - not in header)	Limit APC [n] Level Command processed	N/A
SupplementaryRemotePartyID	Not Present	N/A
SupplementaryRemotePartyCounter	Not Present	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 21.6 Limit APC Level Command Processed - Device Alert Header Data Items

15.4.8.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F86	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Limit APC Level Command Processed	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
APCLimitPeriodStart	The start of the APC Limit Period	xs:dateTime	N/A	N/A	Non-Sensitive
APCLimitPeriodEnd	The end of the APC Limit Period.	xs:dateTime	N/A	N/A	Non-Sensitive
AuxiliaryControllerN	The index on the Device of the Auxiliary Controller to which this Device Alert applies. A Device may have up to 5 Auxiliary Controllers. This Device Alert is applicable only to an Auxiliary Controller that is an APC.	ra:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	N/A	UTC Date-Time	Non-Sensitive
ResultingLevel	The limit applied to the APC of the level of energy flow. The level is the percentage, where 0 means no energy flow. Valid set: Integer in the range 0 to 100	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	N/A	N/A	Non-Sensitive
InputFromControlledLoad	If present, this element indicates that the direction of energy flow limit is with respect to input energy from the controlled load Device. If not present then the direction of energy limit is with respect to output energy to the controlled load Device	ra:NoType (see Annex 17)	No	None	N/A

Table 21.7 Limit APC Level Command Processed - Device Alert Parse Response Data Items

15.4.8.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="4.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0121</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F86</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Limit APC Level Command Processed</ra:AlertDescription>
        <ra:Timestamp>2021-12-01T17:00:01.35</ra:Timestamp>
        <ra:Payload>
          <ra:LimitAPCLevelCommandProcessedDeviceAlert>
            <ra:APCLimitPeriodStart>2021-12-01T17:00:00.00</ra:APCLimitPeriodStart>
            <ra:APCLimitPeriodEnd>2021-12-01T18:59:59.00Z</ra:APCLimitPeriodEnd>
            <ra:AuxiliaryControllerN>3</ra:AuxiliaryControllerN>
            <ra:ResultingLevel>40</ra:ResultingLevel>
          </ra:LimitAPCLevelCommandProcessedDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 22.7 - Device Alert 0x8F86 Limit APC Level Command Processed Parse Response Sample

15.4.9 Device Alert 0x8F87 Limit APC Level Ended or Cancelled

This Device Alert is sent by a Device to indicate that an APC Limit Period, established by a Service Request 7.16 Limit APC Level, has ended.

This Device Alert is introduced in GBCS v4.0. See GBCS section 7.2.9.1 for more details.

15.4.9.1 Format - Limit APC Level Ended

The diagram shows the structure of LimitAPCLevelEndedDeviceAlert, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

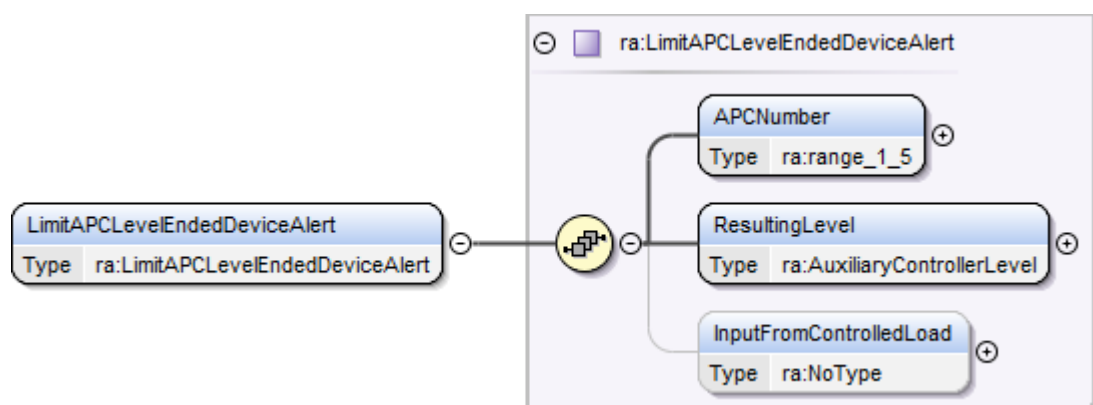


Figure 22.8 – Limit APC Level Ended - Device Alerts Parse Response Structure Detail

15.4.9.2 Specific Header Data Items

GBCS v4.0 or later:

Data Item	Electricity Alert	Gas Alert
GBCSHexadecimalMessageCode	0122	N/A
<i>GBCS Use Case Number (for information only - not in header)</i>	<i>ECS102</i>	N/A
<i>GBCS Use Case Name (for information only - not in header)</i>	<i>Limit APC [n] Level ended or cancelled</i>	N/A
SupplementaryRemotePartyID	Not Present	N/A
SupplementaryRemotePartyCounter	Not Present	N/A
SupplementaryOriginatorCounter	Not Present	N/A
Timestamp	Not Present	N/A

Table 21.8 Limit APC Level Ended - Device Alert Header Data Items

15.4.9.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F87	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Limit APC Level Ended or Cancelled	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive
AuxiliaryControllerN	The index on the Device of the Auxiliary Controller to which this Device Alert applies. A Device may have up to 5 Auxiliary Controllers. This Device Alert is applicable only to an Auxiliary Controller that is an APC.	ra:range_1_5 (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5)	N/A	N/A	Non-Sensitive
ResultingLevel	The level of energy flow in the APC after the ending of the APC level limit period. The level is the percentage; 100 means maximum energy flow and 0 means no energy flow. Valid set: Integer in the range 0 to 100	ra:AuxiliaryControllerLevel (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100)	N/A	N/A	Non-Sensitive
InputFromControlledLoad	If present, this element indicates that the direction of energy flow limit is with respect to input energy from the controlled load Device. If not present then the direction of energy limit is with respect to output energy to the controlled load Device	ra:NoType (see Annex 17)	No	None	N/A

Table 21.9 Limit APC Level Ended - Device Alert Parse Response Data Items

15.4.9.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="4.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-20-30-40-50-60-70-80</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>10-00-20-00-30-00-40-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0122</ra:GBCSHexadecimalMessageCode>
  </ra:Header>
  <ra:Body>
    <ra:DeviceAlertMessage>
      <ra:DeviceAlertContent>
        <ra:GBCSHexAlertCode>8F87</ra:GBCSHexAlertCode>
        <ra:AlertDescription>Limit APC Level Ended or Cancelled</ra:AlertDescription>
        <ra:Timestamp>2021-12-01T19:00:25.42</ra:Timestamp>
        <ra:Payload>
          <ra:LimitAPCLevelEndedDeviceAlert>
            <ra:AuxiliaryControllerN>3</ra:AuxiliaryControllerN>
            <ra:ResultingLevel>40</ra:ResultingLevel>
            <ra:InputFromControlledLoad/>
          </ra:LimitAPCLevelEndedDeviceAlert>
        </ra:Payload>
      </ra:DeviceAlertContent>
    </ra:DeviceAlertMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 22.9 - Device Alert 0x8F87 Limit APC Level Ended Parse Response Sample

15.5 SMETS1 Alert Format

This section describes the information which will be sent with SMETS1 Alerts to DCC Service Users.

15.5.1 SMETS1 Alerts With No Additional Payload

Most SMETS1 Alerts consist of just an Alert Code without any substantial additional data. The SMETS1 Alert Format is described in Annex 19, section 19.4.3.2.

SMETS1 Alert codes are communicated in the GBCSHexAlertCode XML element. Some are in common with GBCS definitions, and others are not defined in GBCS. The DCC shall maintain and publish to all Users the list of SMETS1 Alert Codes.

15.5.2 SMETS1 Alerts 0x8F1C and 0x8F72 Firmware Verification Status

These two SMETS1 Alerts returns the result of Firmware verification as part of the distribution of Firmware upgrades, as follows:

- Alert Code 0x8F1C indicates that it failed
- Alert Code 0x8F72 indicates that it was successful

The same additional payload is conveyed in each case.

See GBCS section 11.2.6 for more details. Note that this Alert type is also referred to in GBCS as "Firmware Distribution Receipt Alert".

15.5.2.1 Format - FirmwareVerificationDeviceAlertType

The diagram shows the structure of FirmwareVerificationDeviceAlertType, which is the XML type used for these Alerts in the Payload part of the Alert structure. See Figure 4 in section 15.3.3 to see how this fits in to the Device Alert response structure as a whole.

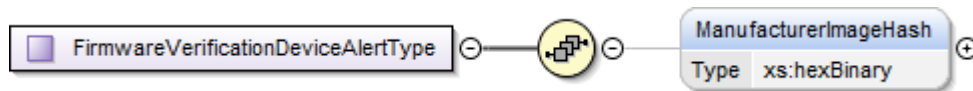


Figure 23 – Firmware Verification SMETS1 Alerts SMETS1 Response Structure Detail

15.5.2.2 Specific Header Data Items

Data Item	Electricity Alert	Gas Alert	Firmware verification failed for CHF or PPMID	Firmware verification successful for CHF or PPMID
GBCSHexadecimal MessageCode	00CE	00CF	1002	1003
GBCS Use Case Number (for information only - not in header)	N/A	N/A	N/A	N/A
GBCS Use Case Name (for information only - not in header)	Firmware Distribution Receipt Alert (ESME)	Firmware Distribution Receipt Alert (GSME)	N/A	N/A
SupplementaryRemotePartyID	Not Present	Not Present	Not Present	Not Present
SupplementaryRemotePartyCounter	Not Present	Not Present	Not Present	Not Present
SupplementaryOriginatorCounter	Not Present	Not Present	Not Present	Not Present
Timestamp	Not Present	Not Present	Not Present	Not Present

Table 22 Firmware Verification SMETS1 Alerts Header Data

15.5.2.3 Specific Body Data Items

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
GBCSHexAlertCode	8F1C or 8F72	xs:hexBinary	N/A	N/A	Non-Sensitive
AlertDescription	Firmware verification failed, or Firmware verification succeeded	xs:string (maxLength = 250)	N/A	N/A	Non-Sensitive
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	N/A	UTC Date-Time	Non-Sensitive

Data Item	Description / Valid Set	Type	Default	Units	Sensitivity
ManufacturerImageHash	<p>Information associated with the firmware update.</p> <p>The Firmware hash as held in the CPL and presented in the format XX..XX (64 characters) where each X is one of the characters 0 to 9 or A to F.</p> <p>This data item should match the value on the CPL (excluding the colon separator between octet values)</p> <p>Note that a hexBinary value of length 32 is defined as 32 octets, an octet is represented by 2 characters.</p>	xs:hexBinary (maxLength = 32)	N/A	N/A	Non-Sensitive

Table 23 Firmware Verification SMETS1 Alerts SMETS1 Response Data Items

15.5.2.4 Sample Response

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <SMETS1SignedResponse schemaVersion="3.0">
        <SMETS1Response>
          <Header>
            <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
            <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
            <ra:OriginatorCounter>50</ra:OriginatorCounter>
          </Header>
          <Body>
            <DeviceAlertMessage>
              <ra:DeviceAlertContent>
                <ra:GBCSHexAlertCode>8F1C</ra:GBCSHexAlertCode>
                <ra:AlertDescription>Firmware verification failed</ra:AlertDescription>
                <ra:Timestamp>2014-05-04T18:13:51.00</ra:Timestamp>
                <ra:Payload>
                  <ra:FirmwareVerificationDeviceAlert>
                    <ra:ManufacturerImageHash>0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
                    </ra:ManufacturerImageHash>
                    <ra:FirmwareVerificationDeviceAlert>
                      <ra:Payload>
                        <ra:DeviceAlertContent>
                          </DeviceAlertContent>
                        </Body>
                      </SMETS1Response>
                    </Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
                      <SignedInfo>
                        <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
                        <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
                        <Reference URI="">
                          <Transforms>
                            <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
                          </Transforms>
                          <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
                          <DigestValue>ZGVmYXVsdA==</DigestValue>
                        </Reference>
                      </SignedInfo>
                      <SignatureValue>ZGVmYXVsdA==</SignatureValue>
                    </KeyInfo>
                      <X509Data>
                        <X509IssuerSerial>
                          <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
                          <X509SerialNumber>7432112348</X509SerialNumber>
                        </X509IssuerSerial>
                      </X509Data>
                    </KeyInfo>
                  </Signature>
                </SMETS1SignedResponse>
              </SMETS1ResponseMessage>
            </Body>
          </Response>
```

Figure 24 – SMETS1 Alert 0x8F1C Firmware Verification Failed SMETS1 Response Sample

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 16 – DCC Alerts

Author: DCC
Version: v5.2a
Date: June 2023

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16.2 Responses 3

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16 DCC Alerts

DCC Alerts are unsolicited messages generated by the DCC Data Systems and sent to the DCC Service Users. The recipient is defined within the DCC Alert. See Main Document of this documentation set section 13 for the list of possible DCC Alerts, their triggers and their applicability to SMETS2 or later and / or to SMETS1.

16.1 Service Request

Service Requests are not applicable to DCC Alerts, since they are unsolicited messages.

16.2 Responses

The Service Response message type for DCC Alerts is specific to them.

The Response XML element of the XSD (see XML Schema – document 3 of this documentation set) defines the structure of the Service Response. For DCC Alerts, the ResponseCode will depend on the DCC Alert type. See section 16.2.1.3 and Main Document of this documentation set section 12.3 for the full list of generic error / response codes.

16.2.1 DCC Alert Message Response

This is the only response type applicable to DCC Alerts. See Main Document of this documentation set section 9.3.3.

Depending on the data included in the DCC Alert, the DCC Alert responses have been divided into multiple types:

1. Power Outage Event
2. Device Status Change Event
3. DSP Schedule Removal
4. Command Failure
5. Firmware Distribution Failure
6. Update HAN Device Log Result
7. Change Of Supplier
8. Device Log Restored
9. PPMID Alert
10. Security Credentials Updated
11. PPMID Removal
12. Quarantined Request
13. Firmware Version Mismatch
14. Dual Band CH Alert
15. S1SP Alert
16. SMETS1CHFirmwareNotification
17. ALCS HCALCS Configuration Change
18. Firmware Upgrade Requested

19. CSP Firmware Delivery Status
20. Comms Hub Alert
21. ECoS Alert
22. Comms Hub Firmware Activation
23. CoS Certificate Alert
24. DUIS Version Mismatch

The following sections describe the format and specific data items of the DCC Alerts and each of their types.

16.2.1.1 Format

DCC Alerts are defined in the XSD (see XML Schema – document 3 of this documentation set) DCCAlertMessage DCCAlert XML element.

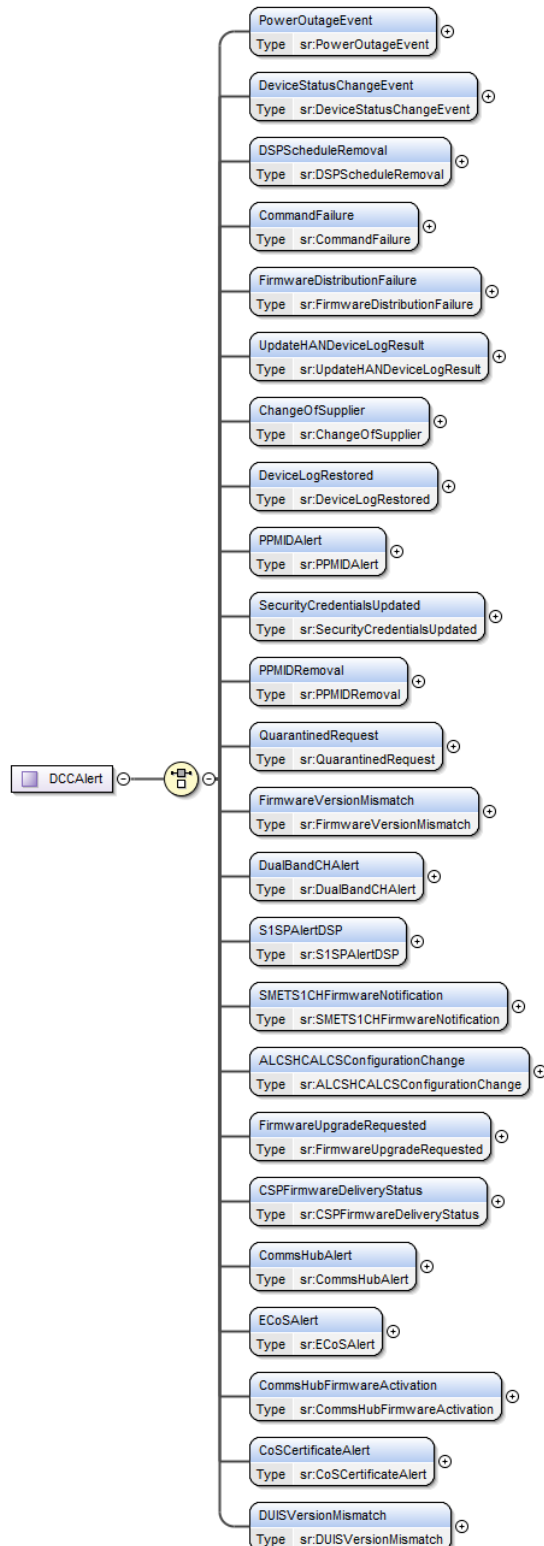


Figure 1 DCC Alert Response Structure

16.2.1.2 Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory for Alert Codes ¹	Default	Units	Sensitivity
PowerOutageEvent	The trigger event indicates that a device power has failed ²	sr:PowerOutageEvent (see PowerOutageEvent Data Items Definition)	AD1	None	N/A	Non-Sensitive
DeviceStatusChangeEvent	The trigger event indicates that a device has been withdrawn from Inventory or its status has changed	sr:DeviceStatusChangeEvent (see DeviceStatusChangeEvent Data Items Definition)	N1, N2, N8, N9, N16, N28, N29, N44, N45	None	N/A	Non-Sensitive
DSPScheduleRemoval	The trigger event indicates that a DSP Schedule is to be deleted	sr:DSPScheduleRemoval (see DSPScheduleRemoval Data Items Definition)	N4, N5, N6, N17, N37, N40	None	N/A	Non-Sensitive
CommandFailure	The trigger event indicates that a Command has failed	sr:CommandFailure (see CommandFailure Data Items Definition)	N3, N7, N10, N11, N12, N13, N14, N15, N33, N34, N35, N36, N38, N41, N53	None	N/A	Non-Sensitive
FirmwareDistributionFailure	The trigger event indicates that a Firmware Distribution Command to the CSP has failed, at least for some of the Devices	sr:FirmwareDistributionFailure (see FirmwareDistributionFailure Data Items Definition)	N18, N19, N20, N21, N22 and N23	None	N/A	Non-Sensitive
UpdateHANDeviceLogResult	The trigger event indicates if a Command to Update a Communications Hub Whitelist Update (addition ONLY) has succeeded or no response has been received by the DSP.	sr:UpdateHANDeviceLogResult (see UpdateHANDeviceLogResult Data Items Definition)	N24, N25	None	N/A	Non-Sensitive
ChangeOfSupplier	The trigger event indicates if an Update Security Credentials (CoS) has succeeded or has failed the CoS Party Access Control or related processing	sr:ChangeOfSupplier (see ChangeOfSupplier Data Items Definition)	N26, N27	None	N/A	Non-Sensitive
DeviceLogRestored	The trigger event indicates that the CHF or GPF Device Log has been restored	sr:DeviceLogRestored (see DeviceLogRestored Data Items Definition)	N30, N31	None	N/A	Non-Sensitive
PPMIDAlert	The trigger event indicates a Device Alert has been generated by the PPMID Device	sr:PPMIDAlert (see PPMIDAlert Data Items Definition)	N39	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory for Alert Codes ¹	Default	Units	Sensitivity
SecurityCredentialsUpdated	The trigger event indicates success Response from Update Security Credentials where the Remote Party whose certificate has been placed on the Device is not the sender of the Service Request	sr:SecurityCredentialsUpdated (see SecurityCredentialsUpdated Data Items Definition)	N42	None	N/A	Non-Sensitive
PPMIDRemoval	The trigger event indicates success Response from Update HAN Device Log (Removal) where the where the removed Device Type is a PPMID that was joined to Electricity and Gas equipment	sr:PPMIDRemoval (see PPMIDRemoval Data Items Definition)	N43	None	N/A	Non-Sensitive
QuarantinedRequest	The trigger event indicates that the Request has been quarantined, because an Anomaly Detection volume threshold or attribute limit has been breached	sr:QuarantinedRequest (see QuarantinedRequest Data Items Definition)	N46, N47, N48	None	N/A	Non-Sensitive
FirmwareVersionMismatch	N49. The trigger event indicates a mismatch between the Device's Firmware Version in SMI and that returned by the Read Firmware Version Service Request version and that the version returned by the Device matches an entry on the CPL with a status of "Current" N50. The trigger event indicates there is a mismatch between the Device's Firmware Version in SMI and that returned by the Read Firmware Version Service Request, the Activate Firmware Service Request or the Future Dated Firmware Activation Alert and that the version returned by the Device matches an entry on the CPL	sr:FirmwareVersionMismatch (see FirmwareVersionMismatch Data Items Definition)	N49, N50, N51, N52	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory for Alert Codes ¹	Default	Units	Sensitivity
	<p>with a status of "Removed"</p> <p>N51. The trigger event indicates there is a mismatch between the Device's Firmware Version in SMI and that returned by the Read Firmware Version Service Request, the Activate Firmware Service Request or the Future Dated Firmware Activation Alert and the version returned by the Device doesn't match an entry on the CPL</p> <p>N52. The trigger event indicates there is a mismatch between the GSME's Firmware Version in SMI and that returned by the Read Firmware Version Service Request where the target Device is GPF</p> <p>FirmwareVersionMismatch is introduced in DUIS Version 2.0</p>					
DualBandCHAlert	<p>The trigger event indicates a Device Alert has been generated by the Dual Band CHF Device</p> <p>DualBandCHAlert is introduced in DUIS Version 2.0</p>	<p>sr: DualBandCHAlert (see DualBandCHAlert Data Items Definition)</p>	N54	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory for Alert Codes ¹	Default	Units	Sensitivity
S1SPAlertDSP	<p>The trigger event indicates the SMETS1 Service Provider has returned an S1SPAlert corresponding to a SMETS1 Service Request, which will mean:</p> <ul style="list-style-type: none"> notification or unrecoverable error with the request (N55) or delivery of a UTRN generated by the S1SP (N56) <p>S1SPAlertDSP is introduced in DUIS Version 3.0</p>	sr:S1SPAlertDSP (see S1SPAlert Data Items Definition)	N55, N56	None	N/A	Non-Sensitive
SMETS1CHFirmwareNotification	<p>Notification of the intention to distribute or outcome of the activation of Firmware update request to a SMETS1 CHF or PPMID.</p> <p>Valid Set: UpdateRequested ActivationSuccessful</p> <p>SMETS1CHFirmwareNotification is introduced in DUIS Version 3.0</p>	sr:SMETS1CHFirmwareNotification (see SMETS1CHFirmwareNotification Data Items Definition)	N57	None	N/A	Non-Sensitive
ALCSHCALCSCConfigurationChange	<p>The trigger event indicates the ESME's ALCS / HCALCS / APC configuration has changed. APCs are applicable only to ESME Devices with GBCS v4.0 or later</p> <p>ALCSHCALCSConfigurationChange is introduced in DUIS Version 3.1, and modified in DUIS v4.0.</p>	sr:ALCSHCALCSConfigurationChange (see ALCSHCALCSConfigurationChange Data Items Definition)	N58	None	N/A	Non-Sensitive
FirmwareUpgradeRequested	<p>This DCC Alert is used to share the list of Devices that have been</p>	sr:FirmwareUpgradeRequested (see FirmwareUpgradeRequested Data Items Definition)	N59	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory for Alert Codes ¹	Default	Units	Sensitivity
	approved by CSPs for firmware update. It is sent to the 'Other Responsible Supplier' of one or more Devices and is currently applicable only to the PPMID. FirmwareUpgradeRequested is introduced in DUIS v5.0					
CSPFirmwareDeliveryStatus	The trigger event indicates a notification has been generated by the CSP in relation to the transfer of a firmware image to a Comms Hub. CSPFirmwareDeliveryStatus is introduced in DUIS v5.0.	sr:CSPFirmwareDeliveryStatus (see CSPFirmwareDeliveryStatus Data Items Definition)	N60, N61	None	N/A	Non-Sensitive
CommsHubAlert	The trigger event indicates a Device Alert has been generated by the Comms Hub. CommsHubAlert Introduced in DUIS v5.0.	sr:CommsHubAlert (see CommsHubAlert Data Items Definition)	N62	None	N/A	Non-Sensitive
ECoSAlert	The trigger event indicates that ECoS Party has generated an ECoS Alert. ECoSAlert is introduced in DUIS v5.1.	sr:ECoSAlert (see ECoSAlert Data Items Definition)	N63	None	N/A	Non-Sensitive
CommsHubFirmwareActivation	The trigger event indicates that a new version of Firmware has been activated on a SMETS2+ Comms Hub. CommsHubFirmwareActivation is introduced in DUIS v5.X.	sr:CommsHubFirmwareActivation (see CommsHubFirmwareActivation Data Items definition)	N64	None	N/A	Non-Sensitive
CoSCertificateAlert	The trigger event indicates that a Device has been installed with an unsupported CoS Certificate in its CoS Trust Anchor Cell.	sr: CoSCertificateAlert	N65	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory for Alert Codes ¹	Default	Units	Sensitivity
DUISVersionMismatch	The trigger event indicates that the DCC Alert or Service Response to be sent to the DCC Service User is not compatible with their DUIS XSD version DUISVersionMismatch is introduced in DUIS Version 2.0	sr:DUISVersionMismatch (see DUISVersionMismatch Data Items Definition)	N999	None	N/A	Non-Sensitive

Table 1 DCC Alert Service Response Data Items

¹ N/A for all other DCC Alert Codes

² For a limited set of ESMs affected by a particular issue with firmware activation, AD1 power outage alerts will be suppressed for a limited period after such a firmware activation. See section 2.3.12 of the main DUGIDS document for more information

Note that, if the DCC Service User's DUIS schema version doesn't support a DCC Alert or Service Response, the DCC Data Systems will:

1. If the DUIS schema version is 1.0, no DCC Alert will be sent to the DCC Service User
2. If the DUIS schema version is 2.0 or later, DCC Alert N999 DUISVersionMismatch will be sent to the DCC Service User. For incompatible DCC Alerts it will include the DCC Alert Code (as text) of the incompatible DCC Alert and for Service Responses the Service Request Request ID of the incompatible Service Response

16.2.1.2.1 PowerOutageEvent

PowerOutageEvent Format

DCC Alerts Power Status Change Event is defined in the XSD PowerOutageEvent XML element.

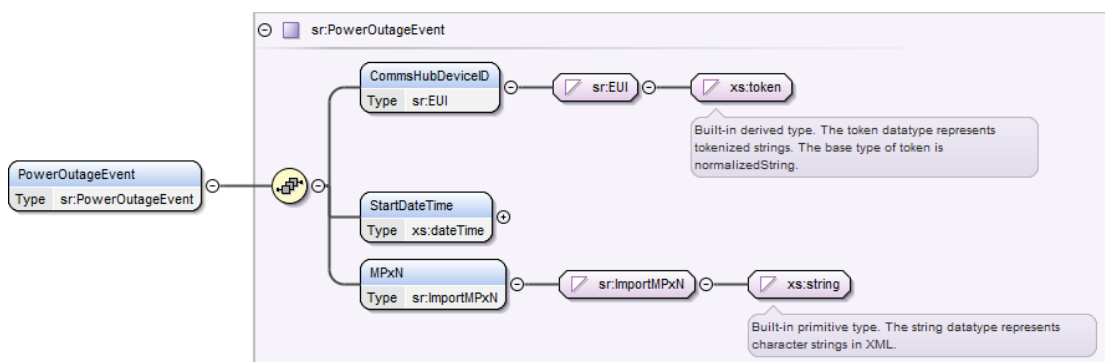


Figure 2 DCC Alert Response – PowerOutageEvent Structure

PowerOutageEvent Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommsHubDeviceID	The Device ID of the Communications Hub that reported the Power Outage	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
StartDateTime	The timestamp when the Power Outage started. This value is provided by the CSP	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive
MPxN	DCC Alerts sent to User Roles: <ul style="list-style-type: none"> EIS and ENO. The primary import MPAN of the Electricity Smart Meter associated with the Communications Hub Function. GIS and GNO. The MPRN of the Gas Smart Meter associated with the Communications Hub Function. 	Sr:ImportMPxN (Restriction of xs:string (min length = 1, max length = 13))	Yes	None	N/A	Non-Sensitive

Table 2 DCC Alert Service Response – PowerOutageEvent Data Items

16.2.1.2.2 DeviceStatusChangeEvent

DeviceStatusChangeEvent Format

DCC Alerts Device Status Change Event is defined in the XSD DeviceStatusChangeEvent XML element.

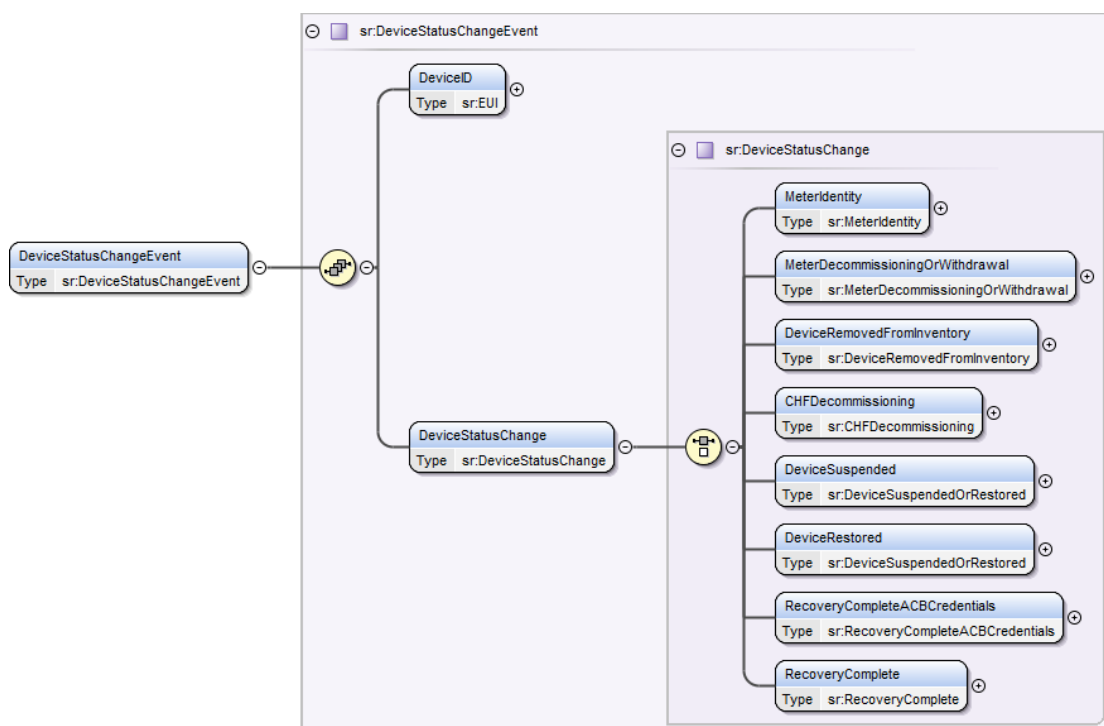


Figure 3 DCC Alert Response – DeviceStatusChangeEvent Structure

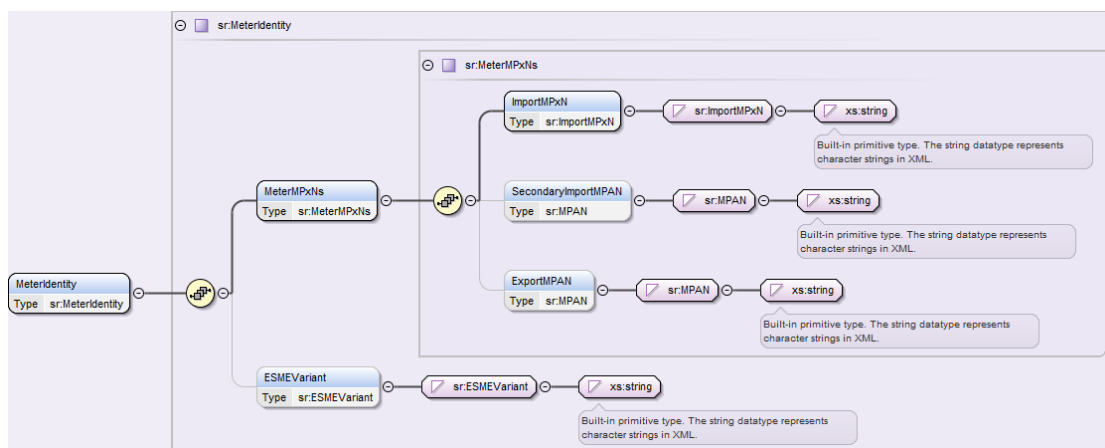


Figure 4 DCC Alert Response – DeviceStatusChangeEvent – MeterIdentity Structure

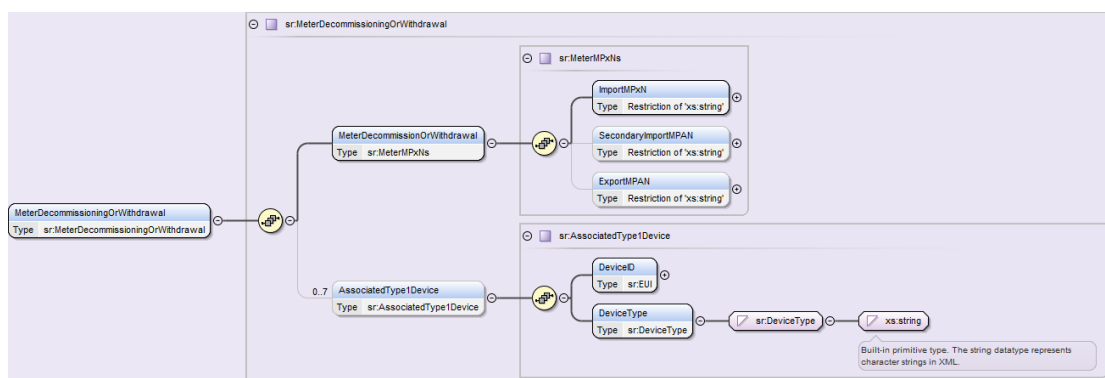


Figure 5 DCC Alert Response – DeviceStatusChangeEvent – MeterDecommissioningOrWithdrawal Structure

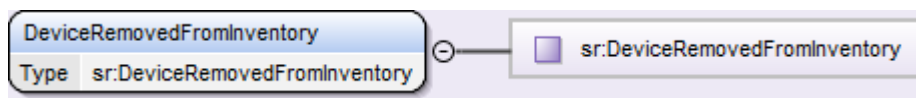


Figure 6 DCC Alert Response – DeviceStatusChangeEvent – DeviceRemovedFromInventory Structure



Figure 7 DCC Alert Response – DeviceStatusChangeEvent – CHFDecommissioning Structure



Figure 8 DCC Alert Response – DeviceStatusChangeEvent – DeviceSuspended Structure



Figure 9 DCC Alert Response – DeviceStatusChangeEvent – DeviceRestored Structure

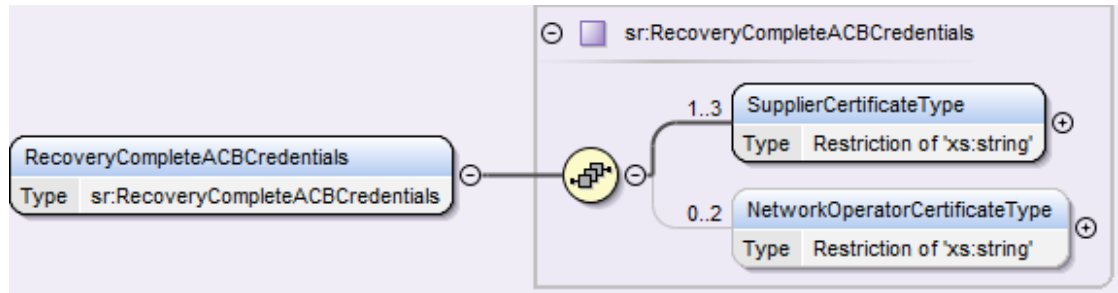


Figure 10 DCC Alert Response – DeviceStatusChangeEvent – RecoveryCompleteACBCredentials Structure



Figure 11 DCC Alert Response – DeviceStatusChangeEvent – RecoveryComplete Structure

DeviceStatusChangeEvent Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID which status is changing	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceStatusChange	The type of Device Status Change	sr:DeviceStatusChange (see DeviceStatusChange Data Items Definition)	Yes	None	N/A	Non-Sensitive

Table 3 DCC Alert Service Response – DeviceStatusChangeEvent Data Items

DeviceStatusChange Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
MeterIdentity	Meter Identity details	sr:MeterIdentity (see MeterIdentity Data Items Definition)	N16: Yes Otherwise: N/A	None	N/A	Non-Sensitive
MeterDecommissioningOrWithdrawal	Device Decommissioning / Withdrawal details	sr:MeterDecommissioningOrWithdrawal (see MeterDecommissioningOrWithdrawal Data Items Definition)	N1, N2: Yes Otherwise: N/A	None	N/A	Non-Sensitive
DeviceRemovedFromInventory	Device in a status of 'pending' for > 36 months has been removed from Inventory	sr:DeviceRemovedFromInventory (empty – included in the XML to describe DCC Alert Type)	N8: Yes Otherwise: N/A	N/A	N/A	Non-Sensitive
CHFDecommissioning	Communications Hub Function Decommissioned	sr:CHFDecommissioning (empty – included in the XML to describe DCC Alert Type)	N9: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
DeviceSuspended	Device Suspended	sr:DeviceSuspendedOrRestored (empty – included in the XML to describe DCC Alert Type)	N28: Yes Otherwise: N/A	None	N/A	Non-Sensitive
DeviceRestored	Device Restored from Suspension	sr:DeviceSuspendedOrRestored (empty – included in the XML to describe DCC Alert Type)	N29: Yes Otherwise: N/A	None	N/A	Non-Sensitive
RecoveryCompleteACBCredentials	SMKI Recovery Procedure is complete - - at least one of the KRP Certificates on the Device has been replaced with an ACB Certificate	sr:RecoveryCompleteACBCredentials (see RecoveryCompleteACBCredentials Data Items Definition)	N44: Yes Otherwise: N/A	None	N/A	Non-Sensitive
RecoveryComplete	SMKI Recovery Procedure is complete - all required Certificates on the Device have been recovered	sr:RecoveryComplete (empty – included in the XML to describe DCC Alert Type)	N45: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 4 DCC Alert Service Response – DeviceStatusChange Data Items

¹ The DCC Alert will include only one of the Data Items in the choice

MeterIdentity Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MeterMPxNs	MPxNs associated to the Meter	sr:MeterMPxNs (see MeterMPxNs Data Items Definition)	Yes	None	N/A	Non-Sensitive

ESMEVariant	Electricity Smart Metering Equipment Variant.	sr:ESMEVariant Restriction of xs:string (Enumeration)	DeviceType = ESME: Yes Otherwise: N/A	None	N/A	Non- Sensitive
	<p>Valid set:</p> <ul style="list-style-type: none"> A. Single Element B. Twin Element C. Polyphase AD. Single Element with ALCS BD. Twin Element with ALCS CD. Polyphase with ALCS ADE. Single Element with ALCS and Boost Function BDE. Twin Element with ALCS and Boost Function CDE. Polyphase with ALCS and Boost Function ADF. Single Element with ALCS and APC^{1,2} BDF. Twin Element with ALCS and APC^{1,2} CDF. Polyphase with ALCS and APC^{1,2} ADEF. Single Element with ALCS, Boost Function and APC^{1,2} BDEF. Twin Element with ALCS, Boost Function and APC^{1,2} CDEF. Polyphase with ALCS, Boost Function and APC^{1,2} AF. Single Element with APC^{1,2} ADG Single Element with ALCS and SAPC^{11, 13, 14} ADEG. Single Element with ALCS, Boost 					

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
	Function and SAPC ^{1, 13, 14} <ul style="list-style-type: none"> • AF. Single Element with APC^{1, 2} • BF. Twin Element with APC^{1, 2} • CF. Polyphase with APC^{1, 2} • AEF. Single Element with Boost Function and APC^{1, 2} • BEF. Twin Element with Boost Function and APC^{1, 2} • CEF. Polyphase with Boost Function and APC^{1, 2} • AG. Single Element with SAPC^{1, 2} • AEG. Single Element with Boost Function and SAPC^{1, 2} 					

Table 5 DCC Alert Service Response – MeterIdentity Data Items

¹ N/A to Devices prior to GBCS v4.0

² This combination cannot be included for a version of DUIS prior to DUIS v4.0, and in such cases invalid items will be omitted, e.g. if the combination in the Inventory is “AG” and the target Service User is recorded by the DCC Data Systems as currently using DUIS v3.0, then just “A” will be returned since G will not be recognised in the DUIS v3.0 XML schema

MeterMPxNs Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ImportMPxN	The reference number identifying an Import electricity or a gas metering point	sr:ImportMPxN (Restriction of xs:string (min length = 1, max length = 13))	Yes	None	N/A	Non-Sensitive
SecondaryImportMPAN	The reference number identifying a Twin Element Import electricity secondary metering point	sr:MPAN (Restriction of xs:string (min length = 13, max length = 13))	Twin Element Electricity Smart Meter: No Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExportMPAN	The reference number identifying an Export electricity metering point	sr:MPAN (Restriction of xs:string (min length = 13, max length = 13))	Export Electricity Smart Meter: No Otherwise: N/A	None	N/A	Non-Sensitive

Table 6 DCC Alert Service Response – MeterMPxNs Data Items

MeterDecommissioningOrWithdrawal Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MeterDecommissionOrWithdrawal	MPxNs associated to the Meter	sr:MeterMPxNs (see MeterMPxNs Data Items Definition)	Yes	None	N/A	Non-Sensitive
AssociatedType1Device	Type 1 devices Associated to the Device being Decommissioned / Withdrawn	sr:AssociatedType1Device (see AssociatedType1Device Data Items Definition)	No ¹	None	N/A	Non-Sensitive

Table 7 DCC Alert Service Response – DeviceDecommissioningOrWithdrawal Data Items

¹ All associated Type 1 devices are to be included

AssociatedType1Device Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	Device ID of the Type 1 associated Device	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceType	Device Type of the Type 1 associated device Valid set: <ul style="list-style-type: none"> HCALCS PPMID 	sr:DeviceType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive

Table 8 DCC Alert Service Response – AssociatedType1Device Data Items

RecoveryCompleteACBCredentials Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SupplierCertificateType	The type of the Supplier certificate; <ul style="list-style-type: none"> DigitalSigning KeyAgreement KeyAgreementTopUp 	Restriction of xs:string (Enumeration)	Yes ¹	None	N/A	Non-Sensitive
NetworkOperatorCertificateType	The type of the Network Operator certificate; <ul style="list-style-type: none"> DigitalSigning KeyAgreement 	Restriction of xs:string (Enumeration)	No ²	None	N/A	Non-Sensitive

Table 9 DCC Alert Service Response – RecoveryCompleteACBCredentials Data Items

¹ Minimum 1 and maximum 3

² Optional. If present, minimum 2 and maximum 2

16.2.1.2.3 DSPScheduleRemoval

DSPScheduleRemoval Format

DCC Alerts DSP Schedule Removal is defined in the XSD DSPScheduleRemoval XML element. There is one DSPScheduleRemoval DCC Alert for each DSP Schedule being removed.

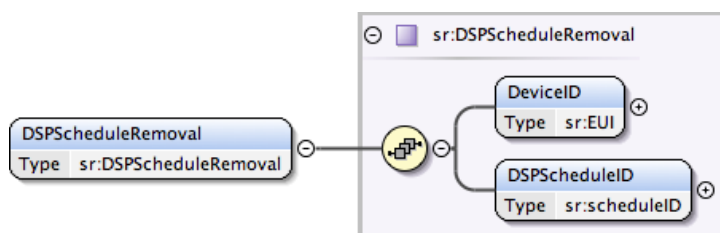


Figure 12 DCC Alert Response – DSPScheduleRemoval Structure

DSPScheduleRemoval Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	ID of the DSP Schedule being removed	sr:scheduleID (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceID	The Device ID for which the DSP Schedule is being removed	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 10 DCC Alert Service Response – DSPScheduleRemoval Data Items

16.2.1.2.4 CommandFailure

CommandFailure Format

DCC Alerts CommandFailure is defined in the XSD CommandFailure XML element.

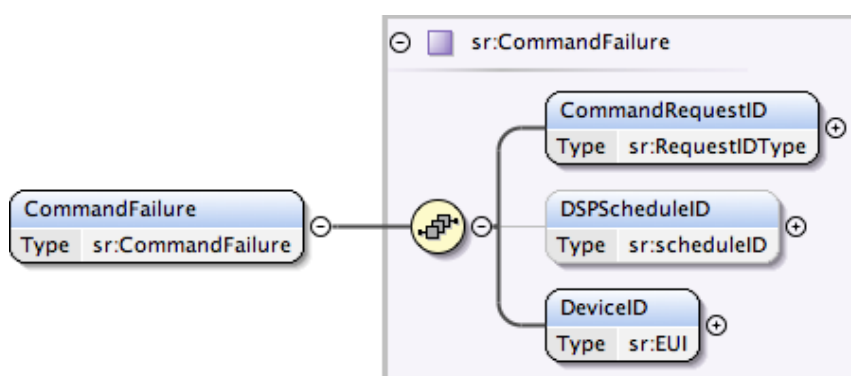


Figure 13 DCC Alert Response – CommandFailure Structure

CommandFailure Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommandRequestID	Request ID of the Command that failed	sr:RequestIDType (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DSPScheduleID	For DSP Scheduled Commands, ID of the DSP Schedule associated to the Command	sr:scheduleID (see Annex section 17)	No ¹	None	N/A	Non-Sensitive
DeviceID	The Device ID for which the Command failed	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 11 DCC Alert Service Response – CommandFailure Data Items

¹ Only applicable to DSP Scheduled Commands

16.2.1.2.5 FirmwareDistributionFailure Format

FirmwareDistributionFailure Format

DCC Alerts FirmwareDistributionFailure is defined in the XSD FirmwareDistributionFailure XML element.

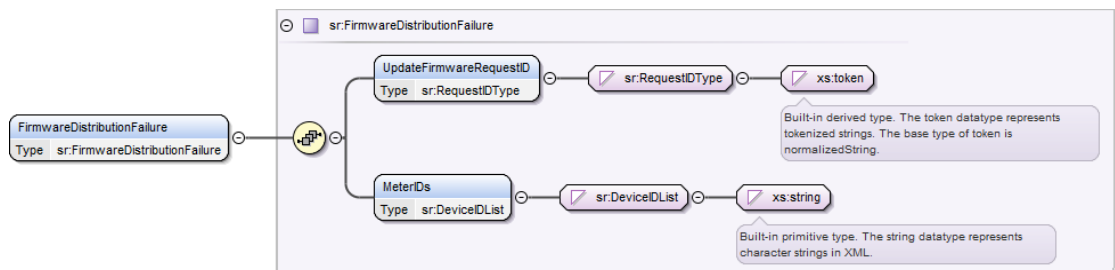


Figure 14 DCC Alert Response – FirmwareDistributionFailure Structure

FirmwareDistributionFailure Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UpdateFirmwareRequestID	Request ID of the Update Firmware Service Request associated to the Command that failed	sr:RequestIDType (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MeterIDs	<p>Comma separated list of Device IDs (each with the sr:EUI format defined in Annex section 17) that:</p> <ul style="list-style-type: none"> The CSP wasn't able to identify – N19 Were included in the Command that failed CSP validation – N18, N20, N21 Were included in the Command that failed delivery to the CSP – N22 Were included in the Command for which no Validation Response was received from the CSP – N23 <p>Note that although the XML tag is named MeterIDs, some valid Device types are not meters, including CHF, PPMID and HCALCS</p>	<p>sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = “([A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}”))</p>	Yes ¹	None	N/A	Non-Sensitive

Table 12 DCC Alert Service Response – FirmwareDistributionFailure Data Items

¹ Minimum of 1 and maximum of 50,000 Device IDs

16.2.1.2.6 UpdateHANDeviceLogResult

UpdateHANDeviceLogResult Format

DCC Alerts UpdateHANDDeviceLogResult is defined in the XSD UpdateHANDDeviceLogResult XML element.

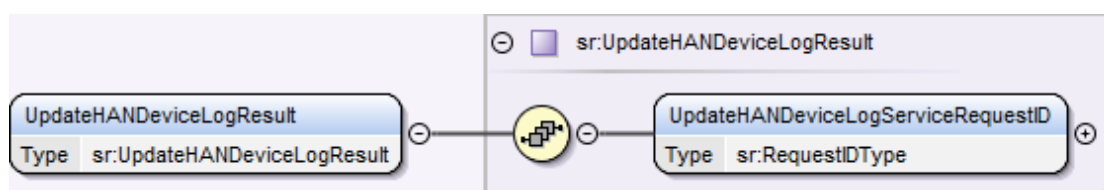


Figure 15 DCC Alert Response – UpdateHANDeviceLogResult Structure

UpdateHANDeviceLogResult Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UpdateHANServiceRequestID	Request ID of the Update HAN Device Log Service Request. The DCC Alert Code indicates success (N24) or failure (N25)	sr:RequestIDType (see Annex section17)	Yes	None	N/A	Non-Sensitive

Table 13 DCC Alert Service Response – UpdateHANDeviceLogResult Data Items

16.2.1.2.7 ChangeOfSupplier

ChangeOfSupplier Format

DCC Alerts ChangeOfSupplier are defined in the XSD ChangeOfSupplier XML element.

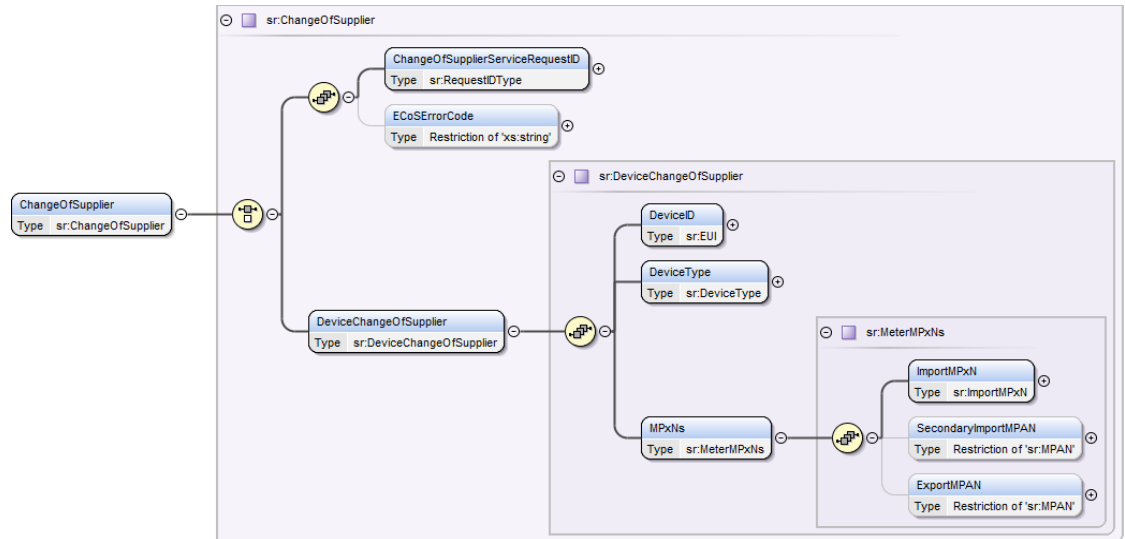


Figure 16 DCC Alert Response – ChangeOfSupplier Structure

ChangeOfSupplier Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ChangeOfSupplierServiceRequestID	Sent to the Update Security Credentials (CoS) sender. Request ID of the Update Security Credentials (CoS) Service Request. The DCC Alert Code (N26) indicates that the request has failed CoS Party Access Control, CoS-specific anti-replay checks, breach of CoS-specific ADT volume, failure of processing by CoS Party, or, for Future Dated Requests, DSP Access Control at the point the Request is to be sent to the CoS Party	sr:RequestIDType (see Annex section 17)	N26: Yes Otherwise: N/A	None	N/A	Non-Sensitive
ECoSErrorCode ¹	An optional element included as part of DCC Alert N26, to provide more information about the cause of the request failure when the Update Security Credentials (CoS) request was not processed successfully by the ECoS Party.	Restriction of xs:string (minLength = 3, maxLength = 3) See Table 15.1 for error codes	N26: Optional Otherwise: N/A	None	N/A	Non-Sensitive
DeviceChangeOfSupplier	Sent to the Old registered Import Supplier for the Device, together with DCC Alert Code N27 to inform them of the Change of Supplier	sr:DeviceChangeOfSupplier (see section DeviceChangeOfSupplier Data Items Definition)	N27: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 14 DCC Alert Service Response – ChangeOfSupplier Data Items

¹ only applicable to DUIS 5.2 or later.

DeviceChangeOfSupplier Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID which has changed Supplier	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceType	Device Type that has changed Supplier Valid set: <ul style="list-style-type: none"> ESME GSME GPF HCALCS 	sr:DeviceType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MPxNs	MPxN(s) associated to the Device, i.e. <ul style="list-style-type: none"> MPAN(s) for ESME and HCALCS MPRN for GSME or GPF 	sr:MeterMPxNs (see MeterMPxNs Data Items Definition)	Yes	None	N/A	Non-Sensitive

Table 15 DCC Alert Service Response – DeviceChangeOfSupplier Data Items

The following table shows the ECoS error codes that may be carried in the ECoSErrorCode data item in the XML element ChangeOfSupplier.

ECoS Error Code for N26 Alert	Meaning
001	ECoS asynchronous processing failure
002	ECoS Anomaly Detection Failure
003	ECoS Anti Replay Failure
004	ECoS does not have the required registration data
005	ECoS registration check failure
006	ECoS message structure validation failure
007	ECoS signature check failure

Table 15.1 Table of ECoS error codes

16.2.1.2.8 DeviceLogRestored

DeviceLogRestored Format

DCC Alert DeviceLogRestored is defined in the XSD DeviceLogRestored XML element.

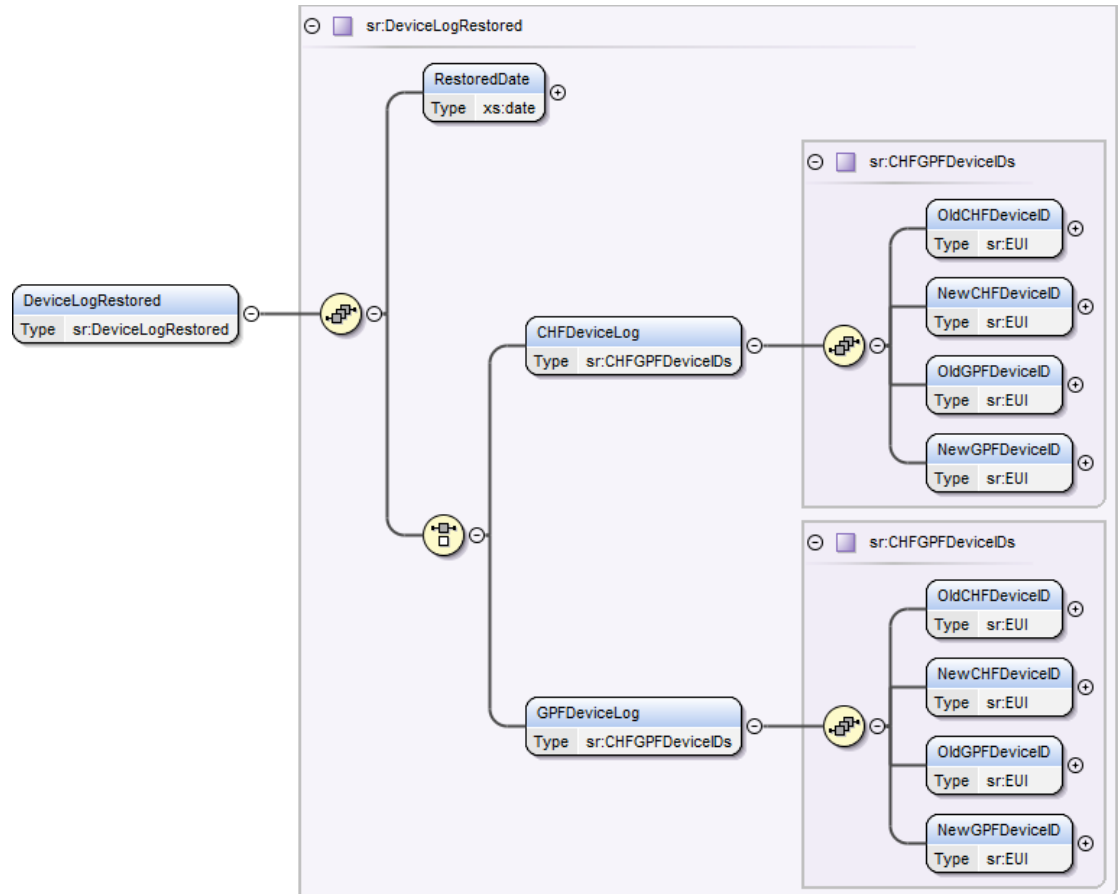


Figure 17 DCC Alert Response – DeviceLogRestored Structure

DeviceLogRestored Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RestoredDate	Date when the Device Log was restored	xs:date	Yes	None	N/A	Non-Sensitive
CHFDeviceLog	CHF Device Log restored	sr:CHFGPFDDeviceIDs (see CHFGPFDDeviceIDs Data Items Definition)	N30: Yes Otherwise: N/A	None	N/A	Non-Sensitive
GPFDeviceLog	GPF Device Log restored	sr:CHFGPFDDeviceIDs (see CHFGPFDDeviceIDs Data Items Definition)	N31: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 16 DCC Alert Service Response – DeviceLogRestored Data Items

CHFGPFDDeviceIDs Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OldCHFDeviceID	The Device ID of the old CHF from which the Device Log is restored to the new CHF via Service Request 8.12.1	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
NewCHFDeviceID	The Device ID of the new CHF to which the Device Log is restored via Service Request 8.12.1	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
OldGPFDDeviceID	The Device ID of the GPF associated to the old CHF. It is the source from which the Device Log is restored to the new GPF via Service Request 8.12.2	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
NewGPFDDeviceID	The Device ID of the GPF associated to the new CHF. It is the target to which the Device Log is restored to via Service Request 8.12.2	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive

Table 17 DCC Alert Service Response – CHFGPFDDeviceIDs Data Items

16.2.1.2.9 PPMIDAlert

PPMIDAlert Format

DCC Alert PPMIDAlert is defined in the XSD PPMIDAlert XML element.

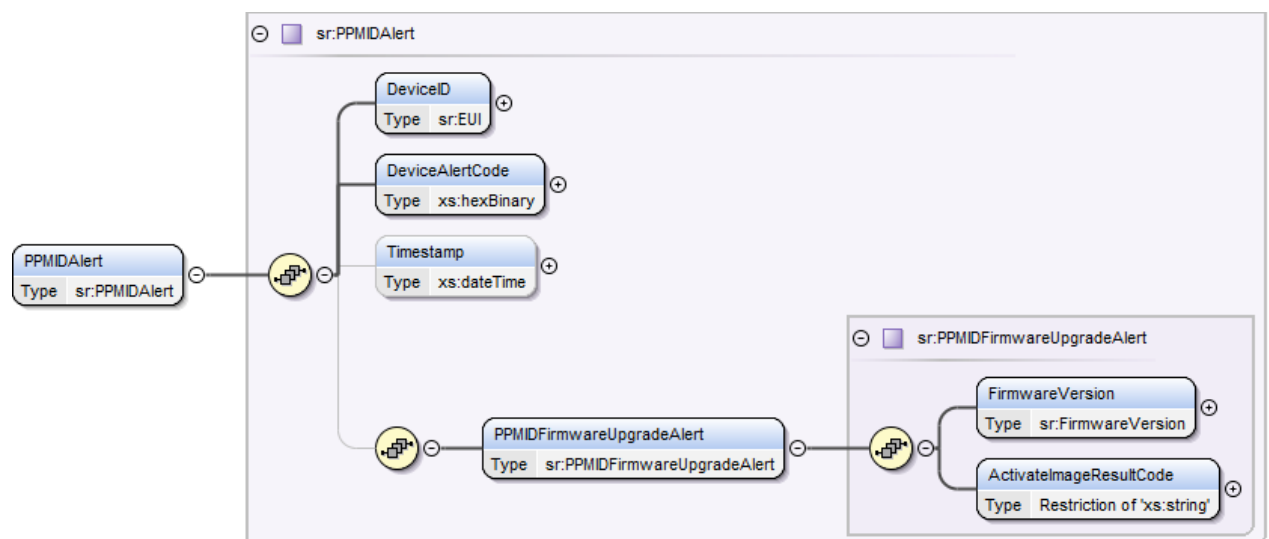


Figure 18 DCC Alert Response – PPMIDAlert Structure

PPMIDAlert Data Items Definition

In the following table, the XML elements marked “DCC v5.0 or later” will not be present in the DCC v4.0 or earlier XML schema, so if this DCC Alert is sent to a DCC Service User using DCC v4.0 or earlier, those data items will be omitted.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the PPMID that generated the Device Alert	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceAlertCode	The Alert Code of the Device Alert generated by the PPMID Valid set: <ul style="list-style-type: none"> 8F1E 8F30 8F3D 8F3E 8F3F 8F78 8F8B¹ 	xs:hexBinary	Yes	None	N/A	Non-Sensitive
TimeStamp ¹	The timestamp at which the event that is responsible for this Device Alert has occurred. This data item is populated only where the Device Alert Code is 8F8B.	xs:dateTime	No	None	N/A	Non-Sensitive
PPMIDFirmwareUpgradeAlert ¹	The Firmware Upgrade Alert sent by a PPMID. This data item is populated only where the Device Alert Code is 8F8B.	sr:PPMIDFirmwareUpgradeAlert (See PPMIDFirmwareUpgradeAlert Data Items Definition)	No	None	N/A	Non-Sensitive

Table 18 DCC Alert Service Response – PPMIDAlert Data Items

¹ only applicable to DUIS 5.0 or later.

PPMIDFirmwareUpgradeAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FirmwareVersion	The version of the active firmware in the PPMID	sr:FirmwareVersion (Restriction of xs:string)	Yes	None	N/A	Non-Sensitive
ActivateImageResultCode	The status of firmware activation within a PPMID. Valid set: <ul style="list-style-type: none"> ActivationSuccess ActivationFailure 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 18.1 DCC Alert Service Response – PPMIDFirmwareUpdateAlert Data Items

16.2.1.2.10 SecurityCredentialsUpdated

SecurityCredentialsUpdated Format

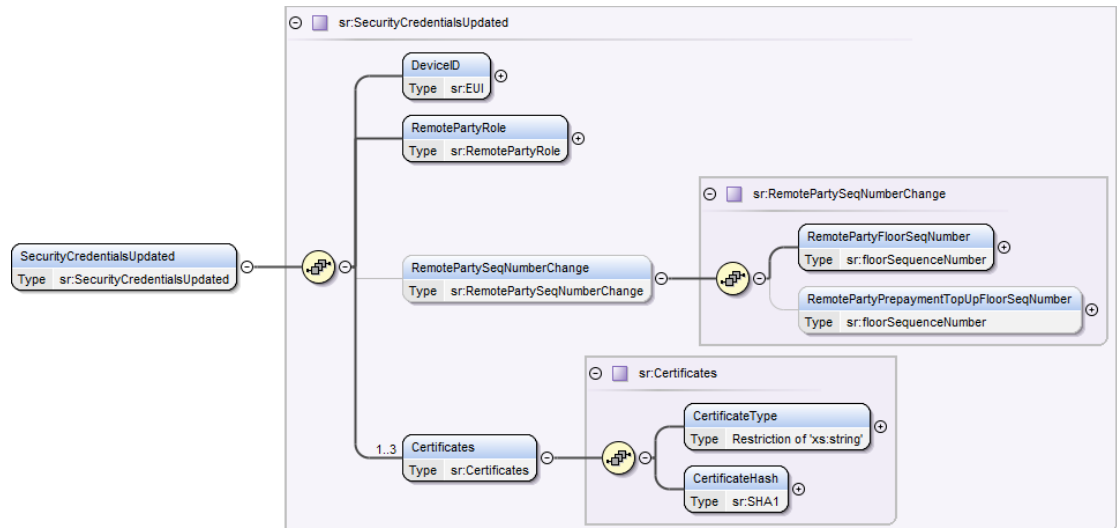


Figure 19 DCC Alert Response –SecurityCredentialsUpdated Structure

SecurityCredentialsUpdated Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The ID of the Device on which the Security Credentials were updated	sr:EUI (see Annex 17)	Yes	None	N/A	Non-Sensitive
RemotePartyRole	The role which has had its certificate(s) changed on the Device. Only valid value in this context; <ul style="list-style-type: none"> NetworkOperator 	Restriction of xs:token (Enumeration)	Yes	None	N/A	Non-Sensitive
RemotePartySeqNumber Change	Sequence numbers associated with the certificate	sr:RemotePartySeqNumberChange (see RemotePartySeqNumberChange)	No	None	N/A	Non-Sensitive
Certificates	All the Certificates (type and hash) that have been placed on the Device by the Service Request	sr:Certificates (see Certificates Data Items Definition)	Yes ¹	None	N/A	Non-Sensitive

Table 19 DCC Alert Service Response – SecurityCredentialsUpdated Data Items

¹ Minimum 1 and maximum 3

RemotePartySeqNumberChange Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RemotePartyFloorSeqNumber	Sequence number for the role. This will be the originator counter of the request by which the Supplier (6.15.1) or ACB (6.21) placed the Network Operator's Certificate on the Device.	sr:floorSequenceNumber (xs:nonNegative Integer)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RemotePartyPrepaymentTopUpFloorSeqNumber	Prepayment Floor sequence number	sr:floorSequenceNumber (xs:nonNegativeInteger)	No	None	N/A	Non-Sensitive

Table 20 DCC Alert Service Response – RemotePartySeqNumberChange Data Items

Certificates Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CertificateType	The type of the certificate; <ul style="list-style-type: none"> DigitalSigning KeyAgreement KeyAgreementTopUp 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
CertificateHash	The hash value of the certificate	sr:SHA1 (xs:base64Binary)	Yes	None	N/A	Non-Sensitive

Table 21 DCC Alert Service Response – Certificates Data Items

16.2.1.2.11 PPMIDRemoval

PPMIDRemoval Format

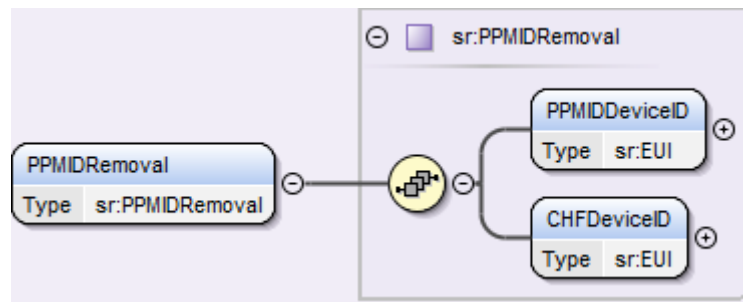


Figure 20 DCC Alert Response – PPMIDRemoval Structure

PPMIDRemoval Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
PPMIDDeviceID	The ID of the PPMID removed from the HAN Device Log	sr:EUI (see Annex 17)	Yes	None	N/A	Non-Sensitive
CHFDeviceID	The ID of the CHF from which HAN Device Log the PPMID has been removed	sr:EUI (see Annex 17)	Yes	None	N/A	Non-Sensitive

Table 22 DCC Alert Service Response – PPMIDRemoval Data Items

16.2.1.2.12 QuarantinedRequest

QuarantinedRequest Format

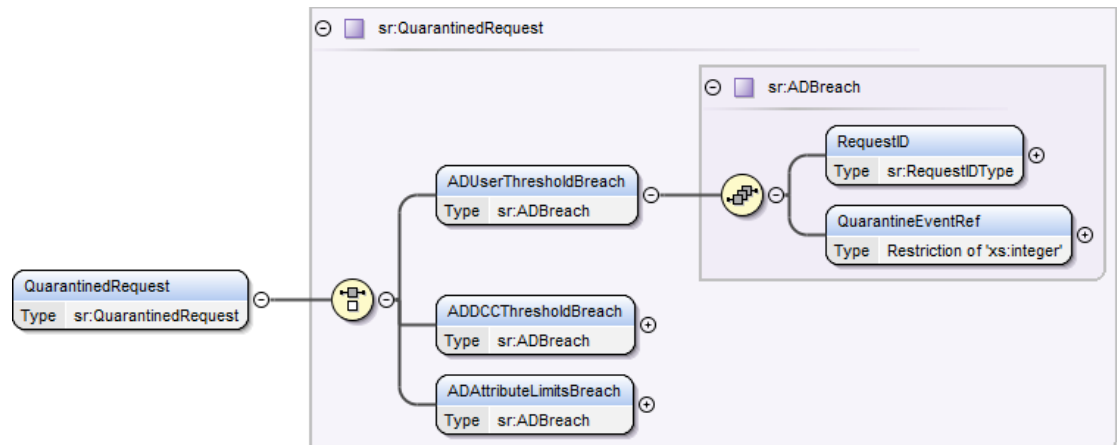


Figure 21 DCC Alert Response – QuarantinedRequest Structure

QuarantinedRequest Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ADUserThresholdBreach	Request quarantined, because an Anomaly Detection User-specific volume threshold has been breached	sr:ADBreach (see ADBreach Data Items Definition)	N46: Yes Otherwise: N/A	None	N/A	Non-Sensitive
ADDCCThresholdBreach	Request quarantined, because an Anomaly Detection DCC system-wide volume threshold has been breached	sr:ADBreach (see ADBreach Data Items Definition)	N47: Yes Otherwise: N/A	None	N/A	Non-Sensitive
ADAttributeLimitsBreach	Request quarantined, because an Anomaly Detection Attribute Limit has been breached	sr:ADBreach (see ADBreach Data Items Definition)	N48: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 23 DCC Alert Service Response – QuarantinedRequest Data Items

ADBreach Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	Request ID of the quarantined Request	sr:RequestIDType (see Annex Section 17)	Yes	None	N/A	Non-Sensitive
QuarantineEventRef	Quarantine event reference generated by the DCC Data Systems for a particular instance of an Anomaly Detection quarantine threshold / attribute limit being exceeded. Note this is not an Incident reference.	Restriction of xs:integer (totalDigits = 20)	Yes	None	N/A	Non-Sensitive

Table 24 DCC Alert Service Response – ADBreach Data Items

16.2.1.2.13 FirmwareVersionMismatch

FirmwareVersionMismatch Format

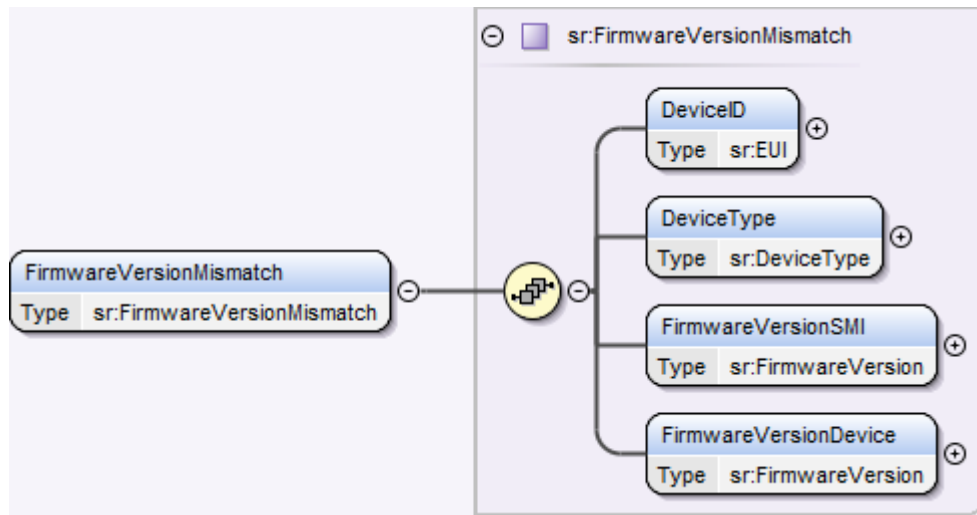


Figure 22 DCC Alert Response – FirmwareVersionMismatch Structure

FirmwareVersionMismatch Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID with a Firmware Version mismatch between the SMI and the Device	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
DeviceType	Device Type of the Device with a Firmware Version mismatch between the SMI and the Device Valid set: <ul style="list-style-type: none"> ESME GSME CHF PPMID HCALCS 	sr:DeviceType (Restriction of xs:string (Enumeration))	Yes	None	N/A	Non-Sensitive
FirmwareVersionSMI	N49, N50. The Device's Firmware Version in SMI prior to its replacement with the value returned by the Device N51, N52. The Device's Firmware Version in SMI The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F. This data item matches the value on the CPL (excluding the colon separator between octet values)	Restriction of xs:string (minLength = 1, maxLength = 8)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
FirmwareVersionDevice	<p>N49, N50. The Device's Firmware Version held on the Device and now updated in the SMI post response returned by the Device</p> <p>The Firmware version as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.</p> <p>This data item matches the value on the CPL (excluding the colon separator between octet values)</p> <p>N51. Firmware Version returned by the Device, which is unknown (it doesn't match an item on the CPL)</p> <p>N52. GSME Firmware Version returned by the GPF</p>	Restriction of xs:string (minLength = 1, maxLength = 8)	Yes	None	N/A	Non-Sensitive

Table 25 DCC Alert Service Response – FirmwareVersionMismatch Data Items

16.2.1.2.14 DualBandCHAlert

DualBandCHAlert Format

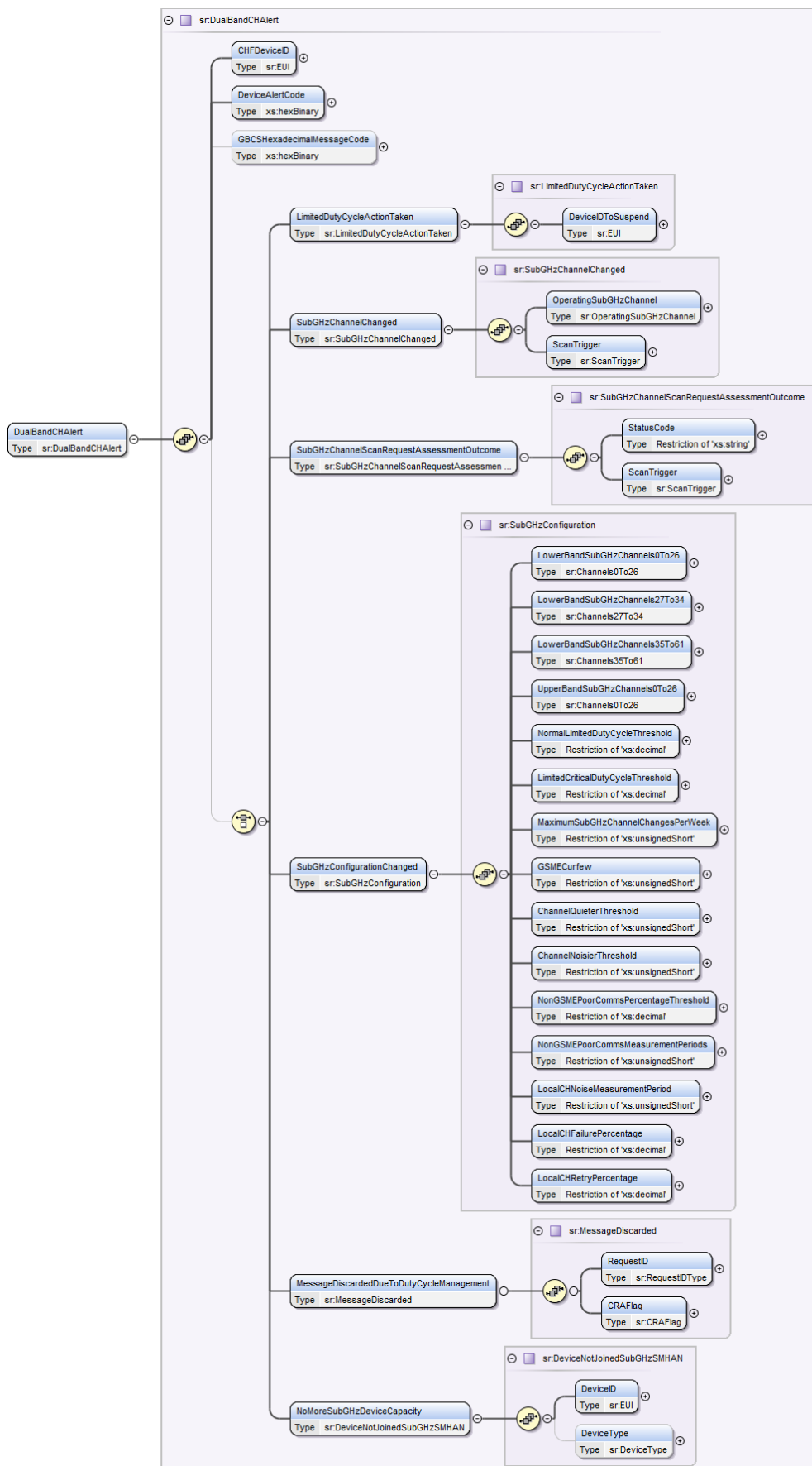


Figure 23 DCC Alert Response – DualBandCHAlert Structure

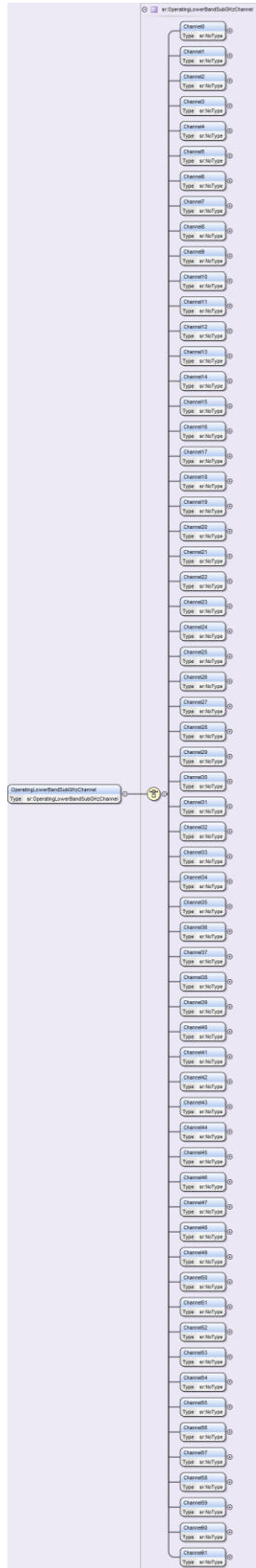


Figure 24 DCC Alert Response DualBandCHAlert - SubGHzChannelChanged – OperatingSubGHzChannel - OperatingLowerBandSubGHzChannel Structure

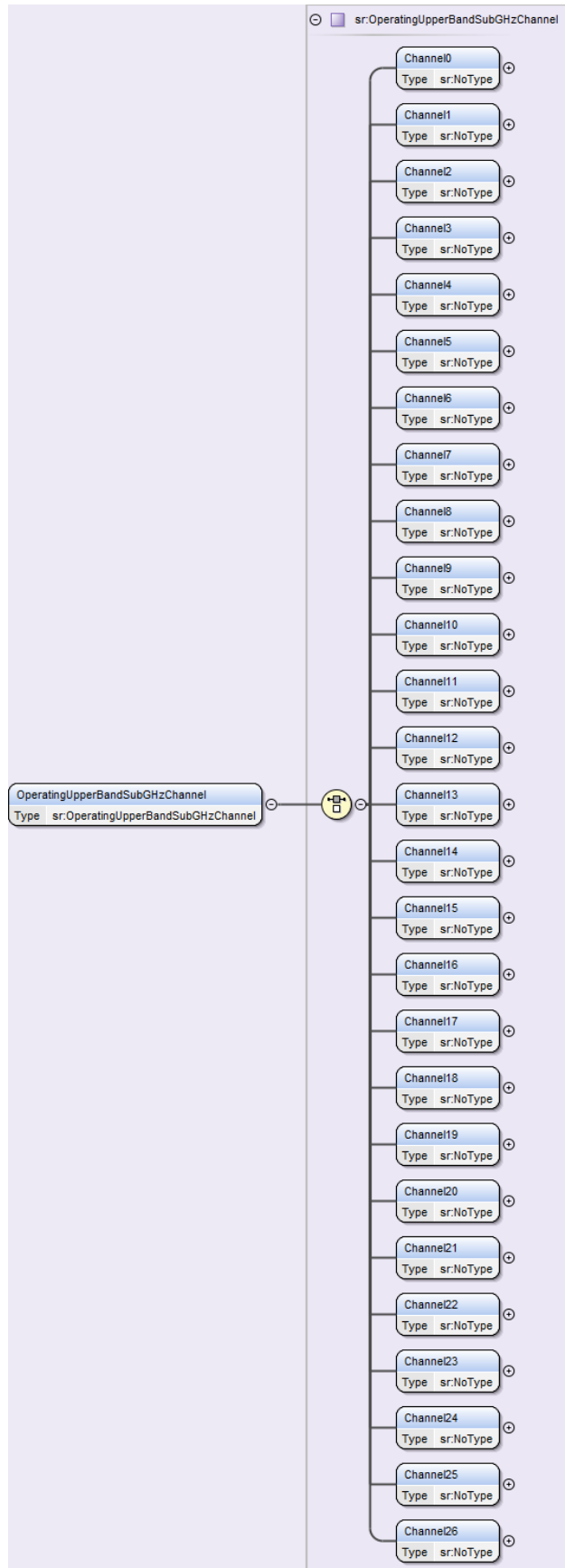


Figure 25 DCC Alert Response – DualBandCHAlert - SubGHzChannelChanged – OperatingUpperBandSubGHzChannel Structure

DualBandCHAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CHFDeviceID	Device ID of the Dual Band CHF that generated the Device Alert	sr:EUI (see Annex Section 17)	Yes	None	N/A	Non-Sensitive
DeviceAlertCode	<p>The Alert Code of the Device Alert generated by the Dual Band CHF. Note – preceding 0x removed as per GBCS definition.</p> <p>Valid set:</p> <ul style="list-style-type: none"> No additional data included within Device Alert: <ul style="list-style-type: none"> 8F21 8F22 8F23 8F24 8F25 8F27 8F29 8F2B Additional data included within Device Alert: <ul style="list-style-type: none"> 8F20 8F26 8F28 8F2A 8F2C 8F2D 	xs:hexBinary	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GBCSHexadecimalMessageCode	<p>The Message Code corresponding to the GBCS Use Case of those Dual Band CH Device Alerts that include additional data.</p> <p>Valid Set:</p> <ul style="list-style-type: none"> 0110. GBCS Use Case DBCH06 Limited Duty Cycle Action Taken Sub GHz Alert -Device Alert 8F20 0111. GBC Use Case DBCH07 Sub GHz Sub GHz Channel Changed Sub GHz Alert. Device Alert 8F26 0112. GBC Use Case DBCH08 Sub GHz Channel Scan Request Assessment Outcome Sub GHz Alert. Device Alert 8F28 0113. DBCH09 Sub GHz Configuration Changed Sub GHz Alert. Device Alert 8F2A 0114. DBCH10 Message Discarded Due to Duty Cycle Management Sub GHz Alert. Device Alert 8F2C 0115. DBCH11 No More Sub GHz Device Capacity Sub GHz Alert. Device Alert 8F2D 	xs:hexBinary	DeviceAlertCode is 8F20, 8F26, 8F28, 8F2A, 8F2C or 8F2D: Yes Otherwise: N/A	None	N/A	Non-Sensitive
LimitedDutyCycleActionTaken	<p>This data item is a decode of the Device Alert details sent to the ACB (DSP Access Control Broker) for GBCS Use Case - DBCH06.</p> <p>This event shall occur when the CH measurement of Duty Cycle rises above the Normal-Limited Duty Cycle Threshold</p> <ul style="list-style-type: none"> When this occurs the CHF shall identify the Device for which the largest number of unicast messages have been received on any Sub GHz Channel over the last Duty Cycle Measurement Period and set Device ID within the Device Alert accordingly. 	sr:LimitedDutyCycleActionTaken (see LimitedDutyCycleActionTaken (GBCS Use Case DBCH06) Data Items Definition)	Device Alert = 8F20: Yes Otherwise: N/A	None	N/A	Non-Sensitive
SubGHzChannelChanged	<p>This data item is a decode of the Device Alert details sent to the ACB (DSP Access Control Broker) for GBCS Use Case - DBCH07.</p> <p>The Sub GHz operational channel has changed as a result of a Channel Scan</p>	sr:SubGHzChannelChanged (see SubGHzChannelChanged (GBCS Use Case DBCH07) Data Items Definition)	Device Alert = 8F26: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SubGHzChannelScanRequestAssessmentOutcome	<p>This data item is a decode of the Device Alert details sent to the ACB (DSP Access Control Broker) for GBCS Use Case - DBCH08.</p> <p>This event shall occur when a Channel Scan is triggered on a Communications Hub (CH).</p> <p>Once the CHF assesses the Channel Scan request generates a Device Alert to notify the result of the assessment to the ACB (DSP Access Control Broker).</p> <p>If any of the checks fails, no further checks are undertaken by the CHF at that point. Note that some of the failures, e.g. HHT connected, will automatically trigger another Channel Scan assessment when that condition is no longer true, e.g. HHT no longer connected to the SMHAN.</p> <p>If all of the checks are passed or scanTrigger is SMHANFormation), the CHF shall set statusCode to ScanRequestAccepted and the CHF will carry out the Channel Scan</p>	<p>sr:SubGHzChannelScanRequestAssessmentOutcome (see SubGHzChannelScanRequestAssessmentOutcome (GBCS Use Case DBCH08) Data Items Definition)</p>	Device Alert = 8F28: Yes Otherwise: N/A	None	N/A	Non-Sensitive
SubGHzConfigurationChanged	<p>This data item is a decode of the Device Alert details sent to the ACB (DSP Access Control Broker) for GBCS Use Case - DBCH09.</p> <p>The Sub GHz Configuration has changed as a result of a successful GBCS command Use Case DBCH04 (Service Request 6.28 Set CHF Sub GHz Configuration). See Annex 6 section 6.28</p>	<p>sr:SubGHzConfiguration (see Annex section 6.28)</p>	Device Alert = 8F2A: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
MessageDiscardedDueToDutyCycleManagement	<p>This data item is a decode of the Device Alert details sent to the ACB (DSP Access Control Broker) for GBCS Use Case – DBCH10.</p> <p>This is a notification to the ACB that the CHF has discarded a Remote Party Command to a Sub GHz Non GSME Device due to communications being suspended with that Device.</p> <p>Whenever a CHF is limiting communications to a Sub GHz Non GSME Device, the CHF shall on receipt of any Remote Party Command for that Device notify the ACB (DSP Access Control Broker) that the message has been discarded by the CHF</p>	<p>sr: MessageDiscarded</p> <p>(see MessageDiscardedDueToDutyCycleManagement (GBCS Use Case DBCH10) Data Items Definition)</p>	<p>Device Alert = 8F2C: Yes Otherwise: N/A</p>	None	N/A	Non-Sensitive
NoMoreSubGHzDeviceCapacity	<p>This data item is a decode of the Device Alert details sent to the ACB (DSP Access Control Broker) for GBCS Use Case – DBCH11.</p> <p>This is a notification to the ACB that the CHF has not allowed a Device to join the SMHAN on a Sub GHz Frequency as the CHF has no more capacity at Sub GHz.</p> <p>The event occurs when:</p> <ul style="list-style-type: none"> A Device other than a GSME or HCALCS is added to the CHF Device Log There are already 4 Devices (excluding GSME and HCALCS) that joined the SMHAN on a Sub GHz frequency; and the Device added then attempts to join the SMHAN on a Sub GHz Frequency <p>the CH shall not allow the Device to join the SMHAN on a Sub GHz Frequency</p>	<p>sr: sr:DeviceNotJoinedSubGHzSMHAN</p> <p>(see :NoMoreSubGHzDeviceCapacity (GBCS Use Case DBCH11) Data Items Definition)</p>	<p>Device Alert = 8F2D: Yes Otherwise: N/A</p>	None	N/A	Non-Sensitive

Table 26 DCC Alert Service Response – DualBandCHAlert Data Items

LimitedDutyCycleActionTaken (GBCS Use Case DBCH06) Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceIDToSuspend	<p>The Device ID of the Device to be Suspended.</p> <p>This is a decode of the content of the Use Case Specific Additional Content from the Device Alert 0x8F20, message Code 0x0110.</p> <p>1) if 'Device ID' is not that of a GSME, the CH shall send to that Device a Suspend ZCL Messages command with the Suspension Period parameter set to Suspension Period; and</p> <p>2) if 'Device ID' is that of a GSME, in the Suspend ZCL Messages command response to the next Get Suspend ZCL Messages Status command received by the CH from that GSME, the CH shall set the Suspension Period parameter to Suspension Period.</p> <p>For clarity, HAN communications with the specified Device will not be possible for Suspension Period</p>	sr:EUI (see Annex Section 17)	Yes	None	N/A	Non-Sensitive

Table 27 DCC Alert Service Response – DualBandCHAlert LimitedDutyCycleActionTaken Data Items

SubGHzChannelChanged (GBCS Use Case DBCH07) Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OperatingSubGHzChannel	<p>The Sub GHz Channel currently operating on the SMHAN, being one of 0 to 61 in the Lower Band Sub GHz (863 to 876 MHz) frequency range or one of 0 to 26 in the Upper Band Sub GHz (915 to 921 MHz) frequency range.</p> <p>This is a decode of the content of the Use Case Specific Additional Content (value of Operating Sub GHz Channel) from the Device Alert Code 0x8F26, message Code 0x0111.</p>	sr: OperatingSubGHzChannel (see OperatingSubGHzChannel (GBCS Use Case DBCH07) Data Items)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ScanTrigger	<p>Trigger of the Scan that resulted in the change to the operating channel</p> <p>Valid Set:</p> <ul style="list-style-type: none"> ▪ RemotePartyCommand ▪ GSMERequest ▪ GSMEMissedItsCurfew ▪ GSMEMissingForTheLastDay ▪ CHDetectedMessageFailureProblems ▪ CHDetectedMessageRetryProblems ▪ SubGHzNon-GSMEDeviceRequest ▪ SMHANFormation <p>This is a decode of the content of the Use Case Specific Additional Content (ScanTrigger) from the Device Alert Code 0x8F26, message Code 0x0111</p>	sr:ScanTrigger (Restriction of xs:string Enumeration)	Yes	None	N/A	Non-Sensitive

Table 28 DCC Alert Service Response – DualBandCHAlert SubGHzChannelChanged Data Items

OperatingSubGHzChannel (GBCS Use Case DBCH11) Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
OperatingLowerBandSubGHzChannel	<p>One of channels 0 to 61 in the Lower Band Sub GHz (863 to 876 MHz) frequency range.</p> <p>This is a decode of the content of the Use Case Specific Additional Content (value of Operating Sub GHz Channel) from the Device Alert Code 0x8F26, message Code 0x0111</p>	sr: ChannelIn863To876MHzRange (Choice of Channel0 sr:NoType to Channel61 sr:NoType)	Operating Channel in 863 to 876 MHz Range: Yes Otherwise: N/A	None	N/A	Non-Sensitive
OperatingUpperBandSubGHzChannel	<p>One of channels 0 to 26 in the Upper Band Sub GHz (915 to 921 MHz) frequency range.</p> <p>This is a decode of the content of the Use Case Specific Additional Content (value of Operating Sub GHz Channel) from the Device Alert Code 0x8F26, message Code 0x0111</p>	sr: ChannelIn915To921MHzRange (Choice of Channel0 sr:NoType to Channel26 sr:NoType)	Operating Channel in 915 to 921 MHz Range: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 29 DCC Alert Service Response – DualBandCHAlert SubGHzChannelChanged OperatingSubGHzChannel Data Items

SubGHzChannelScanRequestAssessmentOutcome (GBCS Use Case DBCH08) Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StatusCode	<p>The Status Code resulting from the Channel Scan assessment</p> <p>Valid Set:</p> <ul style="list-style-type: none"> ScanRequestAccepted HHTConnected DutyCycleUsageIsTooHigh JoiningIsCurrentlyPermitted GSMEOTADistributionUnderway TooManyScansToday TooManyCommandsToday TooManyScansThisWeek <p>This is a decode of the content of the Use Case Specific Additional Content (scanRequestAssessmentOutcomeAndTrigger) from the Device Alert 0x8F28, message Code 0x0112</p>	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive
ScanTrigger	<p>Trigger of the Scan that resulted in the change to the operating channel</p> <p>Valid Set:</p> <ul style="list-style-type: none"> RemotePartyCommand GSMERequest GSMEMissedItsCurfew GSMEMissingForTheLastDay CHDetectedMessageFailureProblems CHDetectedMessageRetryProblems SubGHzNon-GSMEDeviceRequest SMHANFormation <p>This is a decode of the content of the Use Case Specific Additional Content (scanRequestAssessmentOutcomeAndTrigger) from the Device Alert 0x8F28, message Code 0x0112</p>	sr:ScanTrigger (Restriction of xs:string Enumeration)	Yes	None	N/A	Non-Sensitive

**Table 30 DCC Alert Service Response – DualBandCHAlert
SubGHzChannelScanRequestAssessmentOutcome Data Items**

MessageDiscardedDueToDutyCycleManagement (GBCS Use Case DBCH10) Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	The Request ID of the Command being discarded. This is a decode of the content of the Use Case Specific Additional Content (Additional Data ¹) from the Device Alert 0x8F2C, message Code 0x0114.	sr:RequestIDType (see Annex Section 17)	Yes	None	N/A	Non-Sensitive
CRAFlag	GBCS flag that indicates the message type being one of: Command, Response or Alert. This is a decode of the content of the Use Case Specific Additional Content (Additional Data ¹) from the Device Alert 0x8F2C, message Code 0x0114. Valid Set: <ul style="list-style-type: none"> Command Response (N/A to this DCC Alert) Alert (N/A to this DCC Alert) 	sr:CRAFlag Restriction of xs:string (enumeration)	Yes	None	N/A	Non-Sensitive

**Table 31 DCC Alert Service Response – DualBandCHAlert
MessageDiscardedDueToDutyCycleManagement Data Items**

NoMoreSubGHzDeviceCapacity (GBCS Use Case DBCH11) Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the Device not allowed to join the SMHAN on a Sub GHz frequency. This is a decode of the content of the Use Case Specific Additional Content (otherInfo) from the Device Alert 0x8F2D, message Code 0x0115	sr:EUI (see Annex Section 17)	Yes	None	N/A	Non-Sensitive
DeviceType	The Device Type of the Device not allowed to join the SMHAN on a Sub GHz frequency. This is additional information added by the DCC Data Systems, where the Device ID matches that of a Device on the SMI. Valid Set ¹ : <ul style="list-style-type: none"> GSME HCALCS PPMID IHD CAD 	sr:DeviceType (Restriction of xs:string (Enumeration))	No	None	N/A	Non-Sensitive

**Table 32 DCC Alert Service Response – DualBandCHAlert
NoMoreSubGHzDeviceCapacity Data Items**

¹ Only one of these Device Types is expected to correspond to the Device ID in the Device Alert, since only these Device Types can operate at Sub GHz Frequencies. However the DCC Data Systems will return the Device Type corresponding to the Device ID in SMI, which could also be CHF, GPF or ESME

16.2.1.2.15 S1SPAlertDSP

S1SPAlertDSP Format

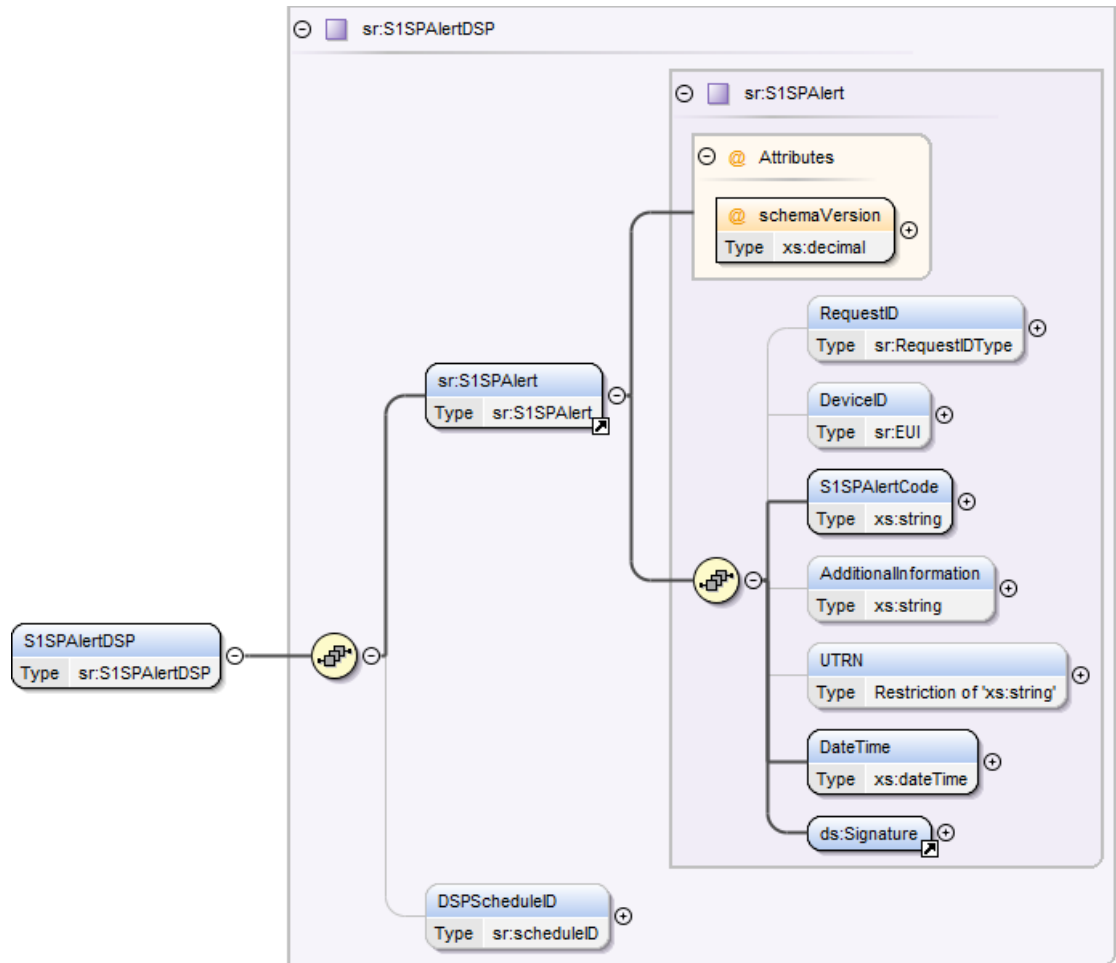


Figure 26 DCC Alert Response – S1SPAlertDSP Structure

S1SPAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
S1SPAlert	The SMETS1 Service Provider reports a Service Request validation error or communications failure with the Device	sr:S1SPAlert (see S1SPAlert Data Items Definition)	Yes	None	N/A	Non-Sensitive
DSPScheduleID	For DSP Scheduled Service Requests, ID of the DSP Schedule associated to the Request	sr:scheduleID (see Annex section 17)	No ¹	None	N/A	Non-Sensitive

Table 33 DCC Alert Service Response – S1SPAlertDSP Data Items

¹ Only Applicable to DSP Scheduled Requests

S1SPAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	N55. The Request ID corresponding to the Request for which the S1SP is reporting an error or notification N56. The Request ID corresponding to the Request for which the S1SP has generated a prepayment top up UTRN	sr:RequestIDType (see Annex section 17)	No	None	N/A	Non-Sensitive
DeviceID	The Device ID for which the S1SP is communicating an error	sr:EUI (see Annex section 17)	No	None	N/A	Non-Sensitive
S1SPAlertCode	S1SP error code Valid Set: See Main Document section 12.4	xs:string	Yes	None	N/A	Non-Sensitive
AdditionalInformation	Additional Information provided by the S1SP	xs:string	No	None	N/A	Non-Sensitive
UTRN	The Unique Transaction Reference Number which conveys the vend amount securely to the meter to allow it to increment the meter balance on a prepay meter. The UTRN must protect against replay, whether entered locally or sent electronically.	Restriction of xs:string (minLength = 20, maxLength = 20, pattern = "[0-9]{20}")	No	None	N/A	Non-Sensitive
DateTime	Date Time when the S1SP generated the alert	xs:dateTime	Yes	None	N/A	Non-Sensitive
ds:signature	SMETS1 Service Provider Digital Signature (defined in a separate schema). See Main Document XMLDGIS XSD for details on the signature schema	ds:signature	Yes	None	N/A	Non-Sensitive

Table 34 DCC Alert Service Response – S1SPAlert Data Items

16.2.1.2.16 SMETS1CHFirmwareNotification

SMETS1CHFirmwareNotification Format

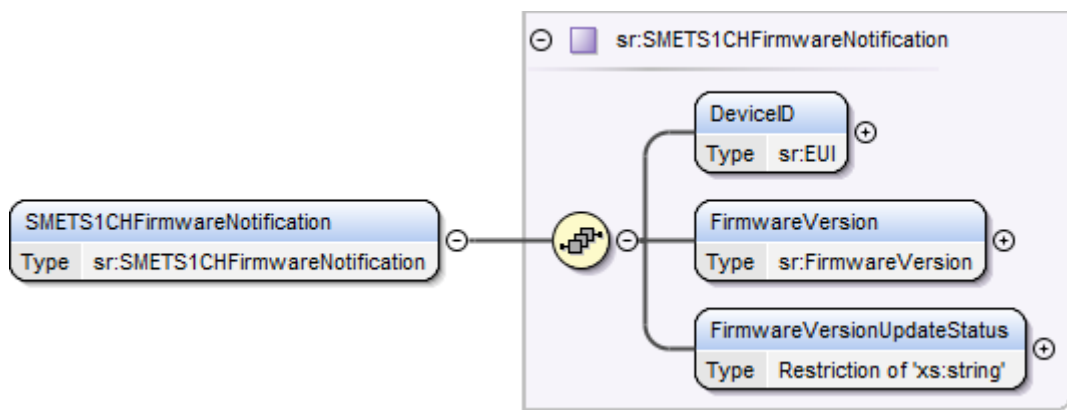


Figure 27 DCC Alert Response – SMETS1CHFirmwareNotification Structure

SMETS1CHFirmwareNotification Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the Device for which a Firmware update has been requested or activated. This DCC Alert is applicable only to SMETS1 CHFs and SMETS1 PPMIDs	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
FirmwareVersion	The firmware version of the FirmwareImage included in the corresponding Update Firmware Service Request, as held in the CPL and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F	Restriction of xs:string (minLength = 1, maxLength = 8)	Yes	None	N/A	Non-Sensitive
FirmwareVersionUpdateStatus	The outcome of the Firmware update request. Valid Set: <ul style="list-style-type: none"> UpdateRequested ActivationSuccessful 	Restriction of xs:string	Yes	None	N/A	Non-Sensitive

Table 35 DCC Alert Service Response – SMETS1CHFirmwareNotification Data Items

16.2.1.2.17 ALCSHCALCSCConfigurationChange

ALCSHCALCSCConfigurationChange Format

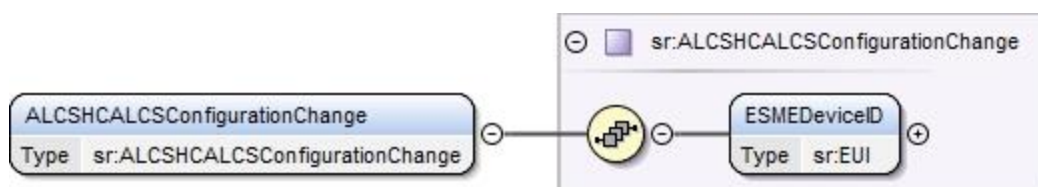


Figure 27.1 DCC Alert Response – ALCSHCALCSCConfigurationChange Structure – DUIS v3.1

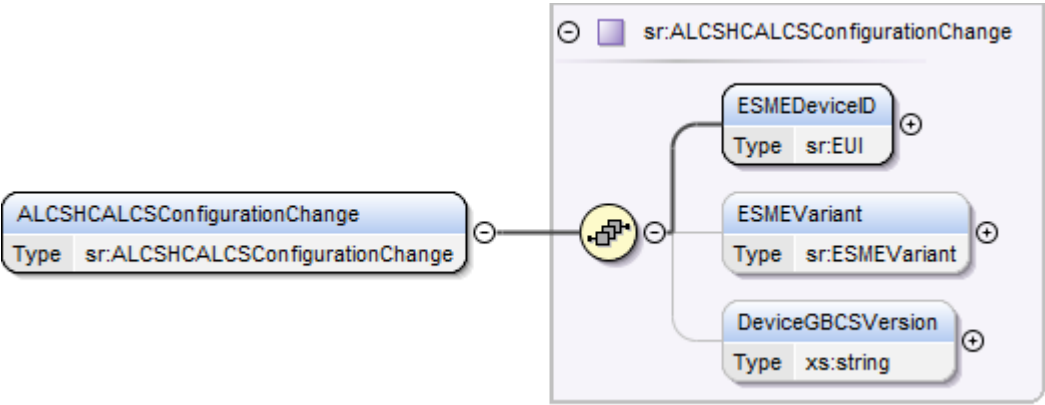


Figure 27.2 DCC Alert Response – ALCSHCALCSConfigurationChange Structure – DUIS v4.0 or later

ALCSHCALCSConfigurationChange Data Items Definition

In the following table, the XML elements marked “(DUIS v4.0 or later)” will not be present in the DUIS v3.1 XML schema, where this DCC Alert was introduced, so if this DCC Alert is sent to a DCC Service User using DUIS v3.1, those data items will be omitted.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ESMEDeviceID	The Device ID of the ESME for which the ALCS / HCALCS configuration has changed	sr:EUI (see Annex 17)	Yes	None	N/A	Non-Sensitive

ESMEVariant (DUI v4.0 or later)	<p>The ESME Variant of the ESME (or SAPC) for which the Auxiliary Controller configuration has changed. This data is provided in order that the recipient can determine the type of Auxiliary Controller functionality that the Device can support.</p> <p>Valid set (note that all possible combinations in the XML enumeration are listed here, but the DCC Alert would be triggered only for a combination including an Auxiliary Controller, i.e. at least one of D, F or G):</p> <ul style="list-style-type: none"> ▪ A. Single Element ▪ B. Twin Element ▪ C. Polyphase ▪ AD. Single Element with ALCS ▪ BD. Twin Element with ALCS ▪ CD. Polyphase with ALCS ▪ ADE. Single Element with ALCS and Boost Function ▪ BDE. Twin Element with ALCS and Boost Function ▪ CDE. Polyphase with ALCS and Boost Function ▪ ADF. Single Element with ALCS and APC¹ ▪ BDF. Twin Element with ALCS and APC¹ ▪ CDF. Polyphase with ALCS and APC¹ ▪ ADEF. Single Element with ALCS, Boost Function and APC¹ ▪ BDEF. Twin Element with ALCS, Boost Function and APC¹ ▪ CDEF. Polyphase with ALCS, Boost Function and APC¹ ▪ ADG. Single Element with ALCS and SAPC¹ ▪ BDG. Twin Element with ALCS and SAPC¹ ▪ CDG. Polyphase with ALCS and SAPC¹ ▪ ADEG. Single Element with ALCS, Boost Function and SAPC¹ ▪ BDEG. Twin Element with ALCS, Boost Function and SAPC¹ ▪ CDEG. Polyphase with ALCS, Boost Function and SAPC¹ ▪ AF. Single Element with APC¹ ▪ BF. Twin Element with APC¹ ▪ CF. Polyphase with APC¹ ▪ AEF. Single Element with Boost Function and APC¹ ▪ BEF. Twin Element with Boost Function and APC¹ ▪ CEF. Polyphase with Boost Function and APC¹ ▪ AG. Single Element with SAPC¹ ▪ BG. Twin Element with SAPC¹ ▪ CG. Polyphase with SAPC¹ ▪ AEG. Single Element with Boost Function and SAPC¹ ▪ BEG. Twin Element with Boost Function and SAPC¹ ▪ CEG. Polyphase with Boost Function and SAPC¹ 	sr:ESMEVariant Restriction of xs:string (Enumeration)	No	None	N/A	Non-Sensitive
------------------------------------	--	---	----	------	-----	---------------

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceGBCSVersion (DUI v4.0 or later)	The operational version of GBCS of the ESME (or SAPC) for which the Auxiliary Controller configuration has changed. This data is provided in order that the recipient can determine which Service Requests related to Auxiliary Controller functionality will be appropriate for the Device. Valid set: GBCS version number valid on the CPL, for example 4.0.	xs:string	No	None	N/A	Non-Sensitive

Table 35.1 DCC Alert Service Response – ALCSHCALCSCConfigurationChange Data Items

¹ N/A to Devices prior to GBCS v4.0

16.2.1.2.18 FirmwareUpgradeRequested

FirmwareUpgradeRequested Format

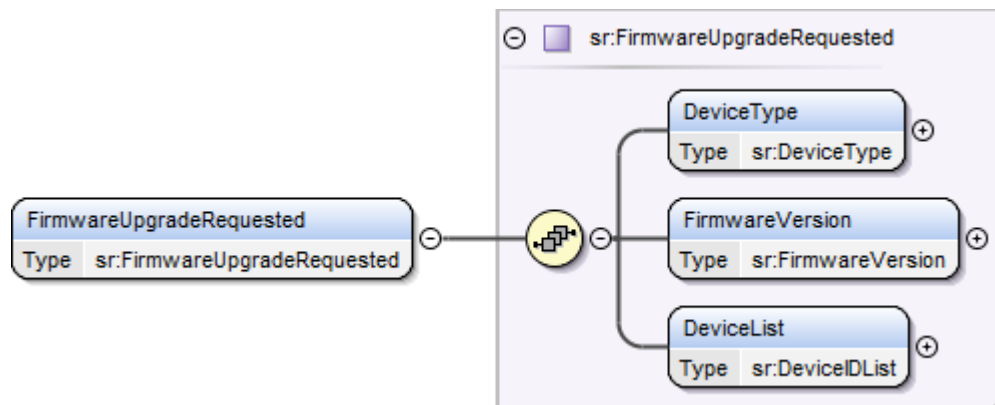


Figure 27.3 DCC Alert Response – FirmwareUpgradeRequested Structure

FirmwareUpgradeRequested Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceType	The type of the Device the Firmware is applicable to. Valid set: PPMID	sr:DeviceType	Yes	None	N/A	Non-Sensitive
FirmwareVersion	The firmware version of the transferred Upgrade Image	sr:FirmwareVersion (Restriction of xs:string)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceList	List of Device IDs that successfully passed validation by DSP and CSP. Populated if a firmware distribution status is received from a CSP	sr:DeviceIDList (Restriction of xs:string (min length = 23 pattern = "[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2})")	Yes ¹	None	N/A	Non-Sensitive

Table 35.2 DCC Alert Service Response – FirmwareUpgradeRequested Data Items

¹ Minimum of 1 and maximum of 50,000 Device IDs

16.2.1.2.19 CSPFirmwareDeliveryStatus

CSPFirmwareDeliveryStatusFormat

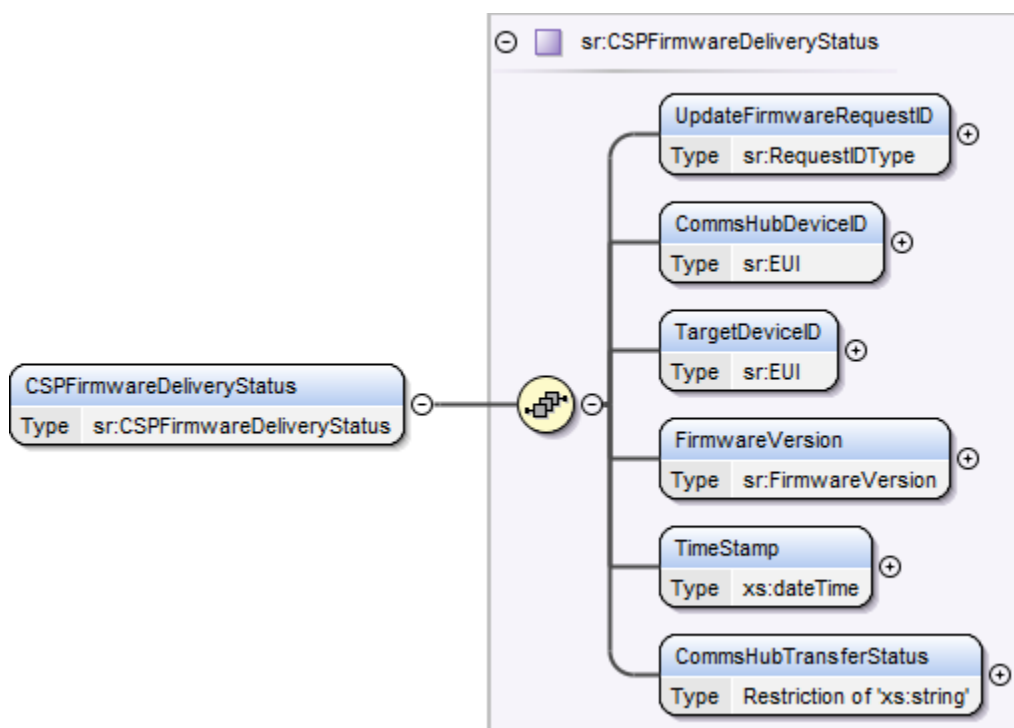


Figure 27.4 DCC Alert CSPFirmwareDeliveryStatus –Alert Structure

CSPFirmwareDeliveryStatus Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UpdateFirmwareRequestID	Request ID of the Update Firmware Service Request associated to this DCC Alert	sr:RequestIDType (see Annex section17)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommsHubDeviceID	The Device ID of the Comms Hub that generated the Device Alert	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
TargetDeviceID	The ID of the Device the firmware image is targeted at	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
FirmwareVersion	The firmware version of the transferred or discarded Upgrade Image	sr:FirmwareVersion (Restriction of xs:string)	Yes	None	N/A	Non-Sensitive
TimeStamp	The timestamp at which the event that is responsible for this DCC Alert has occurred.	xs:dateTime	Yes	None	N/A	Non-Sensitive
CommsHubTransferStatus	Indicates whether a firmware image has been delivered to a Comms Hub. Valid set For DCC Alert N61: <ul style="list-style-type: none"> Success For DCC Alert N60: <ul style="list-style-type: none"> Failure 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 35.3 DCC Alert Service Response – CSPFirmwareDeliveryStatus Data Items

16.2.1.2.20 CommsHubAlert

CommsHubAlert Format

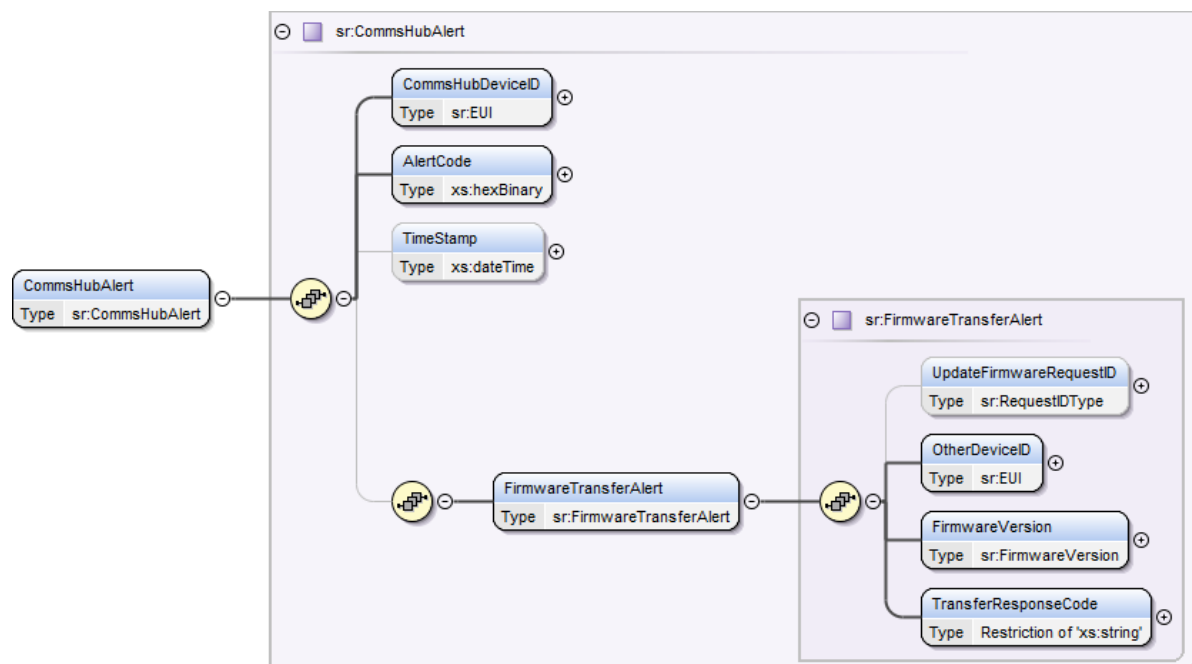


Figure 27.5 DCC Alert Response – CommsHubAlert Structure

CommsHubAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommsHubDeviceID	The Device ID of the Comms Hub that generated the Device Alert	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
AlertCode	The Device Alert Code generated by the Comms Hub. Valid set: For Firmware Transfer Alert: To indicate successful delivery to the target Device: <ul style="list-style-type: none"> 8F8A To indicate delivery to the target Device failed: <ul style="list-style-type: none"> 8F89 	xs:hexBinary	Yes	None	N/A	Non-Sensitive
TimeStamp	The timestamp at which the event that is responsible for this Device Alert has occurred.	xs:dateTime	No	None	N/A	Non-Sensitive
FirmwareTransferAlert	The Device Alert sent by a Comms Hub to report transfer status of a firmware image to the target Device. Only to report a firmware distribution status.	sr:FirmwareTransferAlert (See FirmwareTransferAlert Data Items Definition for details)	No	None	N/A	Non-Sensitive

Table 35.4 DCC Alert Service Response – CommsHubAlert Data Items

FirmwareTransferAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
UpdateFirmwareRequestID	Request ID of the Update Firmware Service Request associated to this Alert If there is no tracking in progress when DSP receives the Comms Hub alert then this element will not be present	sr:RequestIDType (see Annex section 17)	No	None	N/A	Non-Sensitive
OtherDeviceID	The ID of the Device the firmware image is targeted at	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
FirmwareVersion	The firmware version of the transferred or discarded Upgrade Image	sr:FirmwareVersion (Restriction of xs:string)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
TransferResponseCode	Valid set: For Alert Code 0x8F8A: <ul style="list-style-type: none"> FileTransferSuccess For Alert Code 0x8F89: <ul style="list-style-type: none"> FirmwareImageDiscarded HardwareVersionMismatch FileTransferFailure 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 35.5 DCC Alert Service Response – FirmwareTransferAlert Data Items

16.2.1.2.21 ECoS Alert

ECoSAlert format

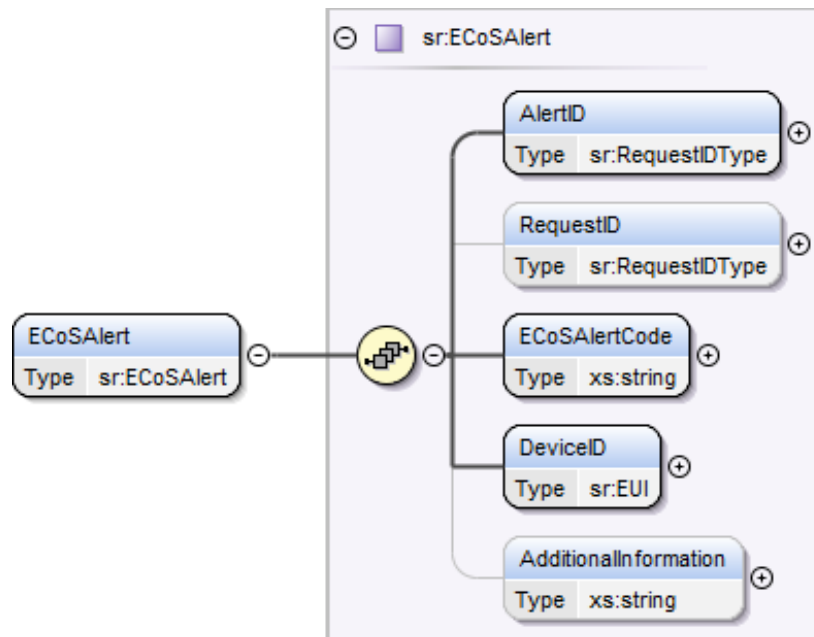


Figure 27.6 DCC Alert Response – ECoSAlert Structure

ECoSAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Alert ID	A unique identifier associated to this ECoS Alert (comprising Business Originator = ECoS Party, Business Target = Service User, Originator Counter generated by ECoS Party)	sr:RequestIDType (see Annex section 17)	Yes	None	N/A	Non-Sensitive

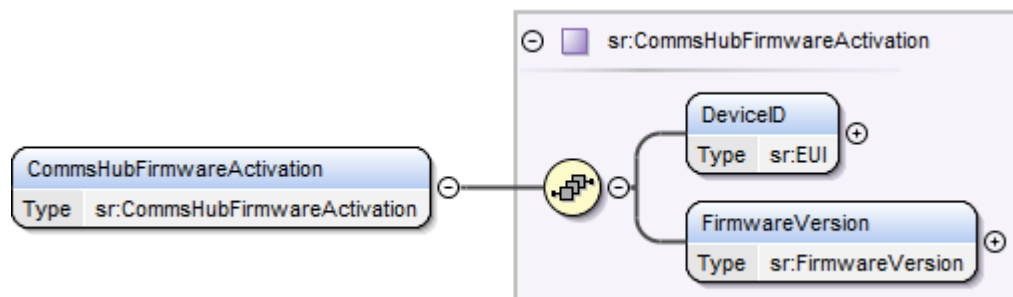
Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	The identifier of the Service Request sent to ECoS Party, about which the ECoS Alert is created.	sr:RequestIDType (see Annex section 17)	No ¹	None	N/A	Non-Sensitive
ECoSAlertCode	The code sent by the ECoS Party to describe the nature of the ECoS Alert being notified. Valid Set: defined in main document section 12.5	xs:string	Yes	None	N/A	Non-Sensitive
DeviceID	The Device ID associated with the ECoS Alert	sr:EUI	Yes	None	N/A	Non-Sensitive
AdditionalInformation	Additional Information provided by the ECoS Party	xs:string (max 250 characters)	No	None	N/A	Non-Sensitive

Table 35.6 DCC Alert Service Response – ECoSAlert Data Items

¹ Mandatory when the ECoS Alert relates to a CoS Service Request, however it is possible for the ECoS Party to generate an ECoS Alert which does not relate to a specific Service Request.

16.2.1.2.22 CommsHubFirmwareActivation

CommsHubFirmwareActivation format



CommsHubFirmwareActivation Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The Device ID of the Device for which a new Firmware Image has been activated.	sr:EUI (see Annex section 17)	Yes	None	N/A	Non-Sensitive
FirmwareVersion	The version of the Firmware Image activated on the Device.	sr:FirmwareVersion (Restriction of xs:string)	Yes	None	N/A	Non-Sensitive

16.2.1.2.23 CoS Certificate Alert

CoSCertificateAlert format

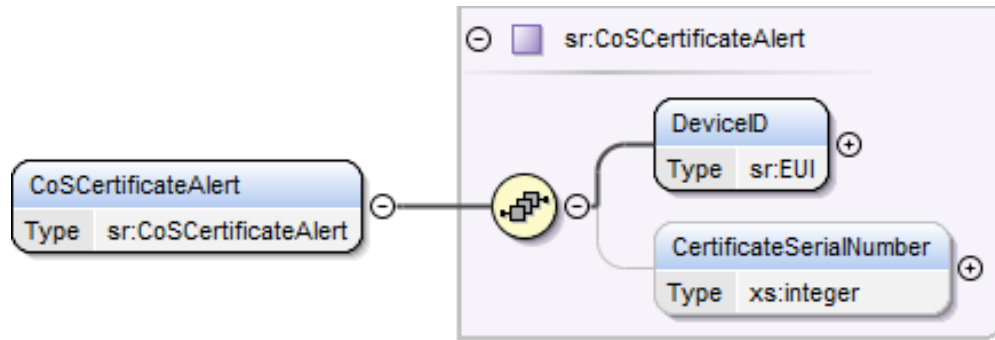


Figure 27.7 DCC Alert Response – CoSCertificateAlert Structure

CoSCertificateAlert Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DeviceID	The EUI 64 ID of the Device	sr:EUI	Yes	None	N/A	Non-Sensitive
CertificateSerialNumber	The serial number of the Certificate placed in the CoS Trust Anchor Cell of the Device	xs:integer	No	None	N/A	Non-Sensitive

Table 35.6 DCC Alert Service Response – CoSCertificateAlert Data Items

16.2.1.2.24 DUISVersionMismatch

DUISVersionMismatch Format

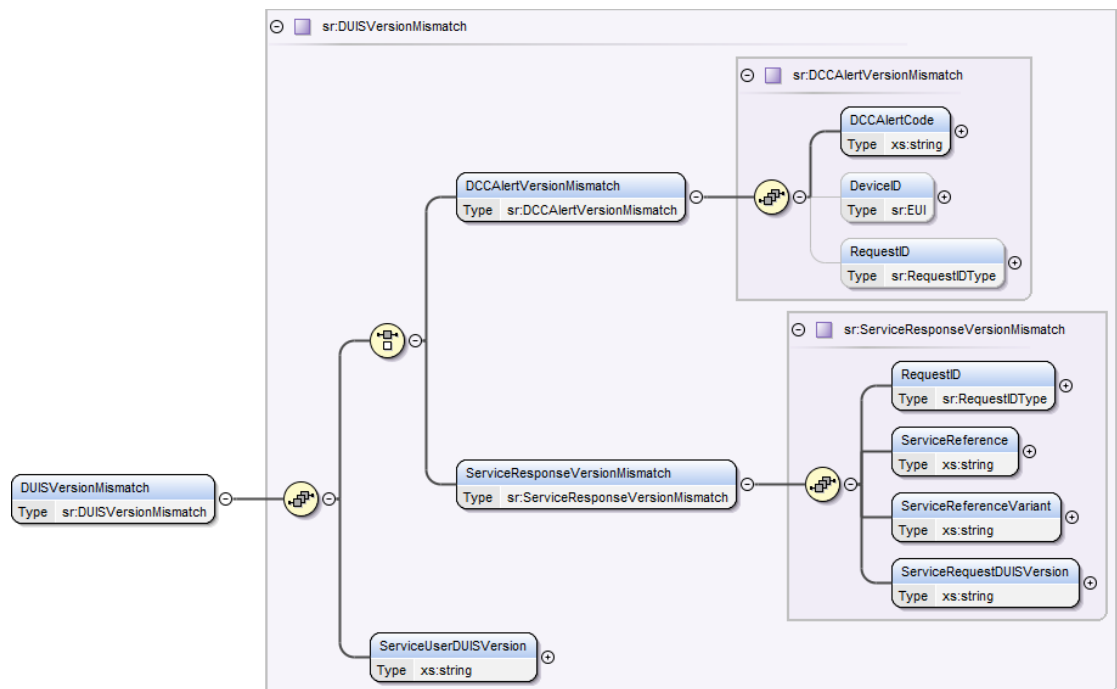


Figure 28 DCC Alert Response – DUISVersionMismatch Structure

DUISVersionMismatch Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DCCAlertVersionMismatch	The DCC Alert generated by the DCC Data Systems is not compatible with the DUIS version used by the DCC Service User	sr:DCCAlertVersionMismatch (see DCCAlertVersionMismatch Data Items Definition)	No ¹	None	N/A	Non-Sensitive
ServiceResponseVersionMismatch	The Service Response is not compatible with the DUIS version used by the DCC Service User	sr:ServiceResponseVersionMismatch (see ServiceResponseVersionMismatch Data Items Definition)	No ¹	None	N/A	Non-Sensitive
ServiceUserDUISVersion	The DUIS Version currently used by the DCC Service User, according to the DCC Data Systems. This will be set to the same value as the Response schema Version	xs:string	Yes	None	N/A	Non-Sensitive

Table 36 DCC Alert Service Response – DUISVersionMismatch Data Items

¹ The DCC Alert will include only one of the Data Items in the choice

DCCAlertVersionMismatch Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DCCAlertCode	<p>The DCC Alert Code incompatible with the DCC Service User's DUIS XSD version</p> <p>SMETS1: If carrying an S1SP Alert, in addition (separated by colons) the S1SP Alert Code and, where present, the UTRN or the AdditionalInformation contained within the S1SPAlert that is unable to be delivered</p> <p>SMETS2: If reporting information regarding PPMID firmware updates requested (DCC Alert N59), in addition (separated by colons) the firmware version of the Update Firmware Request.</p> <p>SMETS2: If reporting a CSP firmware delivery notification (DCC Alert N60 or N61), in addition (separated by a colon) the firmware version of the Update Firmware Request.</p> <p>SMETS2: If carrying a Comms Hub firmware delivery notification (DCC Alert N62), in addition (separated by colons) the firmware version of the Update Firmware Request and the outcome of the transfer from Comms Hub to target device, expressed as the code from the GBCS alert (i.e. 0, 1, 2 or 3).</p> <p>If carrying an ECoS Alert (DCC Alert N63), in addition (separated by colons) the ECoS Alert Code and, where present, Additional Information contained within the ECoS Alert that is unable to be delivered.</p> <p>If carrying a Comms Hub Firmware Activation Alert (DCC Alert N64), in addition (separated by colons) the active firmware version of the Comms Hub.</p> <p>If carrying a CoS Certificate Alert (DCC Alert N65) in addition (separated by colons) the Certificate serial number.</p>	xs:string	Yes	None	N/A	Non-Sensitive
DeviceID	The Device ID corresponding to the incompatible DCC Alert, if applicable	sr:EUI (see Annex section 17)	No	None	N/A	Non-Sensitive
RequestID	The Request ID corresponding to the incompatible DCC Alert, if applicable	sr:RequestIDType (see Annex section 17)	No	None	N/A	Non-Sensitive

**Table 37 DCC Alert Service Response – DUISVersionMismatch
DCCAlertVersionMismatch Data Items**

ServiceResponseVersionMismatch Data Items Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestID	The Request ID of the Service Request incompatible with the DCC Service User's DUIS XSD version	sr:RequestIDType (see Annex section17)	Yes	None	N/A	Non-Sensitive
ServiceReference	The Service Reference of the Service Request incompatible with the DCC Service User's DUIS XSD version	xs:string	Yes	None	N/A	Non-Sensitive
ServiceReferenceVariant	The Service Reference Variant of the Service Request incompatible with the DCC Service User's DUIS XSD version	xs:string	Yes	None	N/A	Non-Sensitive
ServiceRequestDUISVersion	The DUIS Version of the Service Request incompatible with the DCC Service User's DUIS XSD version, e.g.: <ul style="list-style-type: none"> 1.0 2.0 3.0 3.1 4.0 5.0 	xs:string	Yes	None	N/A	Non-Sensitive

Table 38 DCC Alert Service Response – DUISVersionMismatch
ServiceResponseVersionMismatch Data Items

16.2.1.3 Relationship between DCC Alert Codes and Response Codes

DCC Alert			Response Codes
DUIS XSD Version	Modified in DUIS Versions	Code	
>= 1.0	N/A	AD1	I0
>= 1.0	N/A	N1	I0
>= 1.0	N/A	N2	I0
>= 1.0	N/A	N3	I0
>= 1.0	N/A	N4	I0
>= 1.0	N/A	N5	I0
>= 1.0	N/A	N6	I0
>= 1.0	N/A	N7	E1, E2, E3, E4, E5, E19, E56, E57, E1007, E060502
>= 1.0	N/A	N8	I0
>= 1.0	N/A	N9	I0
>= 1.0	N/A	N10	E30
>= 1.0	N/A	N11	E31
>= 1.0	N/A	N12	E20
>= 1.0	N/A	N13	E21
>= 1.0	N/A	N14	E43, E46, E47

DCC Alert			Response Codes
DUIS XSD Version	Modified in DUIS Versions	Code	
>= 1.0	N/A	N15	E44
>= 1.0	4.0	N16	I0
>= 1.0	N/A	N17	I0
>= 1.0	N/A	N18	I0
>= 1.0	N/A	N19	I0
>= 1.0	N/A	N20	I0
>= 1.0	N/A	N21	I0
>= 1.0	N/A	N22	E20
>= 1.0	N/A	N23	E21
>= 1.0	N/A	N24	I0
>= 1.0	N/A	N25	I0
>= 1.0	5.2	N26	E1, E2, E3, E4, E5, E19, E65, E66, E67, E68, E69, E70, E71, E100, E1007, E062303, E062304, E062305, E062306
>= 1.0	N/A	N27	I0
>= 1.0	N/A	N28	I0
>= 1.0	N/A	N29	I0
>= 1.0	N/A	N30	I0
>= 1.0	N/A	N31	I0
>= 1.0	N/A	N33	I0
>= 1.0	N/A	N34	I0
>= 1.0	N/A	N35	I0
>= 1.0	N/A	N36	I0
>= 1.0	N/A	N37	I0
>= 1.0	N/A	N38	I0
>= 1.0	5.0	N39	I0
>= 1.0	N/A	N40	I0
>= 1.0	N/A	N41	I0
>= 1.0	N/A	N42	I0
>= 1.0	N/A	N43	I0
>= 1.0	N/A	N44	I0
>= 1.0	N/A	N45	I0
>= 2.0	N/A	N46	I0
>= 2.0	N/A	N47	I0
>= 2.0	N/A	N48	I0
>= 2.0	N/A	N49	I0

DCC Alert			Response Codes
DUIS XSD Version	Modified in DUIS Versions	Code	
>= 2.0	N/A	N50	I0
>= 2.0	N/A	N51	I0
>= 2.0	N/A	N52	I0
>= 2.0	N/A	N53	E58
>= 2.0	N/A	N54	I0 ¹ , E59 ²
>= 3.0	N/A	N55	I0, E62
>= 3.0	N/A	N56	I0
>= 3.0	N/A	N57	I0
>= 3.1	4.0	N58	I0
>= 5.0	N/A	N59	I0
>= 5.0	N/A	N60	I0
>= 5.0	N/A	N61	I0
>= 5.0	N/A	N62	I0
>= 5.1	N/A	N63	I0 ³
>= 5.1	N/A	N64	I0
>= 5.1	N/A	N65	I0
>= 2.0	N/A	N999	I0

Table 39 Relationship between DCC Alert Codes and Response Codes

¹ Applicable to Device Alerts 0x8F21, 08F23, 0x8F25, 0x8F26, 0x8F27, 0x8F28, 0x8F2A

² Applicable to Device Alerts 0x8F20, 08F22, 0x8F24, 0x8F29, 0x8F2B, 0x8F2C, 0x8F2D

³ the payload of the alert will include the ECoS Alert code as defined in the main document

16.2.1.4 DCC Alert Samples

16.2.1.4.1 Power Outage

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>AD1</DCCAlertCode>
  <DCCAlert>
    <PowerOutageEvent>
      <CommsHubDeviceID>88-00-AA-BB-CC-DD-EE-FF</CommsHubDeviceID>
      <StartDateTime>2014-09-10T07:05:03.00</StartDateTime>
      <MPxN>311234567890</MPxN>
    </PowerOutageEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 29 Sample Power Outage DCC Alert Response Format

16.2.1.4.2 Meter Identity

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N16</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <MeterIdentity>
          <MeterMPxNs>
            <ImportMPxN>1234567890123</ImportMPxN>
          </MeterMPxNs>
          <ESMEVariant>A</ESMEVariant>
        </MeterIdentity>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 30 Sample Meter Identity DCC Alert Response Format

16.2.1.4.3 Meter Decommissioning Or Withdrawal

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N1</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <MeterDecommissioningOrWithdrawal>
          <MeterDecommissionOrWithdrawal>
            <ImportMPxN>1234567890</ImportMPxN>
          </MeterDecommissionOrWithdrawal>
        </MeterDecommissioningOrWithdrawal>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 31 Sample Meter Decommissioning Or Withdrawal DCC Alert Response Format

16.2.1.4.4 Device Removed From Inventory

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N8</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <DeviceRemovedFromInventory/>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 32 Sample Device Removed From Inventory DCC Alert Response Format

16.2.1.4.5 CHF Decommissioning

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N9</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <CHFDecommissioning/>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 33 Sample CHF Decommissioning DCC Alert Response Format

16.2.1.4.6 Device Suspended

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N28</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <DeviceSuspended/>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 34 Sample Device Suspended DCC Alert Response Format

16.2.1.4.7 Device Restored

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N29</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <DeviceRestored/>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 35 Sample Device Restored DCC Alert Response Format

16.2.1.4.8 Recovery Complete (ACB Credentials)

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N44</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <RecoveryCompleteACBCredentials>
          <SupplierCertificateType>DigitalSigning</SupplierCertificateType>
        </RecoveryCompleteACBCredentials>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 36 Sample Recovery Complete (ACB Credentials) DCC Alert Response Format

16.2.1.4.9 Recovery Complete

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N45</DCCAlertCode>
  <DCCAlert>
    <DeviceStatusChangeEvent>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceStatusChange>
        <RecoveryComplete/>
      </DeviceStatusChange>
    </DeviceStatusChangeEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 37 Sample Recovery Complete DCC Alert Response Format

16.2.1.4.10 DSP Schedule Removal

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N4</DCCAlertCode>
  <DCCAlert>
    <DSPScheduleRemoval>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DSPScheduleID>500</DSPScheduleID>
    </DSPScheduleRemoval>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 38 Sample DSP Schedule Removal DCC Alert Response Format

16.2.1.4.11 Command Failure

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N3</DCCAlertCode>
  <DCCAlert>
    <CommandFailure>
      <CommandRequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:50</CommandRequestID>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
    </CommandFailure>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 39 Sample Command Failure DCC Alert Response Format

16.2.1.4.12 Firmware Distribution Failure

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N18</DCCAlertCode>
  <DCCAlert>
    <FirmwareDistributionFailure>
      <UpdateFirmwareRequestID>11-22-33-44-55-66-77-88:11-DB-33-44-55-66-77-88:10</UpdateFirmwareRequestID>
      <MeterIDs>2F-3D-4E-5A-6B-7C-76-87,34-16-5E-4A-5B-6C-76-87</MeterIDs>
    </FirmwareDistributionFailure>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 40 Sample Firmware Distribution Failure DCC Alert Response Format

16.2.1.4.13 Update HAN Device Log Result

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N24</DCCAlertCode>
  <DCCAlert>
    <UpdateHANDeviceLogResult>
      <UpdateHANDeviceLogServiceRequestID>11-22-33-44-55-66-77-88:11-DB-33-44-55-66-77-
88:100</UpdateHANDeviceLogServiceRequestID>
    </UpdateHANDeviceLogResult>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 41 Sample Update HAN Device Log Result DCC Alert Response Format

16.2.1.4.14 Change Of Supplier Result

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N27</DCCAlertCode>
  <DCCAlert>
    <ChangeOfSupplier>
      <DeviceChangeOfSupplier>
        <DeviceID>17-26-33-44-55-66-77-88</DeviceID>
        <DeviceType>ESME</DeviceType>
        <MPxNs>
          <ImportMPxN>1234567890123</ImportMPxN>
        </MPxNs>
      </DeviceChangeOfSupplier>
    </ChangeOfSupplier>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 42 Sample Change Of Supplier DCC Alert Response Format (N27)

An optional additional data item introduced in DUIS v5.2, applicable only to N26, will be omitted for DUIS v5.1 or earlier. An example is shown for DUIS v5.2 where there is an ECoS error, and how it would appear in a response for an earlier DUIS version.

```
<DCCAlertMessage>
  <DCCAlertCode>N26</DCCAlertCode>
  <DCCAlert>
    <ChangeOfSupplier>
      <ChangeOfSupplierServiceRequestID>12-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-
88:50</ChangeOfSupplierServiceRequestID>
    </ChangeOfSupplier>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 42.1 Sample Change Of Supplier DCC Alert Response Format (N26) – DUIS v5.1 or earlier

```
<DCCAlertMessage>
  <DCCAlertCode>N26</DCCAlertCode>
  <DCCAlert>
    <ChangeOfSupplier>
      <ChangeOfSupplierServiceRequestID>12-00-AA-BB-CC-DD-EE-FF:11-22-33-44-55-66-77-
88:50</ChangeOfSupplierServiceRequestID>
      <ECoSErrorCode>001</ECoSErrorCode>
    </ChangeOfSupplier>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 42.2 Sample Change Of Supplier DCC Alert Response Format (N26) – DUIS v5.2 or later

16.2.1.4.15 Device Log Restored

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N30</DCCAlertCode>
  <DCCAlert>
    <DeviceLogRestored>
      <RestoredDate>2015-01-20</RestoredDate>
      <CHFDeviceLog>
        <OldCHFDeviceID>21-00-AA-BB-CC-DD-EE-FF</OldCHFDeviceID>
        <NewCHFDeviceID>22-50-AA-BB-CC-DD-EE-FF</NewCHFDeviceID>
        <OldGPFDDeviceID>23-00-AA-BB-CC-DD-EE-FF</OldGPFDDeviceID>
        <NewGPFDDeviceID>24-51-AA-BB-CC-DD-EE-FF</NewGPFDDeviceID>
      </CHFDeviceLog>
    </DeviceLogRestored>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 43 Sample Device Log Restored DCC Alert Response Format

16.2.1.4.16 PPMID Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows.

Additional data items introduced in DUIS v5.0 will be omitted for DUIS v4.0 or earlier. An example is shown of each.

```
<DCCAlertMessage>
  <DCCAlertCode>N39</DCCAlertCode>
  <DCCAlert>
    <PPMIDAlert>
      <DeviceID>13-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceAlertCode>8F30</DeviceAlertCode>
    </PPMIDAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 44 Sample PPMID Alert DCC Alert Response Format

```
<DCCAlertMessage>
  <DCCAlertCode>N39</DCCAlertCode>
  <DCCAlert>
    <PPMIDAlert>
      <DeviceID>13-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceAlertCode>8F8B</DeviceAlertCode>
      <TimeStamp>2020-09-10T07:05:03.00</TimeStamp>
      <PPMIDFirmwareUpgradeAlert>
        <FirmwareVersion>11A0EEFF</FirmwareVersion>
        <ActivateImageResultCode>ActivationSuccess</ActivateImageResultCode>
      </PPMIDFirmwareUpgradeAlert>
    </PPMIDAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 44.1 Sample PPMID Alert Response Format for Firmware Upgrade Notification – DUIS v5.0 or later

16.2.1.4.17 Security Credentials Updated Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N42</DCCAlertCode>
  <DCCAlert>
    <SecurityCredentialsUpdated>
      <DeviceID>13-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <RemotePartyRole>NetworkOperator</RemotePartyRole>
      <RemotePartySeqNumberChange>
        <RemotePartyFloorSeqNumber>10000</RemotePartyFloorSeqNumber>
      </RemotePartySeqNumberChange>
      <Certificates>
        <CertificateType>DigitalSigning</CertificateType>
        <CertificateHash>ZGVmYXVsdA==</CertificateHash>
      </Certificates>
    </SecurityCredentialsUpdated>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 45 Sample Security Credentials Updated Alert DCC Alert Response Format

16.2.1.4.18 PPMIDRemoval Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N43</DCCAlertCode>
  <DCCAlert>
    <PPMIDRemoval>
      <PPMIDDeviceID>13-00-AA-BB-CC-DD-EE-FF</PPMIDDeviceID>
      <CHFDeviceID>17-24-AA-BB-CC-DD-EE-FF</CHFDeviceID>
    </PPMIDRemoval>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 46 Sample PPMIDRemoval Alert DCC Alert Response Format

16.2.1.4.19 QuarantinedRequest Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N46</DCCAlertCode>
  <DCCAlert>
    <QuarantinedRequest>
      <ADUserThresholdBreach>
        <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
        <QuarantineEventRef>123</QuarantineEventRef>
      </ADUserThresholdBreach>
    </QuarantinedRequest>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 47 Sample QuarantinedRequest Alert DCC Alert Response Format

16.2.1.4.20 FirmwareVersionMismatch Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N49</DCCAlertCode>
  <DCCAlert>
    <FirmwareVersionMismatch>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <DeviceType>ESME</DeviceType>
      <FirmwareVersionSMI>1100EEFF</FirmwareVersionSMI>
      <FirmwareVersionDevice>11A0EEFF</FirmwareVersionDevice>
    </FirmwareVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 48 Sample FirmwareVersionMismatch DCC Alert Response Format

16.2.1.4.21 DualBandCHAlert - no additional data Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F21</DeviceAlertCode>
    </DualBandCHAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 49 Sample DualBandCHAlert (no additional data) DCC Alert Response Format

16.2.1.4.22 DualBandCHAlert – LimitedDutyCycleActionTaken Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F20</DeviceAlertCode>
      <GBCSHexadecimalMessageCode>0110</GBCSHexadecimalMessageCode>
      <LimitedDutyCycleActionTaken>
        <DeviceIDToSuspend>19-03-AA-BB-CC-DD-EE-FF</DeviceIDToSuspend>
      </LimitedDutyCycleActionTaken>
    </DualBandCHAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 50 Sample DualBandCHAlert (LimitedDutyCycleActionTaken) DCC Alert Response Format

16.2.1.4.23 DualBandCHAlert – SubGHzChannelChanged Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F26</DeviceAlertCode>
      <GBCSHexadecimalMessageCode>0111</GBCSHexadecimalMessageCode>
      <SubGHzChannelChanged>
        <OperatingSubGHzChannel>
          <OperatingLowerBandSubGHzChannel>
            <Channel45/>
          </OperatingLowerBandSubGHzChannel>
        </OperatingSubGHzChannel>
        <ScanTrigger>GSMERequest</ScanTrigger>
      </SubGHzChannelChanged>
    </DualBandCHAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 51 Sample DualBandCHAlert (SubGHzChannelChanged) DCC Alert Response Format

16.2.1.4.24 DualBandCHAlert – SubGHzChannelScanRequestAssessmentOutcome Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F28</DeviceAlertCode>
      <GBCSHexadecimalMessageCode>0112</GBCSHexadecimalMessageCode>
      <SubGHzChannelScanRequestAssessmentOutcome>
        <StatusCode>ScanRequestAccepted</StatusCode>
        <ScanTrigger>RemotePartyCommand</ScanTrigger>
      </SubGHzChannelScanRequestAssessmentOutcome>
    </DualBandCHAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 52 Sample DualBandCHAlert (SubGHzChannelScanRequestAssessmentOutcome) DCC Alert Response Format

16.2.1.4.25 DualBandCHAlert – SubGHzConfigurationChanged Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F2A</DeviceAlertCode>
      <GBCSHexadecimalMessageCode>0113</GBCSHexadecimalMessageCode>
      <SubGHzConfigurationChanged>
        <LowerBandSubGHzChannels0To26>
          <Channel0/>
          <Channel7/>
        </LowerBandSubGHzChannels0To26>
        <LowerBandSubGHzChannels27To34>
          <Channel28/>
          <Channel30/>
        </LowerBandSubGHzChannels27To34>
        <LowerBandSubGHzChannels35To61>
          <Channel37/>
          <Channel38/>
        </LowerBandSubGHzChannels35To61>
        <UpperBandSubGHzChannels0To26>
          <Channel3/>
          <Channel9/>
        </UpperBandSubGHzChannels0To26>
        <NormalLimitedDutyCycleThreshold>1.7</NormalLimitedDutyCycleThreshold>
        <LimitedCriticalDutyCycleThreshold>2.1</LimitedCriticalDutyCycleThreshold>
        <MaximumSubGHzChannelChangesPerWeek>3</MaximumSubGHzChannelChangesPerWeek>
        <GSMECurfew>3</GSMECurfew>
        <ChannelQuieterThreshold>10</ChannelQuieterThreshold>
        <ChannelNoisierThreshold>12</ChannelNoisierThreshold>
        <NonGSMEPoorCommsPercentageThreshold>15.00</NonGSMEPoorCommsPercentageThreshold>
        <NonGSMEPoorCommsMeasurementPeriods>75</NonGSMEPoorCommsMeasurementPeriods>
        <LocalCHNoiseMeasurementPeriod>65</LocalCHNoiseMeasurementPeriod>
        <LocalCHFFailurePercentage>12.00</LocalCHFFailurePercentage>
        <LocalCHRetryPercentage>15.3</LocalCHRetryPercentage>
      </SubGHzConfigurationChanged>
    </DualBandCHAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 53 Sample DualBandCHAlert (SubGHzConfigurationChanged) DCC Alert Response Format

16.2.1.4.26 DualBandCHAlert – MessageDiscardedDueToDutyCycleManagement Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F2C</DeviceAlertCode>
      <GBCSHexadecimalMessageCode>0114</GBCSHexadecimalMessageCode>
      <MessageDiscardedDueToDutyCycleManagement>
        <RequestID>11-22-33-44-55-66-77-88:34-25-7A-BB-CC-DD-EE-FF:50</RequestID>
        <CRAFlag>Command</CRAFlag>
      </MessageDiscardedDueToDutyCycleManagement>
    </DualBandCHAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 54 Sample DualBandCHAlert (MessageDiscardedDueToDutyCycleManagement) DCC Alert Response Format

16.2.1.4.27 DualBandCHAlert – NoMoreSubGHzDeviceCapacity Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N54</DCCAlertCode>
  <DCCAlert>
    <DualBandCHAlert>
      <CHFDeviceID>99-00-AA-BB-CC-DD-EE-FF</CHFDeviceID>
      <DeviceAlertCode>8F2D</DeviceAlertCode>
      <GBCSHexadecimalMessageCode>0115</GBCSHexadecimalMessageCode>
      <NoMoreSubGHzDeviceCapacity>
        <DeviceID>19-03-AA-BB-CC-DD-EE-FF</DeviceID>
        <DeviceType>PPMID</DeviceType>
        </NoMoreSubGHzDeviceCapacity>
      </DualBandCHAlert>
    </DCCAlert>
  </DCCAlertMessage>
```

Figure 55 Sample DualBandCHAlert (NoMoreSubGHzDeviceCapacity) DCC Alert Response Format

16.2.1.4.28 S1SPAlert Alert – Validation Error

A sample DCC Alert is given in Annex Introduction Appendix 4.

An S1SP Alert is conveyed in a DCC Alert with DCC Alert Code N55 or N56. The following is an example of specific information for a DCC Alert which is an N55 S1SP Alert conveying a validation error:

```
<DCCAlertMessage>
  <DCCAlertCode>N55</DCCAlertCode>
  <DCCAlert>
    <S1SPAlertDSP>
      <S1SPAlert>
        <RequestID>11-22-33-44-55-66-77-88:34-25-7A-BB-CC-DD-EE-FF:50</RequestID>
        <DeviceID>34-25-7A-BB-CC-DD-EE-FF</DeviceID>
        <SMETS1AlertCode>S1VE1</SMETS1AlertCode>
        <DateTime>2017-08-01T02:05:00.00Z</DateTime>
        <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
          <SignedInfo>
            <CanonicalizationMethod>
              Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
            <SignatureMethod>
              Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
            <Reference URI="">
              <Transforms>
                <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
              </Transforms>
              <DigestMethod>
                Algorithm="http://www.w3.org/2001/04/xmldsig#sha256" />
              <DigestValue>ZGVmYXVsdA==</DigestValue>
            </Reference>
          </SignedInfo>
          <SignatureValue>ZGVmYXVsdA==</SignatureValue>
        </Signature>
        <KeyInfo>
          <X509Data>
            <X509IssuerSerial>
              <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
              <X509SerialNumber>7432112348</X509SerialNumber>
            </X509IssuerSerial>
          </X509Data>
        </KeyInfo>
      </S1SPAlert>
    </S1SPAlertDSP>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 56 Sample S1SPAlert DCC Alert Response Format – Validation Error

16.2.1.4.29 SMETS1CHFirmwareNotification Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N57</DCCAlertCode>
  <DCCAlert>
    <SMETS1CHFirmwareNotification>
      <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      <FirmwareVersion>1100EEFF</FirmwareVersionSMI>
      <FirmwareVersionUpdateStatus>UpdateRequested</FirmwareVersionUpdateStatus>
    </SMETS1CHFirmwareNotification>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57 Sample SMETS1CHFirmwareNotification DCC Alert Response Format

16.2.1.4.30 ALCSHCALCSCConfigurationChange

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as in the following examples.

This structure was introduced in DUIS v3.1 and additional data items were introduced in DUIS v4.0. An example is shown of each.

```
<DCCAlertMessage>
  <DCCAlertCode>N58</DCCAlertCode>
  <DCCAlert>
    <ALCSHCALCSCConfigurationChange>
      <ESMEDeviceID>99-00-AA-BB-CC-DD-EE-FF</ESMEDeviceID>
    </ALCSHCALCSCConfigurationChange>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.1 Sample ALCSHCALCSCConfigurationChange DCC Alert Response Format – DUIS v3.1

```
<DCCAlertMessage>
  <DCCAlertCode>N58</DCCAlertCode>
  <DCCAlert>
    <ALCSHCALCSCConfigurationChange>
      <ESMEDeviceID>99-00-AA-BB-CC-DD-EE-FF</ESMEDeviceID>
      <ESMEVariant>AF</ESMEVariant>
      <DeviceGBCSVersion>4.0</DeviceGBCSVersion>
    </ALCSHCALCSCConfigurationChange>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.2 Sample ALCSHCALCSCConfigurationChange DCC Alert Response Format – DUIS v4.0 or later

16.2.1.4.31 FirmwareUpgradeRequested Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N59</DCCAlertCode>
  <DCCAlert>
    <FirmwareUpgradeRequested>
      <DeviceType>PPMID</DeviceType>
      <FirmwareVersion>11A0EEFF</FirmwareVersion>
      <DeviceList>2F-3D-4E-5A-6B-7C-76-87,34-16-5E-4A-5B-6C-76-87</DeviceList>
    </FirmwareUpgradeRequested>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.3 Sample FirmwareUpgradeRequested DCC Alert Response Format

16.2.1.4.32 CSPFirmwareDeliveryStatus Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N61</DCCAlertCode>
  <DCCAlert>
    <CSPFirmwareDeliveryStatus>
      <UpdateFirmwareRequestID>11-22-33-44-55-66-77-88:11-DB-33-44-55-66-77-88:10</UpdateFirmwareRequestID>
      <CommsHubDeviceID>11-00-AA-BB-CC-DD-EE-FF</CommsHubDeviceID>
      <TargetDeviceID>13-00-AA-BB-CC-DD-EE-FF</TargetDeviceID>
      <FirmwareVersion>11A0EEFF</FirmwareVersion>
      <TimeStamp>2020-09-10T07:05:03.00</TimeStamp>
      <CommsHubTransferStatus>Success</CommsHubTransferStatus>
    </CSPFirmwareDeliveryStatus>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.4 Sample CSPFirmwareDeliveryStatus DCC Alert Response Format

16.2.1.4.33 CommsHubAlert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N62</DCCAlertCode>
  <DCCAlert>
    <CommsHubAlert>
      <CommsHubDeviceID>13-00-AA-BB-CC-DD-EE-FF</CommsHubDeviceID>
      <AlertCode>8F89</AlertCode>
      <TimeStamp>2020-09-10T07:05:03.00</TimeStamp>
      <FirmwareTransferAlert>
        <OtherDeviceID>11-00-AA-BB-CC-DD-EE-FF</OtherDeviceID>
        <FirmwareVersion>11A0EEFF</FirmwareVersion>
        <TransferResponseCode>FileTransferFailed</TransferResponseCode>
      </FirmwareTransferAlert>
    </CommsHubAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.5 Sample CommsHubAlert DCC Alert Response Format

16.2.1.4.34 ECoSAler

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N63</DCCAlertCode>
  <DCCAlert>
    <ECoSAler>
      <AlertID>21-22-33-44-55-66-77-88:34-25-7A-BB-CC-DD-EE-FF:60</AlertID>
      <RequestID>34-25-7A-BB-CC-DD-EE-FF:99-88-77-66-55-66-77-88:50</RequestID>
      <ECoSAlerCode>EN01</ECoSAlerCode>
      <DeviceID>99-88-77-66-55-66-77-88</DeviceID>
    </ECoSAler>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.6 Sample ECoSAler DCC Alert Response Format

16.2.1.4.35 CommsHubFirmwareActivation Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N64</DCCAlertCode>
  <DCCAlert>
    <CommsHubFirmwareActivation>
      <DeviceID>2F-3D-4E-5A-6B-7C-76-87</DeviceID>
      <FirmwareVersion>11A0EEFF</FirmwareVersion>
    </CommsHubFirmwareActivation>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.3 Sample CommsHubFirmwareActivation DCC Alert Response Format

16.2.1.4.36 CoSCertificate Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N65</DCCAlertCode>
  <DCCAlert>
    <CoSCertificateAlert>
      <DeviceID>99-88-77-66-55-66-77-88</DeviceID>
      <CertificateSerialNumber>7432112348</CertificateSerialNumber>
    </CoSCertificateAlert>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 57.7 Sample CoS Certificate Alert DCC Alert Response Format

16.2.1.4.37 DUISVersionMismatch Alert

A sample DCC Alert is given in Annex Introduction Appendix 4. The specific information for this DCC Alert is as follows:

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N49</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>2.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 58 Sample DUISVersionMismatch DCC Alert Response Format

The following sample shows a DCC Alert N999 where the undeliverable item is an N55 'Device Commissioned' S1SP Alert:

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N55:S1MC1:1234567890123</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
        <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:1</RequestID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>2.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 59 Sample DCC Alert N999 Response Format With S1SP Alert

The following sample shows a DCC Alert N999 where the undeliverable item is a DCC Alert N59:

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N59:1100EEFF</DCCAlertCode>
        <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:1</RequestID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>3.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 59.1 Sample DCC Alert N999 Response Format With N59 Information

The following sample shows a DCC Alert N999 where the undeliverable item is a DCC Alert N60 (note that N61 would follow the same pattern):

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N60:1100EEFF</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
        <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:1</RequestID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>3.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 59.2 Sample DCC Alert N999 Response Format With N60 Information

The following sample shows a DCC Alert N999 where the undeliverable item is a DCC Alert N62:

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N62:1100EEFF:1</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
        <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:1</RequestID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>3.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

The following sample shows a DCC Alert N999 where the undeliverable item is an N63 'ECoS Alert':

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N63:EN01</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
        <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:1</RequestID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>2.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 59.4 Sample DCC Alert N999 Response Format With N63 Information

The following sample shows a DCC Alert N999 where the undeliverable item is an N64 'Comms Hub Firmware Alert':

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N64:1100EEFF</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>3.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 59.5 Sample DCC Alert N999 Response Format with N64 Information

The following sample shows a DCC Alert N999 where the undeliverable item is an N65 'CoS Certificate Alert':

```
<DCCAlertMessage>
  <DCCAlertCode>N999</DCCAlertCode>
  <DCCAlert>
    <DUISVersionMismatch>
      <DCCAlertVersionMismatch>
        <DCCAlertCode>N65:7432112348</DCCAlertCode>
        <DeviceID>99-00-AA-BB-CC-DD-EE-FF</DeviceID>
      </DCCAlertVersionMismatch>
      <ServiceUserDUISVersion>2.0</ServiceUserDUISVersion>
    </DUISVersionMismatch>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 59.6 Sample DCC Alert N999 Response Format With CoS Certificate Alert

16.2.2 Throttling of DCC Alerts

The sending of DCC Alerts to DCC Service Users may be limited by throttling. See DUGIDS main document section 2.12 for a description of the throttling of Alerts.

The following is a sample of the body of a DCC Alert (in this case a power outage alert) where the sending of DCC Alerts to a DCC Service User has been reduced by throttling.

```
<DCCAlertMessage>
  <DCCAlertCode>AD1</DCCAlertCode>
  <ThrottledAlertSequenceId>97311</ThrottledAlertSequenceId>
  <ThrottledAlertCount>499</ThrottledAlertCount>
  <DCCAlert>
    <PowerOutageEvent>
      <CommsHubDeviceID>88-00-AA-BB-CC-DD-EE-FF</CommsHubDeviceID>
      <StartDateTime>2014-09-10T07:05:03.00</StartDateTime>
      <MPxN>311234567890</MPxN>
    </PowerOutageEvent>
  </DCCAlert>
</DCCAlertMessage>
```

Figure 60 Sample DCC Alert – With Throttling

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 17 – DUIS Shared Data Types

Author: DCC
Version: 5.2a
Date: June 2023

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17 DUIS Defined Data Types shared across Service Requests

This section defines those Data Types that are included in a number of requests and / or responses, for example sr:FutureDatedAbstractType (included in Future Dated Service Requests) or sr:Date (included in Service Requests where the date can contain wildcards).

Note that in many cases shared XML data types are defined in both the DUIS XML Schema, with the “sr” namespace, and the MMC XML Schema, with the “ra” namespace. In such cases the XML schema definitions are duplicated in DUIS XML and MMC XML apart from the namespace.

Within the DUGIDS document set only the types with the “sr” namespace are described in detail, and references to the “ra” namespace equivalent should be regarded as identical apart from the namespaces and the fact that “ra” namespace types have most attributes as optional.

17.1 Definitions

17.1.1 RequestIDType

It is included in the header of all requests and in all solicited responses.

17.1.1.1 Data Type Format

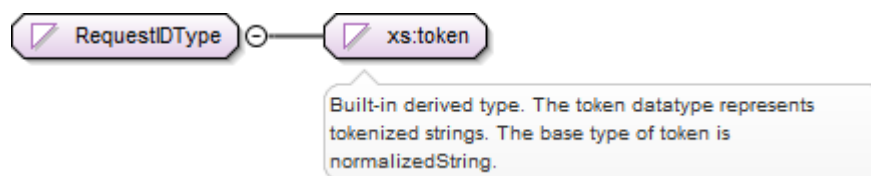


Figure 1 DUIS Data Type RequestIDType Structure

17.1.1.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestIDType	<p>Concatenation of the following 3 components separated by “.”</p> <ul style="list-style-type: none"> 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 integer value ≥ 0 and $< 2^{64}$, e.g. 1234 <p>The regular expression to validate this value is defined in the DUIS schema.</p> <p>The validation allows an integer from 0 to 18,446,744,073,709,551,615</p>	<p>Restriction of xs:token (base type xs:normalizedString)</p> <p>Pattern as per DUIS Schema</p>	<p>request: Yes</p> <p>solicited response from DCC: Yes</p> <p>solicited response from Device: Yes</p> <p>unsolicited response (Device or DCC Alert): N/A</p>	None	N/A	Non-Sensitive

Table 1 DUIS Data Type RequestIDType Data Items

17.1.2 ResponseIDType

It is included in the header of all solicited responses from Devices, Device Alerts and DCC Alerts.

17.1.2.1 Data Type Format

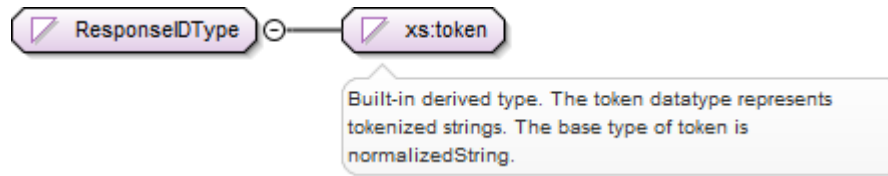


Figure 2 DUIS Data Type ResponseIDType Structure

17.1.2.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ResponseIDType	<p>Concatenation of the following 3 components separated by “.”</p> <ul style="list-style-type: none"> 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “.” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “.” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 integer value ≥ 0 and $< 2^{64}$, e.g. 1234 (type xs:nonNegativeInteger) <p>The regular expression to validate this value is defined in the DUIS schema.</p> <p>The validation allows an integer from 0 to 18,446,744,073,709,551,615</p>	<p>Restriction of xs:token (base type xs:normalizedString)</p> <p>Pattern as per DUIS Schema</p>	<p>solicited response from DCC: N/A</p> <p>solicited response from Device: Yes</p> <p>unsolicited response (Device or DCC Alert): Yes</p>	None	N/A	Non-Sensitive

Table 2 DUIS Data Type ResponseIDType Data Items

17.1.3 EUI

It is used by all Device ID’s definitions.

17.1.3.1 Data Type Format

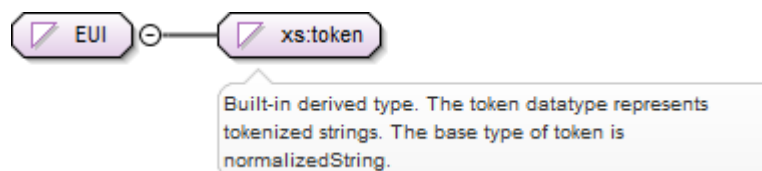


Figure 3 DUIS Data Type EUI Structure

17.1.3.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
EUI	1 EUI-64 value, formatted in 8 octets (an octet is two hex digits) with a "." as a separator, for example "AA-22-33-44-55-66-77-88". It is case insensitive	Restriction of xs:token (base type xs:normalizedString) (pattern = "[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}")	No	None	N/A	Non-Sensitive

Table 3 DUIS Data Type EUI Data Items

17.1.4 CommandVariant

It is included in the header of all requests.

17.1.4.1 Data Type Format

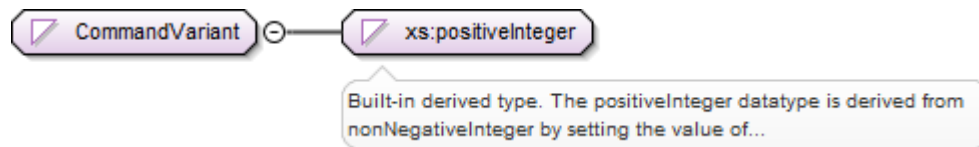


Figure 4 DUIS Data Type CommandVariant Structure

17.1.4.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommandVariant	Value to indicate to the DCC Data Systems if a request has to be <ul style="list-style-type: none"> transformed to a GBCS command or sent via the CSP network, returned to the DCC Service User to be locally applied (via a Hand Held Terminal) or both or executed by DCC Valid set: <ul style="list-style-type: none"> 1 2 3 4 5 6 7 8 9, DCC Data Systems internal use only, not to be used by Service Users. 	Restriction of xs:positiveInteger (Enumeration)	request: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 4 DUIS Data Type CommandVariant Data Items

17.1.5 ServiceReference

It is included in the header of all requests and in the ResponseMessage of all solicited responses.

17.1.5.1 Data Type Format

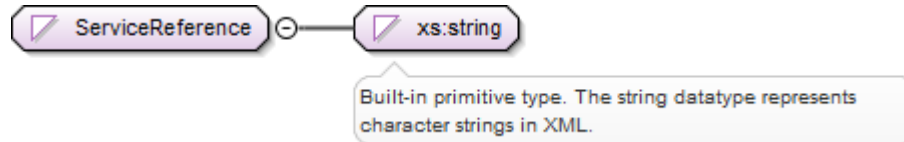


Figure 5 DUIS Data Type ServiceReference Structure

17.1.5.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ServiceReference	Identifier that signals the particular Service Request to DCC (and is driven from the DCC Service User's selection of Service Request) Valid set: <ul style="list-style-type: none">See Main Document Table 33 Service Reference column	Restriction of xs:string (Enumeration)	request: Yes Solicited response (DCC and Device): Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 5 DUIS Data Type ServiceReference Data Items

17.1.6 ServiceReferenceVariant

It is included in the header of all requests and in the ResponseMessage of all solicited responses.

17.1.6.1 Data Type Format

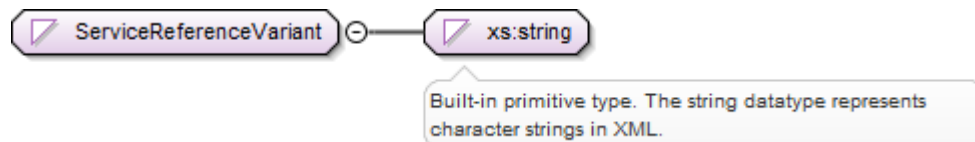


Figure 6 DUIS Data Type ServiceReferenceVariant Structure

17.1.6.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ServiceReferenceVariant	Identifier that signals the particular Service Request Variant to DCC (and is driven from the DCC Service User's selection of Service Request) Valid set: <ul style="list-style-type: none">See Main Document Table 33 Service Reference Variant column	Restriction of xs:string (Enumeration)	request: Yes Solicited response (DCC and Device): Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 6 DUIS Data Type ServiceReferenceVariant Data Items

17.1.7 ResponseCode

It is included in the header of all responses.

17.1.7.1 Data Type Format

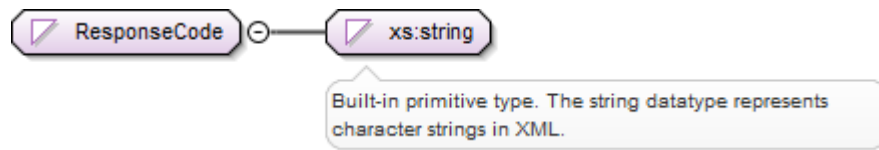


Figure 7 DUIS Data Type ResponseCode Structure

17.1.7.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ResponseCode	Code indicating the success or exceptions generated by the original request. These codes are listed in the Main Document (if generic), this document (if shared by several requests) or at a service request level where there is a specific response code for that request. Valid set: <ul style="list-style-type: none"> See section 17.1.22, Main Document section 12.3 and Annex 1 to Annex 16 validation sections. 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 7 DUIS Data Type ResponseCode Data Items

17.1.8 FutureDatedAbstractType

It is added to those Data Types used in Service Requests that can optionally be Future Dated.

17.1.8.1 Data Type Format



Figure 8 DUIS Data Type FutureDateAbstractType Structure

17.1.8.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000¹ 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 8 DUIS Data Type FutureDateAbstractType Data Items

¹ This date indicates that an existing Service Request of the same type for the same Device is to be cancelled. The time associated with this date should be 00:00:00.00Z, i.e. the ExecutionDateTime should be 3000-12-31T00:00:00.00Z

17.1.9 MandatoryFutureDatedAbstractType

It is added to those Data Types used in Service Requests that can only be Future Dated.

17.1.9.1 Data Type Format

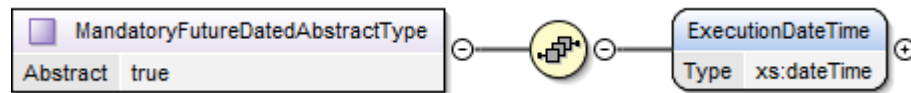


Figure 9 DUIS Data Type MandatoryFutureDateAbstractType Structure

17.1.9.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	<p>The UTC date and time the DCC User requires the command to be executed on the Device ID</p> <p>Valid set:</p> <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000¹ 	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive

Table 9 DUIS Data Type MandatoryFutureDateAbstractType Data Items

¹ This date indicates that an existing Service Request of the same type for the same Device is to be cancelled. The time associated with this date should be 00:00:00.00Z, i.e. the ExecutionDateTime should be 3000-12-31T00:00:00.00Z

17.1.10 Date

It supports the definition of date with and without wildcards. Where a date or date-time doesn't support wildcards the xs:date or xs:dateTime types are used instead.

For example in a calendar or schedule, it allows the definition of special dates, e.g. Christmas (only the Month and Day Of Month set to specified values of 12 and 25 respectively) or Sundays (only the Day Of Week set to a specified value of 7). It also supports the definition of dates without wildcards, e.g. 2014/09/30 (Year, Month and Day Of Month set to specified values of 2014, 09 and 30 respectively and Day Of Week set to the non-specified value).

The 'Date' Definition of Christmas would be:

```
<ExampleDateWithWildcardsChristmas>
  <Year>
    <NonSpecifiedYear/>
  </Year>
  <Month>
    <SpecifiedMonth>12</SpecifiedMonth>
  </Month>
  <DayOfMonth>
    <SpecifiedDayOfMonth>25</SpecifiedDayOfMonth>
  </DayOfMonth>
  <DayOfWeek>
    <NonSpecifiedDayOfWeek/>
  </DayOfWeek>
</ExampleDateWithWildcardsChristmas>
```

The 'Date' Definition of Sunday would be:

```
<ExampleDateWithWildcardsSunday>
  <Year>
    <NonSpecifiedYear/>
  </Year>
  <Month>
    <NonSpecifiedMonth/>
  </Month>
  <DayOfMonth>
    <NonSpecifiedDayOfMonth/>
  </DayOfMonth>
  <DayOfWeek>
    <SpecifiedDayOfWeek>7</SpecifiedDayOfWeek>
  </DayOfWeek>
</ExampleDateWithWildcardsSunday>
```

The 'Date' Definition of 2014/09/30 would be:

```
<ExampleDateNoWildcards>
  <Year>
    <SpecifiedYear>2014</SpecifiedYear>
  </Year>
  <Month>
    <SpecifiedMonth>09</SpecifiedMonth>
  </Month>
  <DayOfMonth>
    <SpecifiedDayOfMonth>30</SpecifiedDayOfMonth>
  </DayOfMonth>
  <DayOfWeek>
    <NonSpecifiedDayOfWeek/>
  </DayOfWeek>
</ExampleDateNoWildcards>
```

17.1.10.1 Data Type Format

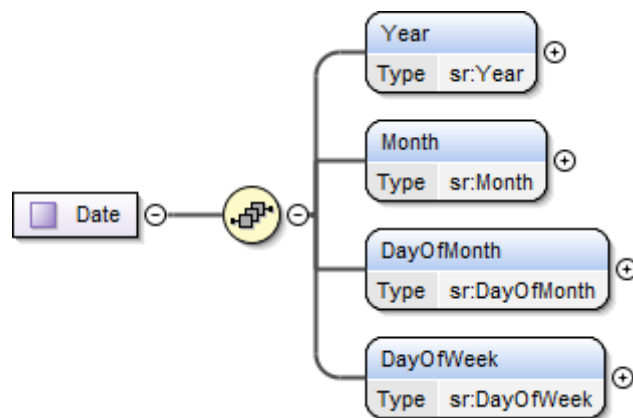


Figure 10 DUIS Data Type Date Structure

17.1.10.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Year	Specified or non-specified year	sr:Year (see section 17.1.11.2)	Yes	None	N/A	Non-Sensitive
Month	Specified or non-specified month	sr:Month (see section 17.1.12.2)	Yes	None	N/A	Non-Sensitive
DayOfMonth	Specified day of month or last day of month or second last day of month or non-specified day of month	sr:DayOfMonth (see section 17.1.13.2)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayOfWeek	Specified or non-specified day of week	sr:DayOfWeek (see section 17.1.14.2)	Yes	None	N/A	Non-Sensitive

Table 10 DUIS Data Type Date Data Items

17.1.11 Year

It supports the definition of Year with wildcards.

17.1.11.1 Data Type Format

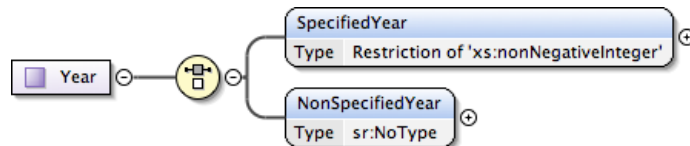


Figure 11 DUIS Data Type Year Structure

17.1.11.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedYear	Four digit year	Restriction of xs:nonNegativeInteger (minInclusive = 2014, totalDigits = 4)	No	None	N/A	Non-Sensitive
NonSpecifiedYear	Tag to indicate wildcard for year	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 11 DUIS Data Type Year Data Items

¹ Year is a choice of two elements, so one of them is mandatory

17.1.12 Month

It supports the definition of Month with wildcards.

17.1.12.1 Data Type Format

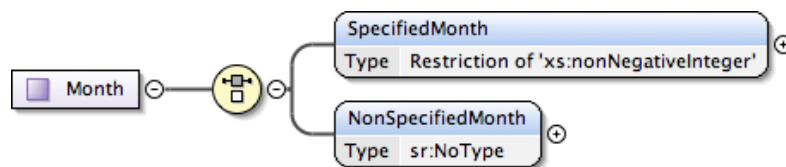


Figure 12 DUIS Data Type Month Structure

17.1.12.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
-----------	-------------------------	------	------------------------	---------	-------	-------------

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedMonth	Two digit month	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 12, totalDigits = 2)	No	None	N/A	Non-Sensitive
NonSpecifiedMonth	Tag to indicate wildcard for month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 12 DUIS Data Type Month Data Items

¹ Month is a choice of two elements, so one of them is mandatory

17.1.13 DayOfMonth

It supports the definition of Day of Month with wildcards.

17.1.13.1 Data Type Format

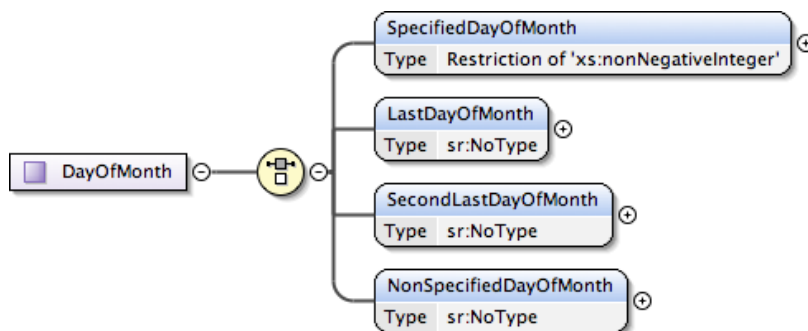


Figure 13 DUIS Data Type DayOfMonth Structure

17.1.13.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfMonth	Day of the month	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 31, totalDigits = 2)	No	None	N/A	Non-Sensitive
LastDayOfMonth	Tag to indicate last day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive
SecondLastDayOfMonth	Tag to indicate second last day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfMonth	Tag to indicate wildcard for day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 13 DUIS Data Type DayOfMonth Data Items

¹ Day Of Month is a choice of four elements, so one of them is mandatory

17.1.14 DayOfWeek

It supports the definition of Day of Week with wildcards.

17.1.14.1 Data Type Format

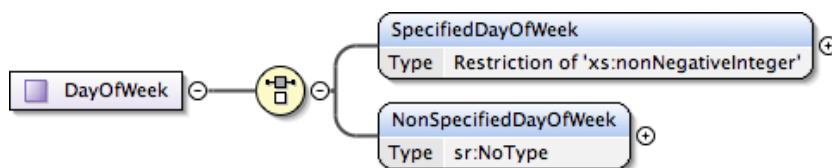


Figure 14 DUIS Data Type DayOfWeek Structure

17.1.14.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfWeek	One digit day of week, with Monday being 1 and Sunday 7	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 7)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfWeek	Tag to indicate wildcard for day of week	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 14 DUIS Data Type DayOfWeek Data Items

¹ Day Of Week is a choice of two elements, so one of them is mandatory

17.1.15 ReadLogPeriod

It defines the date-time period (no wildcards) to read a Log.

For example:

StartDateTime = 2014-02-20T00:00:00.00Z

EndDateTime = 2014-02-27T23:59:59.00Z

An End Date of 31/12/3000 will be interpreted by the DCC Data Systems as 'read to the end of the log' (The time associated with this date should be 00:00:00.00Z, i.e. the EndDateTime should be 3000-12-31T00:00:00.00Z). Note that only the current registered User Role, e.g. Import Supplier, will be able to 'read to the end of the log', because the generic authorisation check associated to E4 is applicable to the read log period. See Main Document of this documentation set section 7.4.

17.1.15.1 Data Type Format

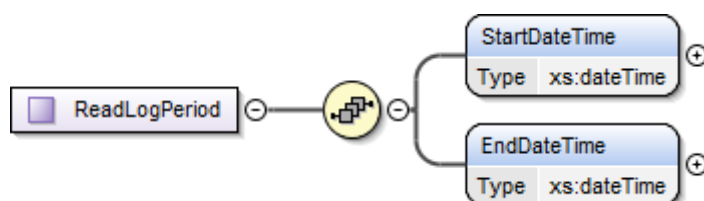


Figure 15 DUIS Data Type ReadLogPeriod Structure

17.1.15.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartDateTime	The date-time (in UTC) of the start of the data set required Valid set: <ul style="list-style-type: none"> For On Demand Requests, date-time not in the future For Future Dated Requests, date-time <= ExecutionDateTime 	xs:dateTime Note wild cards are not supported	Yes	None	UTC Date-Time	Non-Sensitive
EndDateTime	The date-time (in UTC) of the end of the data set required Valid set: <ul style="list-style-type: none"> >= StartDateTime 	xs:dateTime Note wild cards are not supported	Yes	None	UTC Date-Time	Non-Sensitive

Table 15 DUIS Data Type ReadLogPeriod Data Items

17.1.16 ReadLogPeriodOffset

Included in DSP Scheduled Service Requests that read a Log, to indicate the date-time period (no wildcards) for which the Log is to be read, relative to the current date. The DSP Schedule is created using this data item type. When the DSP Scheduled Service Request is to be run, the actual date-time period is built from it, resulting in a ReadLogPeriod data item type (see section 17.1.15). The DSP Scheduled Service Request Access Control is run against the ReadLogPeriod data items, to check that the Create Schedule sender is authorised to read data for the entire period requested. Otherwise a DCC Alert N7 ("DSP Scheduled" access control failure) will be sent to that DCC Service User.

For example, if the StartDateOffset is -8, the StartTime is 00:00:00, the EndDateOffset is -1 and the EndTime is 23:59:59.0, these values will be recorded on the DSP Schedule. If the DSP Scheduled Service Request is generated on the 28/02/2014, the ReadLogPeriod StartDateTime will be set to 2014-02-20T00:00:00.00Z and the EndDateTime to 2014-02-27T23:59:59.00Z. If access control succeeds (including the DCC Service User that sent the Create Schedule Service Request being authorised to read the corresponding Log between these two date-times), a Command will be generated for the Device to read that Log between these two date-times.

17.1.16.1 Data Type Format

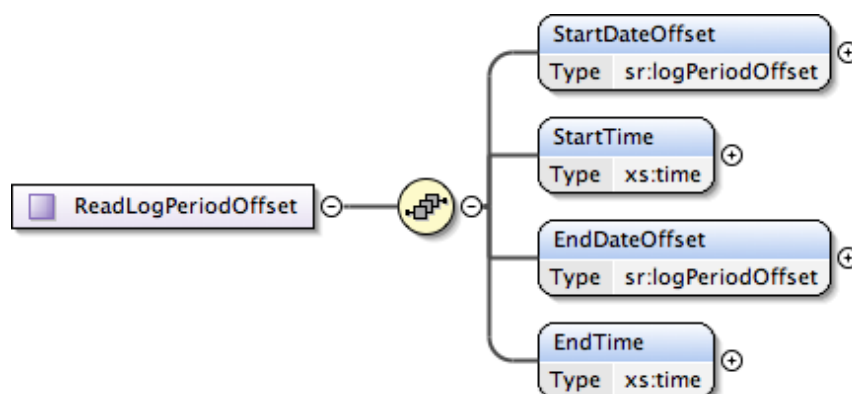


Figure 16 DUIS Data Type ReadLogPeriodOffset Structure

17.1.16.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartDateOffset	Number of days prior to or including the current date to set the start date for the data set required Valid set: between 0 and -400 days e.g. if StartDateOffset = -8, Start Date = Current Date – 8 days	sr:logPeriodOffset defined as a nonPositiveInteger between 0 and -400	Yes	None	N/A	Non-Sensitive
StartTime	The time of day on the Start Date the data has to start to be read e.g. if Start Date = 2014-02-20 and StartTime = 00:00:00.00Z, StartDateTime = 2014-02-20T00:00:00.00Z	xs:time	Yes	None	UTC Time	Non-Sensitive
EndDateOffset	Number of days prior to or including the current date to set the end date for the data set required Valid set: <= 0 and >= StartDateOffset e.g. if EndDateOffset = -1, End Date = Current Date – 1 days and between -400 and 0 days	sr:logPeriodOffset defined as a nonPositiveInteger between 0 and -400	Yes	None	N/A	Non-Sensitive
EndTime	The time of day on the End Date the data has to finish being read e.g. if End Date = 2014-02-27 and EndTime = 23:59:59.00Z, EndDateTime = 2014-02-20T23:59:59.00Z	xs:time	Yes	None	UTC Time	Non-Sensitive

Table 16 DUIS Data Type ReadLogPeriodOffset Data Items

17.1.17 ReadLogPeriodAbstractType

It defines the date-time period to read a Log to be used as a base type of those Service Requests that read a Log and can't be Future Dated.

17.1.17.1 Data Type Format

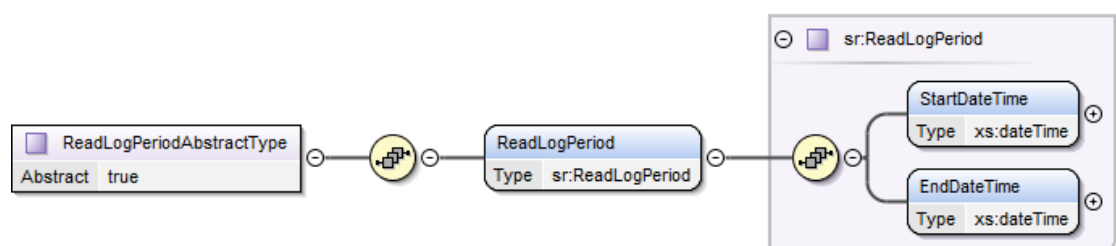


Figure 17 DUIS Data Type ReadLogPeriodAbstractType Structure

17.1.17.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ReadLogPeriod	The start and end date-time period for which the Log is to be read	sr:ReadLogPeriod (see section 17.1.15.2)	Yes	None	N/A	Non-Sensitive

Table 17 DUIS Data Type ReadLogPeriodAbstractType Data Items

17.1.18 ReadLogPeriodFDAbstractType

It defines the date-time period to read a Log to be used as a base type of those Service Requests that read a Log and can optionally be Future Dated.

17.1.18.1 Data Type Format

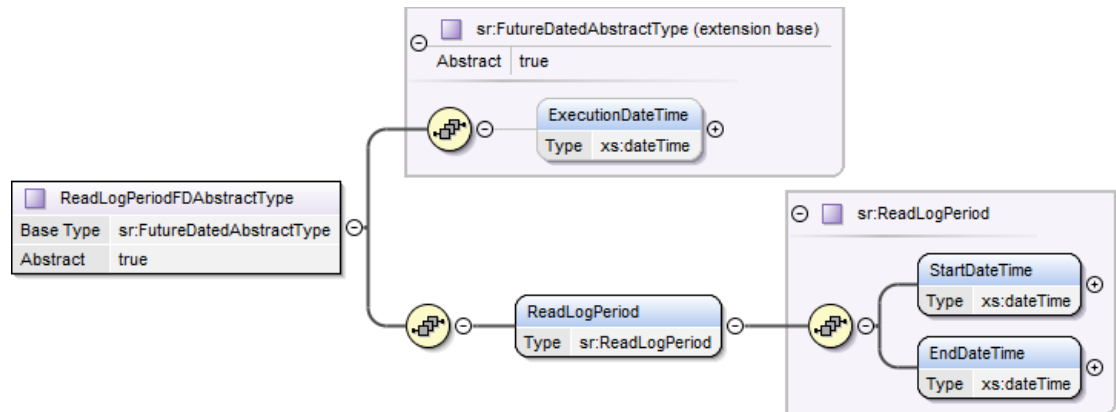


Figure 18 DUIS Data Type ReadLogPeriodFDAbstractType Structure

17.1.18.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime (see section 17.1.8.2)	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The start and end date-time period for which the Log is to be read	sr:ReadLogPeriod (see section 17.1.15.2)	Yes	None	N/A	Non-Sensitive

Table 18 DUIS Data Type ReadLogPeriodFDAbstractType Data Items

17.1.19 KAPublicSecurityCredentials

Key Agreement Public Security Credentials has to be included in a Read Service Request that returns sensitive data if the DCC Service User role is an Unknown Remote Party (URP) to the Device

17.1.19.1 Data Type Format

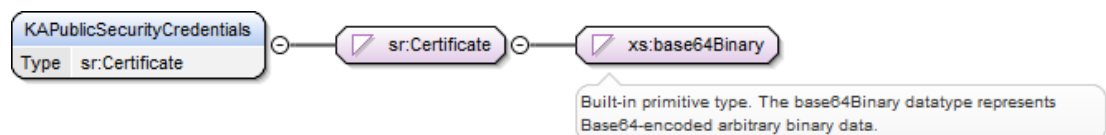


Figure 19 DUIS Data Type KAPublicSecurityCredentials Structure

17.1.19.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
KAPublicSecurity Credentials	The Key Agreement Public Security Credential (of the requesting DCC Service User) to be used where the request to read sensitive data is from an Unknown Remote Party (e.g. Other User, 'Old' Registered Supplier or, for Device Type Gas Smart Meter, Gas Network Operator)	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive

Table 19 DUIS Data Type KAPublicSecurityCredential Data Items

17.1.20 ScheduleDatesAndTime

Schedule Dates And Time defines the common elements included in the Electricity Schedules used in Service Requests 6.14.2, i.e. the Schedule Start and End Dates (with wildcards) and the Switch Time.

Note that Schedules are only used in Electricity GBCS Use Cases. Service Request 2.1 Gas UC uses a calendar structure and Service Requests 6.14.2 is not applicable to Gas.

17.1.20.1 Data Type Format

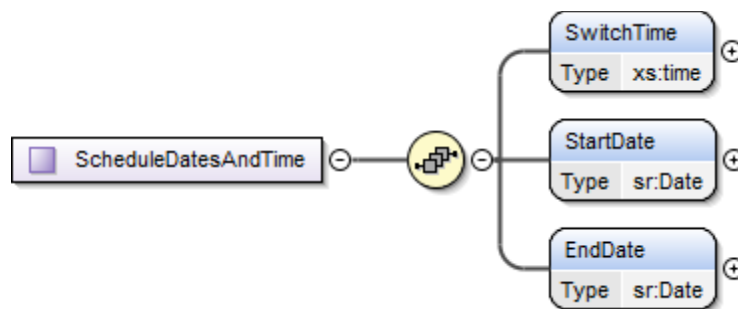


Figure 20 DUIS Data Type ScheduleDatesAndTime Structure

17.1.20.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchTime	The time of day when the schedule is to be activated	xs:time	Yes	None	N/A	Non-Sensitive
StartDate	Start of the date period when the schedule is applicable Valid set: <ul style="list-style-type: none"> Valid date (with wildcards). See section 17.1.10 	sr:Date (with wildcards) (see section 17.1.10)	Yes	None	N/A	Non-Sensitive
EndDate	End of the date period when the schedule is applicable Valid set: <ul style="list-style-type: none"> Valid date (with wildcards). See section 17.1.10 	sr:Date (with wildcards) (see section 17.1.10)	Yes	None	N/A	Non-Sensitive

Table 20 DUIS Data Type ScheduleDatesAndTime Data Items

17.1.21 ScheduleDatesAndTimeWithoutWildcards

Schedule Dates And Time Without Wildcards defines the common elements included in the Electricity Schedules used in Service Requests 2.1. i.e. the Schedule Start and End Dates (without wildcards) and the Switch Time.

Note that Schedules are only used in Electricity GBCS Use Cases. Service Request 2.1 Gas UC uses a calendar structure and Service Requests 6.14.2 is not applicable to Gas.

17.1.21.1 Data Type Format

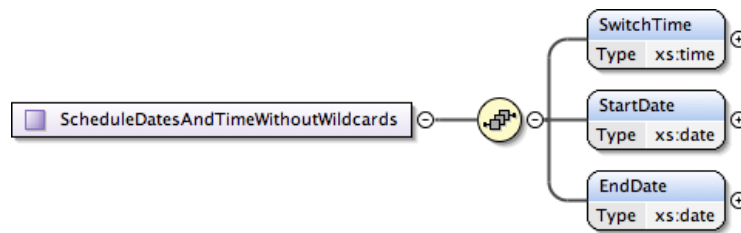


Figure 21 DUIS Data Type ScheduleDatesAndTimeWithoutWildcards Structure

17.1.21.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchTime	The time of day when the schedule is to be activated	xs:time	Yes	None	N/A	Non-Sensitive
StartDate	Start of the date period when the schedule is applicable Valid set: • Valid date	xs:date	Yes	None	N/A	Non-Sensitive
EndDate	End of the date period when the schedule is applicable Valid set: • Valid date	xs:date	Yes	None	N/A	Non-Sensitive

Table 21 DUIS Data Type ScheduleDatesAndTimeWithoutWildcards Data Items

17.1.22 NoType

A type definition to indicate that the specific data item does not have a type associated with it, and is simply an empty tag.

17.1.22.1 Data Type Format

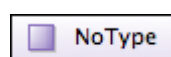


Figure 22 DUIS Data Type NoType Structure

17.1.23 scheduleID

The scheduleID uniquely defines a schedule on held by the DSP for a given device

17.1.23.1 Data Type Format

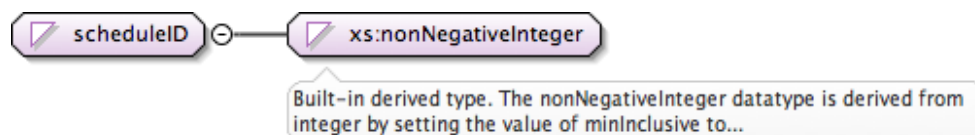


Figure 23 DUIS Data Type ServiceReferenceVariant Structure

17.1.23.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
scheduleID	Value between 0 and 1,000,000,000,000 that uniquely defines a schedule held by the DSP for a given device.	Restriction of xs:nonNegativeInteger	Yes	None	N/A	Non-Sensitive

17.1.24 GasDateWithWildcards

A number of Gas use cases allow a wildcard setting that allows for a repeating functionality.

For example in a calendar or schedule, it allows the definition of special dates, e.g. Christmas (only the Month and Day Of Month set to specified values of 12 and 25 respectively) or Sundays (only the Day Of Week set to a specified value of 7). It also supports the definition of dates without wildcards, e.g. 2014/09/30 (Year, Month and Day Of Month set to specified values of 2014, 09 and 30 respectively and Day Of Week set to the non-specified value).

The 'GasDateWithWildcards' Definition of Christmas would be:

```
<ExampleDateWithWildcardsChristmas>
  <GasYearWithWildcards>
    <NonSpecifiedYear/>
  </GasYearWithWildcards>
  <GasMonthWithWildcards>
    <SpecifiedMonth>12</SpecifiedMonth>
  </GasMonthWithWildcards>
  <GasDayOfMonthWithWildcards>
    <SpecifiedDayOfMonth>25</SpecifiedDayOfMonth>
  </GasDayOfMonthWithWildcards>
  <GasDayOfWeekWithWildcards>
    <NonSpecifiedDayOfWeek/>
  </GasDayOfWeekWithWildcards>
</ExampleDateWithWildcardsChristmas>
```

The 'Date' Definition of Sunday would be:

```
<ExampleDateWithWildcardsSunday>
  <GasYearWithWildcards>
    <NonSpecifiedYear/>
  </GasYearWithWildcards>
  <GasMonthWithWildcards>
    <NonSpecifiedMonth/>
  </GasMonthWithWildcards>
  <GasDayOfMonthWithWildcards>
    <NonSpecifiedDayOfMonth/>
  </GasDayOfMonthWithWildcards>
  <GasDayOfWeekWithWildcards>
    <SpecifiedDayOfWeek>7</SpecifiedDayOfWeek>
  </GasDayOfWeekWithWildcards>
</ExampleDateWithWildcardsSunday>
```

The 'Date' Definition of 2014/09/30 would be:

```
<ExampleDateNoWildcards>
  <GasYearWithWildcards>
    <SpecifiedYear>2014</SpecifiedYear>
  </GasYearWithWildcards>
  <GasMonthWithWildcards>
    <SpecifiedMonth>9</SpecifiedMonth>
  </GasMonthWithWildcards>
  <GasDayOfMonthWithWildcards>
    <SpecifiedDayOfMonth>30</SpecifiedDayOfMonth>
  </GasDayOfMonthWithWildcards>
```

```
<GasDayOfWeekWithWildcards>
  <NonSpecifiedDayOfWeek/>
</GasDayOfWeekWithWildcards>
</ExampleDateNoWildcards>
```

17.1.24.1 Data Type Format

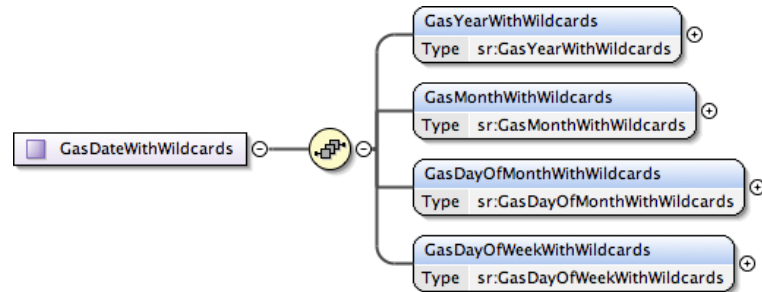


Figure 24 DUIS Data Type GasDateWithWildcards Structure

17.1.24.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GasYearWithWildcards	Specified or non-specified year	sr:GasYearWithWildcards (see section 17.1.25)	Yes	None	N/A	Non-Sensitive
GasMonthWithWildcards	Specified or non-specified month	sr:GasMonthWithWildcards (see section 17.1.26)	Yes	None	N/A	Non-Sensitive
GasDayOfMonthWithWildcards	Specified day of month or last day of month or second last day of month or non-specified day of month	sr:GasDayOfMonthWithWildcards (see section 17.1.27)	Yes	None	N/A	Non-Sensitive
GasDayOfWeekWithWildcards	Specified or non-specified day of week	sr:GasDayOfWeekWithWildcards (see section 17.1.28)	Yes	None	N/A	Non-Sensitive

Table 22 DUIS Data Type Date Data Items

17.1.25 GasYearWithWildcards

It supports the definition of Year with wildcards.

17.1.25.1 Data Type Format

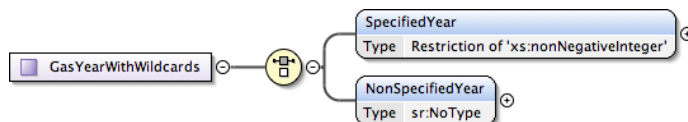


Figure 25 DUIS Data Type GasYearWithWildcards Structure

17.1.25.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedYear	Four digit year	Restriction of xs:nonNegativeInteger (minInclusive = 2014, totalDigits = 4)	No	None	N/A	Non-Sensitive
NonSpecifiedYear	Tag to indicate wildcard for year	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 23 DUIS Data Type GasYearWithWildcards Data Items

¹ GasYearWithWildcards is a choice of two elements, so one of them is mandatory

17.1.26 GasMonthWithWildcards

It supports the definition of Month with wildcards.

17.1.26.1 Data Type Format

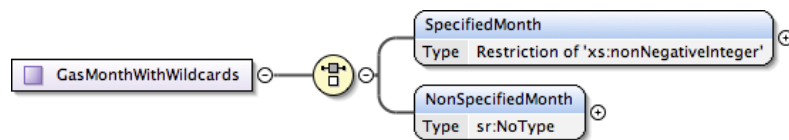


Figure 26 DUIS Data Type GasMonthWithWildcards Structure

17.1.26.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedMonth	The month January = 1 December = 12	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 12, totalDigits = 2)	No	None	N/A	Non-Sensitive
NonSpecifiedMonth	Tag to indicate wildcard for month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 24 DUIS Data Type GasMonthWithWildcards Data Items

¹ GasMonthWithWildcards is a choice of two elements, so one of them is mandatory

17.1.27 GasDayOfMonthWithWildcards

It supports the definition of Day of Month with wildcards.

17.1.27.1 Data Type Format

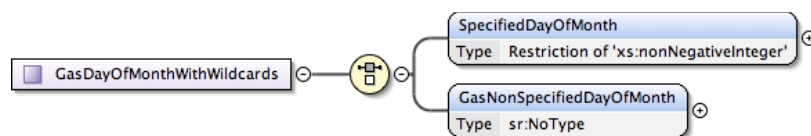


Figure 27 DUIS Data Type GasDayOfMonthWithWildcards Structure

17.1.27.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfMonth	The day of the month	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 31, totalDigits = 2)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfMonth	Tag to indicate wildcard for day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 25 DUIS Data Type GasDayOfMonthWithWildcards Data Items

¹ GasDayOfMonthWithWildcards is a choice of two elements, so one of them is mandatory

17.1.28 GasDayOfWeekWithWildcards

It supports the definition of Day of Week with wildcards.

17.1.28.1 Data Type Format

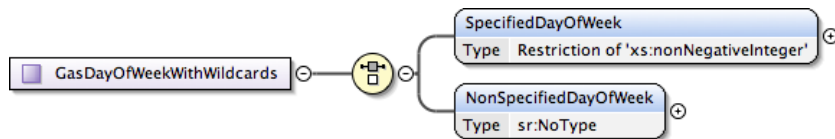


Figure 28 DUIS Data Type GasDayOfWeekWithWildcards Structure

17.1.28.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfWeek	Day of the week, with Monday being 1 and Sunday 7	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 7)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfWeek	Tag to indicate wildcard for day of week	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 26 DUIS Data Type GasDayOfWeekWithWildcards Data Items

¹ GasDayOfWeekWithWildcards is a choice of two elements, so one of them is mandatory

17.2 Validation

The specific validation applicable to the DUIS Defined Shared Data Types is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the Execution Date Time in a Future Dated Request valid? ¹	Check that the Execution Date Time is a date-time in the Future and either no later than the current date plus 30 days or the 31/12/3000 ⁵	E1000
Is the Read Log Period Start Date Time not later than the required execution date-time?	Check that the Read Log Period (sr:ReadLogPeriod) Start Date Time is not later than the current date-time for "On Demand" and the Execution Date Time for "Future Dated" requests	E1001
Is the Read Log Period End Date Time valid?	Check that the Read Log Period (sr:ReadLogPeriod) End Date Time is not earlier than the Log Start Date Time	E1003
Is the Read Log Period Offset EndDate Offset valid?	Check that the Read Log Period Offset (sr:ReadLogPeriodOffset) End Date Offset is not earlier than the Read Log Period Offset Start Date Offset	E1004
Are the Public Security Credentials included?	For those Service Request that return Sensitive data and are available to Device URPs ² (e.g. 'Old' Registered Supplier and 'Other User'), check that the Key Agreement Public Security Credentials are included in Service Requests submitted by URPs and not included otherwise	E1006
Are the Public Security Credentials valid? ³	For those Requests that include Public Security Credentials in the body: Check that the certificates used in the chain of trust have NOT expired (i.e. their expiry date is post the date of check or, for Future Dated Requests, post the Execution Date) and that the certificates used in the chain of trust have NOT been revoked (i.e. they are not included in the Certificate Revocation List) Check that all required Certificate Authority certificates are included in the Request and that no unnecessary Certificate Authority certificates have been provided.	E1007 ⁷
Does the Device included in the Request exist? ⁴	For those Requests that include a Device ID in the body, check that the Device ID exists in the Smart Metering Inventory	E1008
Is the Service Request valid for the Target Device?	<ul style="list-style-type: none"> On Demand or Future Dated Service Requests: Check that if the Business Target ID Device Type is GSME that the DCC Service User Role is GIS, and that they are the current registered Supplier for that device. Create Schedule (for DSP Scheduled Service Requests): Check that if the Device ID Device Type is GSME that the DCC Service User Role is GIS, and that they are the current registered Supplier for that device. 	E1010
Is the Service Request Target Device a Dual Band CHF? ⁶	Check that the Service Request's Target Device is a Dual Band Communications Hub	E1011

Table 27 DUIS Defined Shared Data Types Service Request Validation Checks

¹ Validation applicable to Service Requests and GBCS Commands (Signed Pre-Commands). Note that the execution date-times within GBCS Commands will also be checked

² The URPs to which this validation applies are Service Reference Variant dependent

³ Only for Service Requests or Signed Pre-Commands that include Public Security Credentials in the Request body, e.g. those that read sensitive data and are applicable to URPs and those that update security credentials

⁴ Not applicable to Service Reference Variant 12.2 (Device Pre-notification) which is used to add Devices to the Smart Metering Inventory

⁵ This date indicates that an existing Service Request of the same type for the same Device is to be cancelled

⁶ Validation only applicable to Service Requests 6.28, 6.29, 6.30, 6.31 and 6.32. This check will only fail for CHF's recorded by the DCC Data Systems as having a "Single Band (2.4GHz only)" HAN Variant and a Firmware version certified to GBCS v2.0 or later (if the CHF Firmware version is certified to GBCS v1.0 validation error E57 will be returned instead). Please see HAN Variant for the corresponding CHF Device Id returned by Service Request 8.2 (Read Inventory) Response or by the SSI Read Inventory screen

⁷ Please note additional security validation applies from June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details.

17.3 Response Codes

The Response Codes applicable to the DUIS Defined Shared Data Types are as follows (see Main Document of this documentation set section 12.3 for generic Response Codes):

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types
E1000	Failed Validation – Invalid Date-Time for Future Dated Request	Error	Future Dated Service Request Execution Date-Time is not valid	Acknowledgement
E1001	Failed Validation – Log Period Start Date Time later than required execution date-time	Error	The Log Period (sr:ReadLogPeriod) Start Date Time is later than the current date-time for "On Demand" or the Execution Date Time for "Future Dated" requests	Acknowledgement
E1003	Failed Validation – Log Period End Date Time earlier than Start Date Time	Error	The Log Period (sr:ReadLogPeriod) End Date Time is earlier than the Log Period Start Date Time	Acknowledgement
E1004	Failed Validation – Log Period Offset End Date smaller than Start Date	Error	The Log Period Offset (sr:ReadLogPeriodOffset) End Date is smaller (earlier) than the Log Period Offset Start Date Time	Acknowledgement
E1006	Failed Validation – Security Credentials mismatch	Error	For those Service Requests that include sensitive data in the Response: Service Requests from Device URPs (e.g. 'old' Registered Supplier and 'Other User') don't include the DCC Service User's Key Agreement Public Security Credentials or are included in other cases	Acknowledgement

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types
E1007 ¹	Failed Validation – Invalid Security Credentials	Error	For those Service Requests that include Public Security Credentials in the body: At least one of the certificates used in the chain of trust has expired or been revoked or has an incorrect format, or required Certificate Authority certificates are missing from the Request, or unnecessary Certificate Authority certificates have been provided.	Acknowledgement and DCC Alerts
E1008	Failed Validation – Invalid Device ID	Error	The Device ID included in the Request body doesn't exist in the Smart Metering Inventory	Acknowledgement
E1010	Failed Validation – Invalid Device Type	Error	The Device Type is invalid	Acknowledgement
E1011	Failed Validation – Device not a Dual Band Communications Hub	Error	The DCC does not have this Device recorded as a Dual Band Communications Hub	Acknowledgement

Table 28 DUIS Defined Shared Data Types DCC Data Systems Response Codes

¹ Please note additional security validation applies from June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details.

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 18 – Parse Output

Author: DCC
Version: v5.2a
Date: June 2023

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18 Parse Output

18.1 Introduction

This document contains description of the XML schema used for the DCC Service User Parse Output, which is the format in which the Parse software returns the interpretation of GBCS payload to DCC Service Users. There is an accompanying XML schema, the DCC Service User Parse Output XML Schema, referred to more briefly as the MMC XML Schema. Please note that this is a separate XML Schema to the DUIS XML Schema used for Service Requests and responses, as defined in Appendix 2 of the main document. They are referred to as follows:

- The DUIS XML Schema XSD (document 3 of this documentation set);
- the MMC XML Schema XSD (document 4 of this documentation set).

The DCC Service User Parse Output is used in the interaction between DCC Service User systems and the Parse software, after responses have been sent by the DSP to the DCC Service User. Messages sent by the DSP which were not originated by a Device will not use the DCC Service User Parse Output.

SMETS1 Service Responses and Device Alerts do not use the DCC Service Parse Output, but do use the MMC XML Schema. Because of this, some changes have been made to the MMC XML Schema v3.0 and to this document where common parts are affected.

This Annex section 18 describe the use of MMC XML for data from SMETS2 or later Devices. See Annex section 19 for the use of MMC XML for data from SMETS1 Devices.

This section and its contents shall only be used by DCC Service Users who choose to use the Parse Software as provided by the DCC. If a DCC Service User chooses not to use the Parse Software then the contents of this Annex 18 will not be applicable and can be ignored.

18.2 Context

The Parse Output is used to enable an XML representation of data in the GBCS payload XML element of the Service Response from a Device. It is used in the interaction between DCC Service User systems and the Parse software, after Service Responses and Device Alerts containing GBCS payload have been sent by the DSP to the DCC Service User.

The main document section 2.2 describes the context in which the Parse software is used.

The Device data returned by the Parse Output should be in conformance with SMETS definitions.

18.3 XML Schema

The XML Schema used for the Parse output format, known as the MMC XML Schema, defines the format of XML responses and Device Alerts which will be returned by Parse software. The MMC XML Schema imports data types from the DUIS XML schema.

The XML representation of the GBCS payload in response to each Service Request is normally based on the same name as the corresponding Service Request in the DUIS XML schema, with the addition of the suffix "Rsp" at the end, for example UpdateMeterBalance and UpdateMeterBalanceRsp.

Service Requests for which there is no GBCS payload response from a Device, e.g. DCC-only Service Requests, will not have a corresponding response in the MMC XML Schema.

Device Alerts are also passed from Parse software to the users in conformance to the MMC XML Schema, as described in section 18.4.3.

The namespace defined and used within the MMC XML Schema is "ra". From MMC v3.0, the MMC XML Schema XSD no longer imports XML types from the DUIS XML Schema XSD, and the XML types which were formerly imported in that way have been duplicated within the MMC

XML Schema XSD. This means that for elements where the namespace was previously defined as “sr”, from MMC v3.0 they will have the namespace “ra”, but will be otherwise identical.

Where those XML types duplicated within MMC are featured in SRV descriptions, for references to further details the DUGIDS annex documents continue to refer to sections within the DUGIDS document set that describe the equivalent DUIS XML definitions.

18.4 XML High-Level Response Structure

The XML which carries the data extracted from the GBCS payload sent by a Device consists of a header which is in common between Service Responses and Device Alerts, and a body which will be either Service Response data or Device Alert data, structured by different types according to Service Request Variant or Device Alert Code.

DCC-only Service Responses and DCC Alerts are not sent as GBCS and therefore will not be returned by Parse software.

There is no MAC or signature information included in these headers. MAC and/or signature information appears in Service Responses for use where needed, e.g. for the DCC Service User to carry out integrity checks on Service Responses sent by the DCC, but do not need to be in the MMC XML Schema.

The top-level structure is shown in the following diagram.

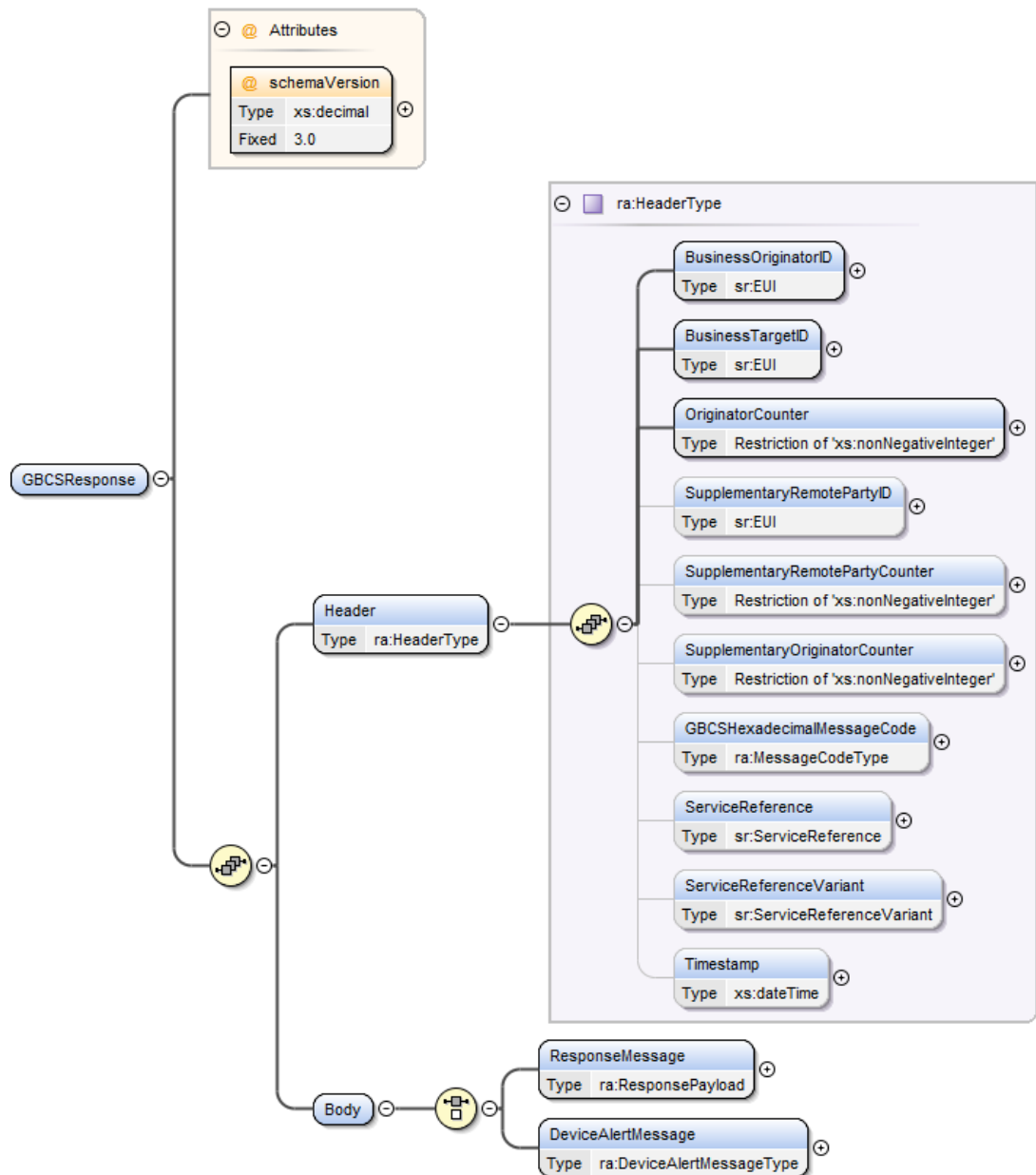


Figure 1 High-level response structure

As can be seen from the diagram above, the top-level element is of XML type GBCSResponse and contains a header and a body. The body is a choice between elements of the one of the following XML types:

- ResponseMessage. This is used to hold an XML representation of data returned in the GBCSPayload of a Service Response, as sent to the DCC by a Device, and which has then been passed to the Parse Software by the DCC Service User.
- DeviceAlertMessage. This is used to hold an XML representation of data which has been sent by a Device to the DCC as a Device Alert and which has then been passed to the Parse Software by the DCC Service User.

The header also contains information extracted from the GBCS payload, which in some cases will be a duplication of information in the Service Response that contained the GBCS payload.

The header and the body are described in the following sections.

18.4.1 Header

When a message is sent to a DCC Service User by the DSP, based on a GBCS message sent by a Device containing data intended for a DCC Service User, there will be header information in the Service Response, and additional header information will be contained within the GBCS payload. The header information described here is the header data within the GBCS payload sent by the Device, unpacked into an XML document conforming to the MMC XML Schema.

The Originator/Target relationship of the GBCS message will be between the DCC Service User and Device in most cases, except for cases where the DCC Service User is an Unknown Remote Party to the Device, or the request is DSP-scheduled, in which case it will be between the DSP and the Device.

See main document section 4 for illustrations of which Business Originator ID, Business Target ID and Originator Counter are used inside the GBCS payload in different circumstances. The ID of the DCC Service User for which the Service Response is intended will be in the SupplementaryRemotePartyID field in cases as listed in GBCS section 4.3.1.4, and in the BusinessTargetID field otherwise.

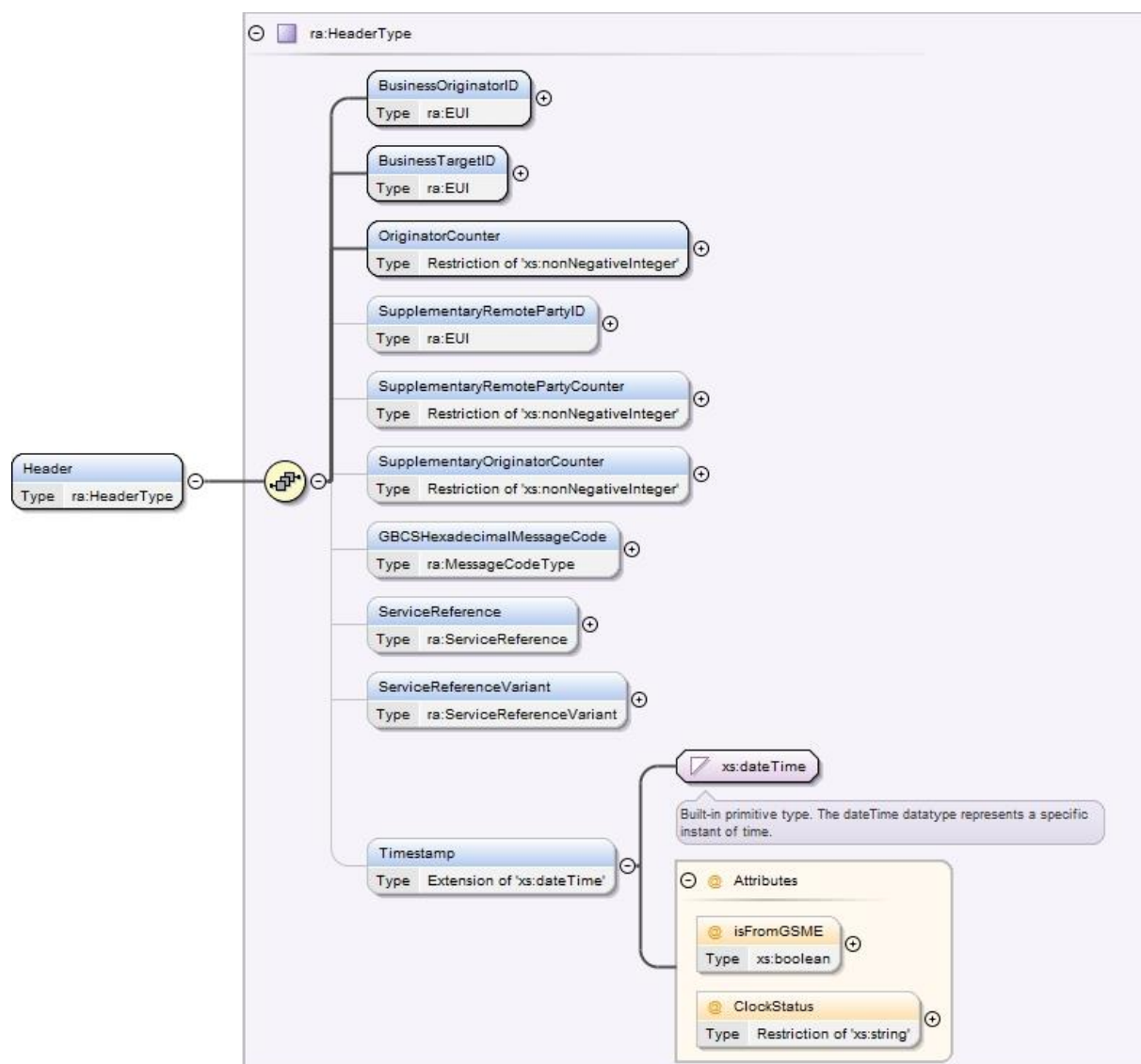


Figure 2 Header response structure

The XML header structure includes the following fields:

Data Item	Description	Type	Mandatory	Valid Values
BusinessOriginatorID	The Device ID of the Device which sent the GBCS payload. See main document section 4 for usage	ra:EUI	Yes	EUI-64 value, formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive
BusinessTargetID	In some cases as listed in GBCS 4.3.1.4 this will be the ID of the DSP Access Control Broker, and in most cases it will be the ID of the DCC Service User for which the GBCS payload is intended. See main document section 4 for usage	ra:EUI	Yes	EUI-64 value, formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-BB-CC-DD-EE-FF-11-22”. It is case insensitive
OriginatorCounter	For Service Responses the Originator Counter for this message from the DCC Service User which sent the GBCS payload (or the DSP Access Control Broker in cases where the DCC Service User is an Unknown Remote Party to the Device). See main document section 4 for usage. For Device Alerts it will be the Device's Originator Counter.	xs:nonNegativeInteger	Yes	≥ 0 and $< 2^{64}$, e.g. 1234
SupplementaryRemotePartyID	For responses this will refer to the DCC Service User in cases where the GBCS command to the Device was originated by the DSP. It is not used otherwise. See GBCS 4.3.1.4. For Device Alerts it will be the DCC Service User ID of the second party to the Device Alert if there is one.	ra:EUI	No	EUI-64 value, formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive
SupplementaryRemotePartyCounter	For responses this will refer to the DCC Service User in cases where the GBCS command to the Device was originated by the DSP. It is not used otherwise. See GBCS 4.3.1.4.	xs:nonNegativeInteger	No	≥ 0 and $< 2^{64}$, e.g. 1234
SupplementaryOriginatorCounter	This will be used for particular GBCS use cases in the circumstances listed in GBCS 4.3.1.4. It is not used otherwise. See GBCS 4.3.1.4.	xs:nonNegativeInteger	No	≥ 0 and $< 2^{64}$, e.g. 1234

Data Item	Description	Type	Mandatory	Valid Values
GBCSHexadecimalMessageCode	<p>The Message Code corresponding to the GBCS use case, e.g. 0021 (ECS10 Send Message to ESME) or 0071 (GCS07 Send Message to GSME).</p> <p>For Device Alerts the Message Code will be populated with generic codes used for Device Alerts unless there is a specific GBCS Use Case for it; see annex 15 section 15.3.1 for more details.</p> <p>Message Codes will be represented in XML by 4 hexadecimal characters e.g. "0021", without the leading "0x" convention used in GBCS documentation.</p>	xs:hexBinary	Yes	Values in 16 bit hexadecimal from 0001, as defined in GBCS Table 15.
ServiceReference	Identifier that signals the particular Service Request for which the response has been generated.	sr:ServiceReference (see Annex section 17)	No (required for a Service Response, not for a Device Alert)	See Main Document Table 33 Service Reference column
ServiceReferenceVariant	Identifier that signals the particular Service Request for which the response has been generated.	sr:ServiceReferenceVariant (see Annex section 17)	No (required for a Service Response, not for a Device Alert)	See Main Document Table 33 Service Reference Variant column
Timestamp	<p>The time as sent by the Device, in UTC time.</p> <p>SMETS2:</p> <p>If the IsFromGSME attribute of the Timestamp in the Response is set to true, then this indicates that the value of Timestamp is set by the GSME, not the GPF.</p> <p>Additionally the ClockStatus attribute provides information about the timestamp. Valid set:</p> <ul style="list-style-type: none"> reliable unreliable invalid. 	<p>Extension of xs:dateTime (contains the optional attributes</p> <ol style="list-style-type: none"> 'IsFromGSME' ¹ of type xs:boolean 'ClockStatus' ², which is a restriction of type xs:string <p>)</p>	No	UTC Date-Time

Table 1 Service Request Response Header Data Items

¹ This can only be present where indicated in Annex 4 that the Timestamp parameter can include it. See Table 1.1.

² This can only be present where indicated in Annex 4 that the Timestamp parameter can include it. See Table 1.2.

The following table shows how the IsFromGSME attribute of Timestamp will be populated by Parse for responses returned using MMC v5.1 or later. The attributes will not be present where responses are returned using an MMC version prior to MMC v5.1.

	GSME's GBCS version is v4.2 or later	GSME's GBCS version is prior to v4.2
GPF's GBCS version is v4.2 or later	True: The date-time source is GSME's clock; bit 2 is set in attribute 4 of the Clock object False: The date-time source is GPF's clock; bit 2 is unset in attribute 4 of the Clock object	False
GPF's GBCS version is prior to v4.2	False	False

Table 1.1 Derivation of the IsFromGSME attribute of Timestamp

The following table shows how the ClockStatus attribute of Timestamp will be populated by Parse for responses returned using MMC v5.1 or later. The attributes will not be present where responses are returned using an MMC version prior to MMC v5.1.

	GSME's GBCS version is v4.2 or later	GSME's GBCS version is prior to v4.2
GPF's GBCS version is v4.2 or later	<ul style="list-style-type: none"> Where IsFromGSME is True: ClockStatus is the clock status of the GSME Where IsFromGSME is False: ClockStatus is the clock status of the GPF 	ClockStatus will always be the clock status of the GPF
GPF's GBCS version is prior to v4.2	ClockStatus will always be the clock status of the GPF	ClockStatus will always be the clock status of the GPF

Table 1.2 Derivation of the ClockStatus attribute of Timestamp

18.4.2 Body for a Service Response

Within the XML message containing data extracted from a GBCS payload XML element sent from the Device to DCC Service User, as well as a header XML structure there will be a body XML structure which contains data corresponding to either a Service Response or a Device Alert.

The response body features, at its top level, a sequence of three optional XML structures;

- A SMETSData group, which will hold the translated data from the message. In most cases this will be the only XML structure in the response body. It contains the overall status of the message, and successful data from GBCS responses if the GBCSPayload contains meaningful successful data. This structure will always be present except for cases where the message contains sensitive data which must be decrypted first, in which case SMETSData won't be included until the decrypted data has been returned by the DCC Service User calling a separate Parse function as defined in the Parse and Correlate Software.
- A GBCSData group, which can contain plain or encrypted raw GBCSData for an intermediate stage in Parse processing, where there is encrypted data in the GBCS payload included as part of the response.

- A DebugInfo group featuring any status information returned as part of an unsuccessful DLMS/COSEM or ZigBee message (this applies to most of them, the exception being the relatively small number coded in ASN.1 directly, which are mainly security-related). ASN.1 unsuccessful responses do not have an equivalent DebugInfo structure, instead status messages are embedded in the response in the SMETSData structure. The GBCS Use Cases which use ASN.1 data structures are listed and defined in GBCS section 13.

This is illustrated in the following diagram.

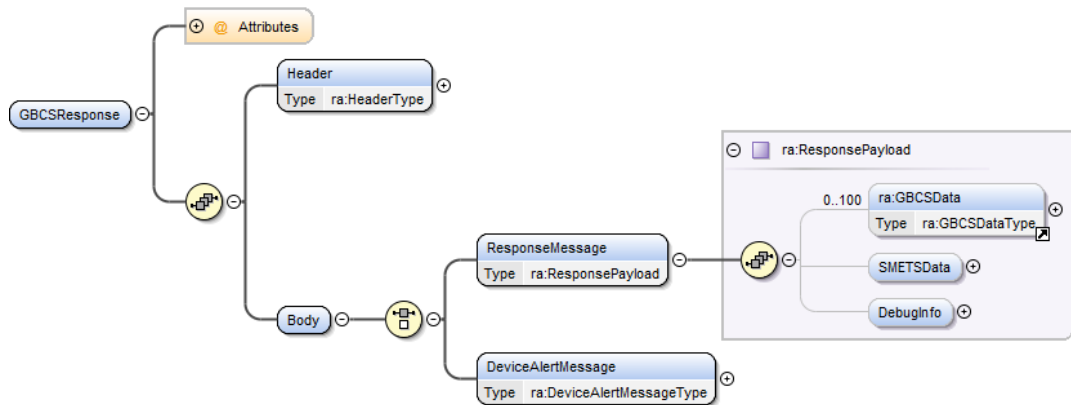


Figure 3 Response Body ResponseMessage XML type

The SMETSData group contains a choice of structures dependent on which service request it is responding to. Each one will include:

- A Boolean attribute called MessageSuccess, which is true for a message which was returned with no errors from the Device, and false if any error responses were returned;
- a set of elements corresponding to individual data items relevant to the Service Response.

The following diagram shows an illustration of some of the response types available in the SMETSData group. In the full list there is an XML type for the Service Response corresponding to each Service Request.

The full list is not shown because it would be too much detail for a diagram like this. The full list is available in the MMC XML Schema.

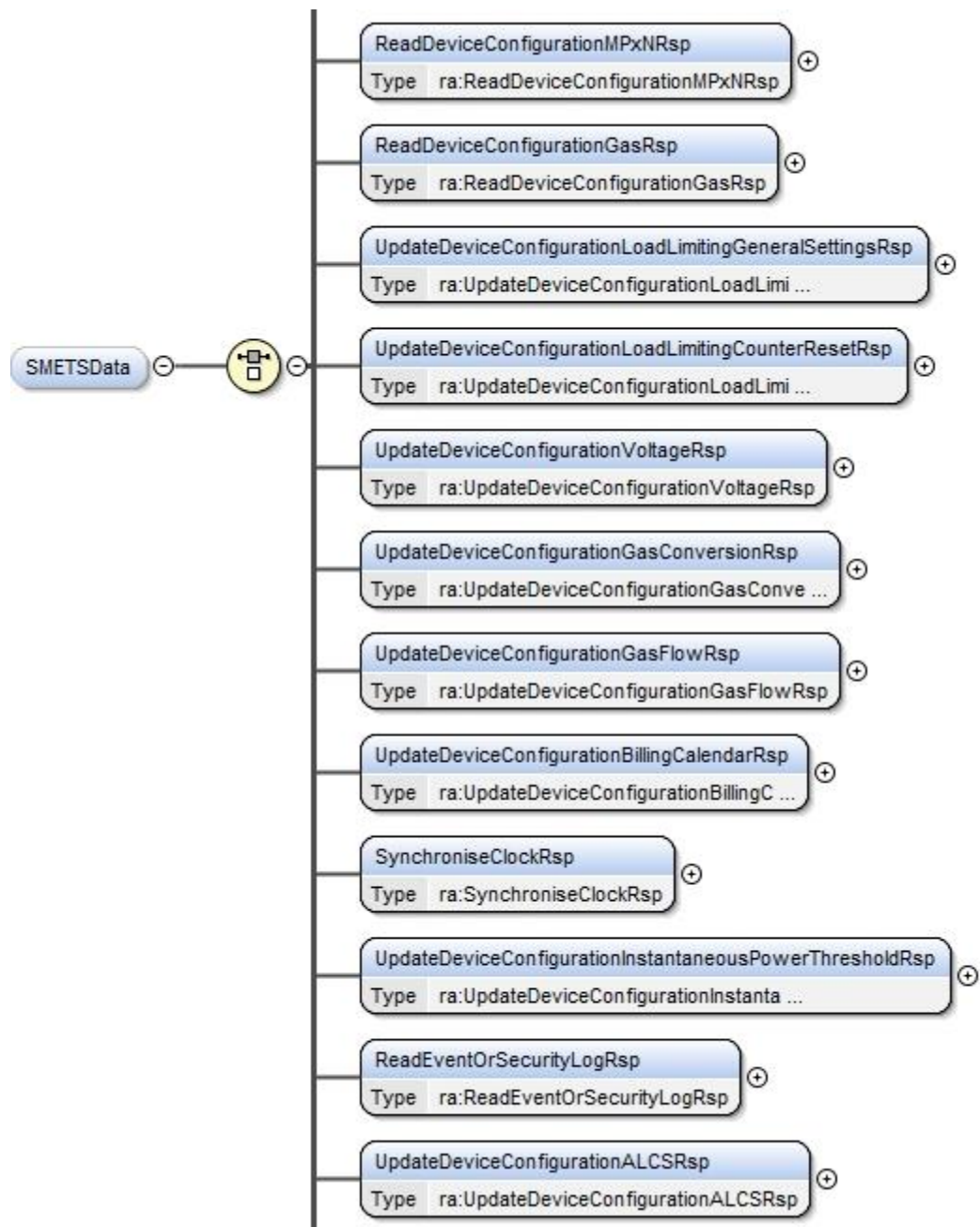


Figure 4 Response Body SMETSData with subset of response XML types (truncated for readability)

The structures corresponding to individual Service Response types are shown in the annexes corresponding to groups of Service Requests, e.g. Annex section 4 contains the Service Responses to read Service Requests such as 4.1.1.

Where applicable, common data returned by Electricity Smart Meters and Gas Smart Meters or Gas Proxy Functions are shared data items in the Service Responses to individual Service Requests. In cases where a response data item is applicable only to one of gas or electricity, this is found in a fuel-specific XML choice structure within the response message, and identified in data description tables for the response in the appropriate annex.

An example of Service Response with data differences between electricity and gas is shown below.

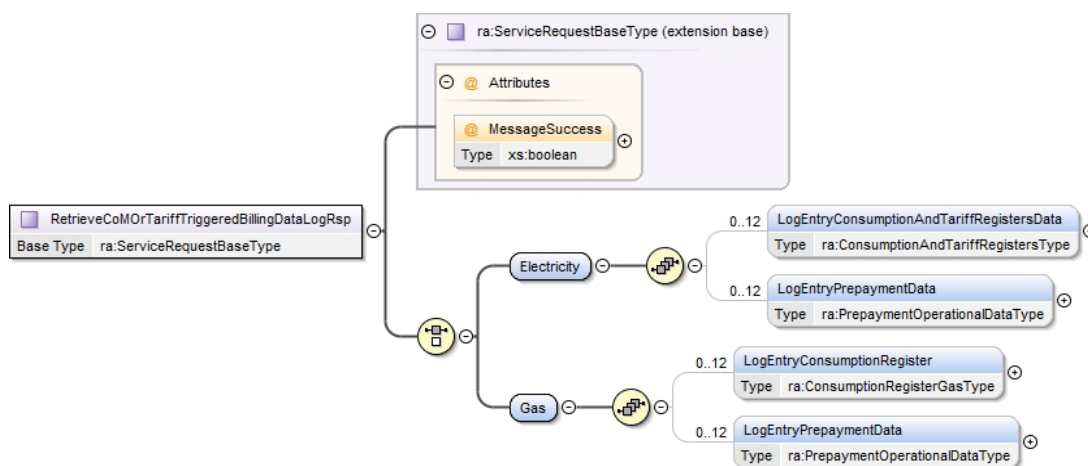


Figure 5 Response Body Example

18.4.3 Body for a Device Alert

Within the XML message containing data extracted from a Device Alert's GBCS payload, as well as a header there will be a body which contains data from the Device Alert. The majority of Device Alerts, as defined in GBCS, do not return any Device Alert specific additional information other than the identifier of the Device Alert and the time it was generated. Data common to all Device Alerts is shown in Table 2 Alert Data Items below. Each Device Alert will also have a timestamp, which is in the header of the XML message, as shown in Figure 2 in section 18.4.1.

Where Device Alerts have additional data sent by the Device there are specific XML types in the schema to represent the additional data.

In some cases, as defined by GBCS, Device Alerts can also contain encrypted data, which are handled in the same way as encrypted data in responses; see section 18.7.

See Annex section 15 for details of the DUIS XML Schema response wrapper for Device Alerts.

The structure is shown in the following diagram.

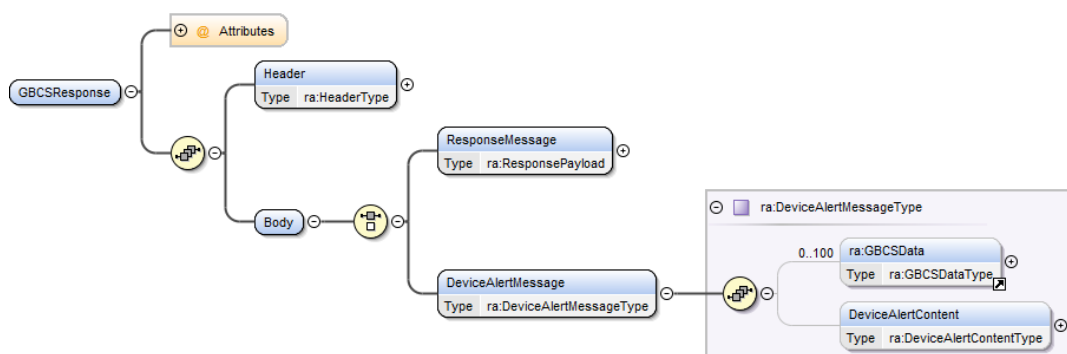


Figure 6 Alert Body DeviceAlertMessage XML type

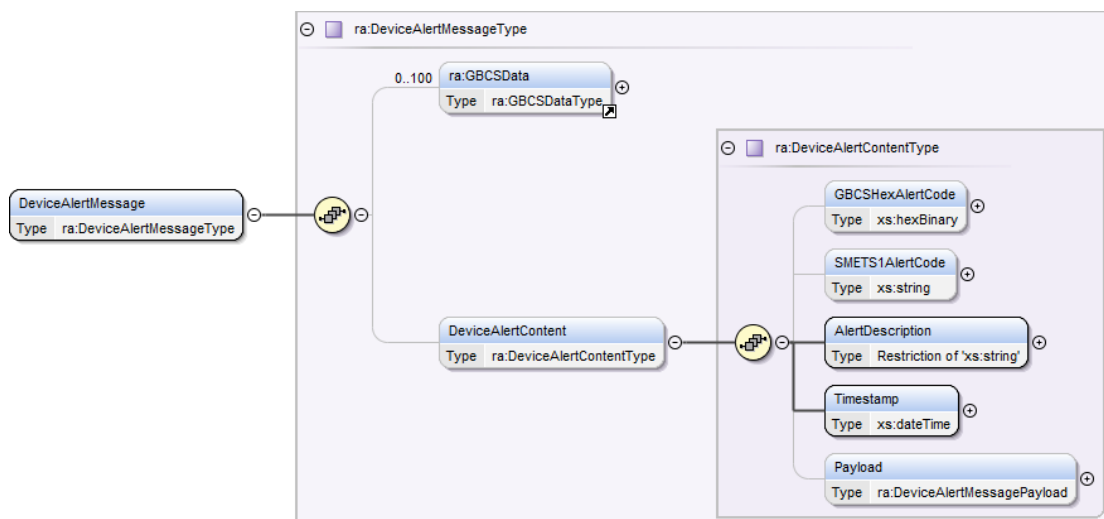


Figure 7 Alert Body DeviceAlertMessage with Alert content XML type

The Device Alert body XML structure includes the following fields:

Data Item	Description	Type	Mandatory	Valid Values
GBCSHexAlertCode	The Alert Code corresponding to the Device Alert defined in GBCS, e.g. 0x000C, or additional non-mandated codes as permitted by the GBCS definition. This is displayed in XML in format of 4 characters e.g. 000C. SMETS1 Alerts may contain a mandated GBCS code from the subset applicable to SMETS1 Devices, or a non-mandated code.	xs:hexBinary	Yes	Values in 16 bit hexadecimal from 0001, as defined in GBCS section 16.
AlertDescription	Description of the Device Alert as defined in GBCS e.g. "Clock adjustment greater than 10 seconds", or additional information relevant to SMETS1.	xs:string (maxLength = 250)	Yes	See GBCS section 16 or SMETS1 Supporting Requirements Document
Timestamp	The Device Alert timestamp as sent by the Device, in UTC time.	xs:dateTime	Yes	UTC Date-Time
Payload	This is additional data specific to the GBCS Use Case, where there is data additional to the Alert Code. Most Device Alerts will not have additional data.	Ra:DeviceAlertMessagePayload	GBCS: No SMETS1: N/A	See Annex section 15.

Table 2 Alert Data Items

18.5 Sample Successful Responses

Three sample XML documents conforming to the MMC XML Schema are shown below, one for Electricity and two for Gas Smart Meters. These are shown as full XML documents conforming to the MMC XML Schema. The second gas sample shows the use of optional attributes of the Timestamp element.

In other annexes in this document set, header sections and the wrapping ra:Body, ra:ResponseMessage and ra:SMETSdata types are omitted from XML samples for specific Service Requests and corresponding responses.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>00-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>00-00-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>002D</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>4.3</ra:ServiceReference>
    <ra:ServiceReferenceVariant>4.3</ra:ServiceReferenceVariant>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ReadInstantaneousPrepayValuesRsp MessageSuccess="true">
          <ra:EmergencyCreditBalance>50</ra:EmergencyCreditBalance>
          <ra:AccumulatedDebtRegister>20</ra:AccumulatedDebtRegister>
          <ra:PaymentDebtRegister>10</ra:PaymentDebtRegister>
          <ra:TimeDebtRegister1>10</ra:TimeDebtRegister1>
          <ra:TimeDebtRegister2>10</ra:TimeDebtRegister2>
          <ra:MeterBalance>100</ra:MeterBalance>
        </ra:ReadInstantaneousPrepayValuesRsp>
      </ra:SMETSData>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 8 Sample ReadInstantaneousPrepayRegistersRsp Parse Response Document for Electricity

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>00-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>00-00-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0075</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>4.3</ra:ServiceReference>
    <ra:ServiceReferenceVariant>4.3</ra:ServiceReferenceVariant>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ReadInstantaneousPrepayValuesRsp MessageSuccess="true">
          <ra:EmergencyCreditBalance>50</ra:EmergencyCreditBalance>
          <ra:AccumulatedDebtRegister>20</ra:AccumulatedDebtRegister>
          <ra:PaymentDebtRegister>10</ra:PaymentDebtRegister>
          <ra:TimeDebtRegister1>10</ra:TimeDebtRegister1>
          <ra:TimeDebtRegister2>10</ra:TimeDebtRegister2>
          <ra:MeterBalance>100</ra:MeterBalance>
        </ra:ReadInstantaneousPrepayValuesRsp>
      </ra:SMETSData>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 9 Sample ReadInstantaneousPrepayRegisters Parse Response Document for Gas

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>00-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>00-00-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0075</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>4.3</ra:ServiceReference>
    <ra:ServiceReferenceVariant>4.3</ra:ServiceReferenceVariant>
    <ra:Timestamp isFromGSME="true" ClockStatus="reliable">2017-08-25T03:04:05.00</ra:Timestamp>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ReadInstantaneousPrepayValuesRsp MessageSuccess="true">
          <ra:EmergencyCreditBalance>50</ra:EmergencyCreditBalance>
          <ra:AccumulatedDebtRegister>20</ra:AccumulatedDebtRegister>
          <ra:PaymentDebtRegister>10</ra:PaymentDebtRegister>
          <ra:TimeDebtRegister1>10</ra:TimeDebtRegister1>
          <ra:TimeDebtRegister2>10</ra:TimeDebtRegister2>
          <ra:MeterBalance>100</ra:MeterBalance>
        </ra:ReadInstantaneousPrepayValuesRsp>
      </ra:SMETSData>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 9.1 Sample Read Meter Balance Parse Response Document for Gas showing use of Timestamp attributes

18.6 Error Status in MMC XML Schema for Service Responses

18.6.1 Overview

This section applies to Service Responses. Device Alerts do not have a status of this sort since if a Device Alert has been received it must have been produced successfully.

For each Service Response, the SMETSData XML structure in the response Body has an overall Boolean status, called MessageSuccess, indicating the success (true) or failure (false) of the command requested by the Service User, as contained in the GBCS payload returned by the Device. If the Parse software has been unable to process the GBCS payload, this will be handled in a different way as indicated in the interface specification for Parse software.

Where there has been a failure in the execution of the command to a Device, the error statuses are handled in a different way according to the underlying specific protocol as defined by GBCS for the GBCS Use Case. In order to be able to return GBCS protocol-specific status responses there are different status types according to the underlying protocol used by the command. The underlying protocol could consist of DLMS/COSEM (e.g. for Electricity Smart Meters), ZigBee Smart Energy Protocol (e.g. for Gas Smart Meters) or ASN.1 (which could be for Gas or Electricity Smart Meters or other Devices).

- For GBCS commands based upon the DLMS/COSEM protocol, which means most commands to Electricity Smart Meters or Communications Hubs, the Device response status codes will be in a COSEMDebug structure within the DebugInfo group;
- for GBCS commands based upon the ZigBee protocol, which includes most commands to gas Devices, the Device response status codes will be in a ZIGBEEDebug structure within the DebugInfo group;
- a few security-related Device commands are implemented in a binary protocol represented in ASN.1. In these cases status codes are embedded within the response structure for the command and DebugInfo is not used.

The MessageSuccess Boolean in the SMETSData XML structure indicates that the GBCS commands to the Device which were initiated for the Service Request were successful overall if no errors were returned by the Device, so in successful cases there will be no need to read individual protocol-specific statuses. Protocol-specific statuses are provided for fault investigation in cases of unsuccessful responses from the Device.

Where errors have been returned by the Device, the MMC XML Schema provides additional status information in an XML structure called DebugInfo, as described in section 18.4.2, except for cases where the underlying protocol is defined by GBCS as using ASN.1. Where a message has succeeded in its entirety only the overall MessageStatus and data are returned from Parse, in a SMETSData XML structure, with no DebugInfo structure. Where a message has been partially successful, Parse will return as much data as it was able to decode in a SMETSData structure, if any, along with the debug information in DebugInfo structure.

Responses in the MMC XML Schema may contain complex data structures and multiple data items, and status for these may be different from simply one result per data item, so in some cases a single status may be returned for a set of data. The correspondence of error status codes to individual or groups of attributes may be different in the different underlying protocols as defined in GBCS, namely DLMS/COSEM, ZigBee Smart Energy Protocol or using ASN.1.

In DLMS/COSEM there are different sets of error responses for action (update) commands and data access (read) commands. A DLMS/COSEM exchange with a Device uses break-on-error processing, meaning that if an individual component DLMS/COSEM command as part of a GBCS use case fails, then subsequent commands will not be executed; in this case the “other-reason” failure status will be returned for commands after the first failed command.

Some commands return no substantial information apart from status, e.g. many commands which update configuration on meters, and in these cases there are no specific examples in

the annex documents describing individual Parse Output responses for specific Service Requests, and the sections refer to the examples in this section.

The list of valid values for each underlying protocol within GBCS (DLMS/COSEM, ZigBee Smart Energy Protocol and ASN.1) is listed in this section and the MMC XML Schema as well as GBCS and underlying protocol documentation.

In the next few sections there are some examples of a command which returns no substantial data apart from status. In other annexes there will not be examples of commands which only return status.

18.6.2 ZIGBEEDebug Status Structure

This is the structure used to return debug information for a ZigBee message (also in this context the related terms ZSE or GBZ are sometimes used). It contains one or more ZIGBEEClusterResponse XML structures, the number depending on the GBCS Use Case and corresponding to the ZigBee clusters in the GBCS command.

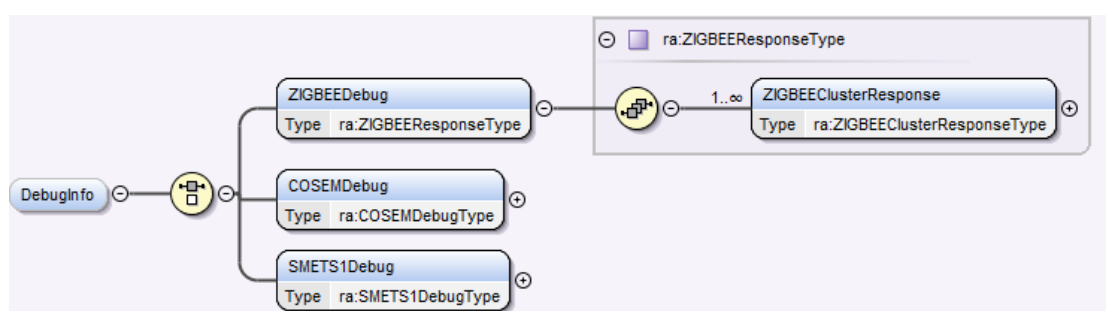


Figure 10 - ZIGBEEDebug Structure

The following diagram expands ZIGBEEClusterResponse.

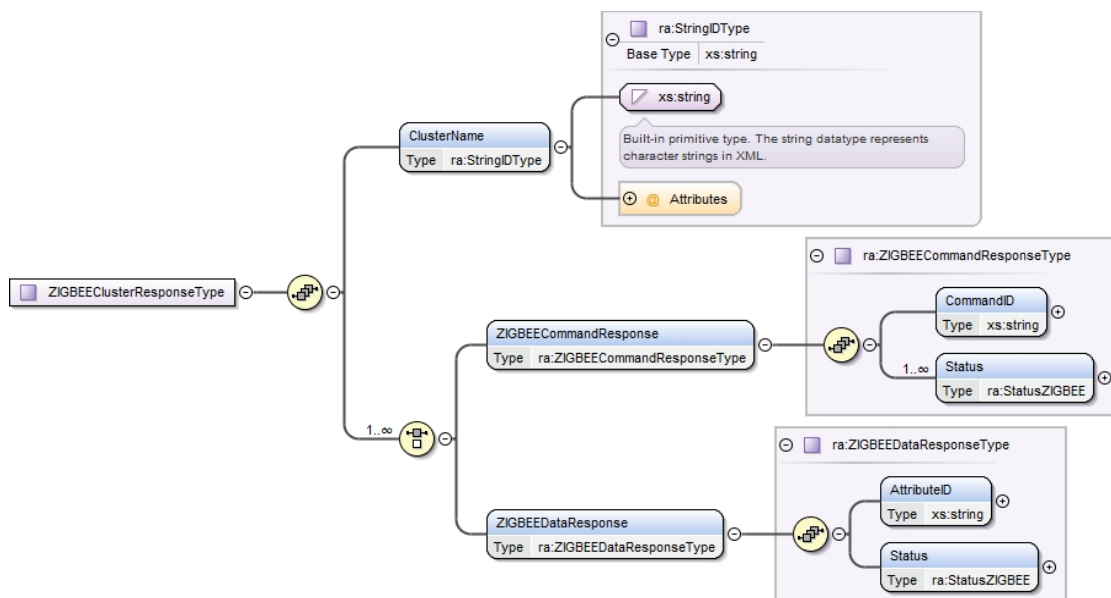


Figure 11 - ZIGBEEClusterResponse Structure

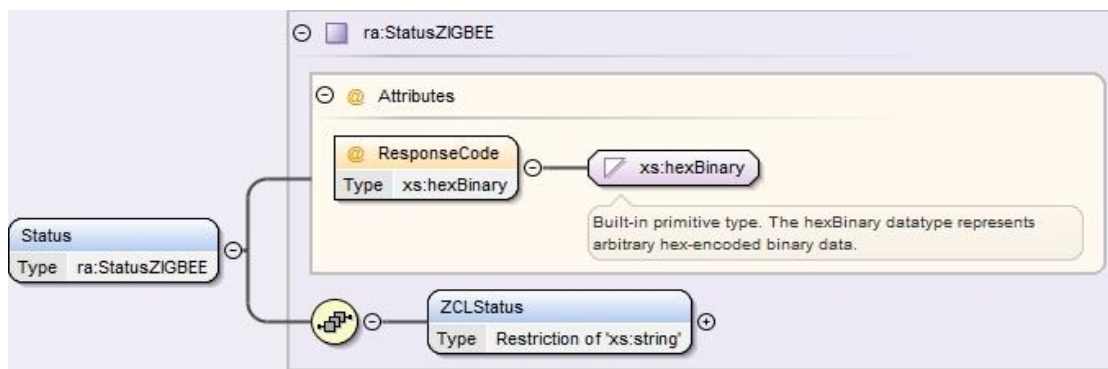


Figure 12 - StatusZIGBEE Structure

18.6.2.1 Data Items Definition

A command based on ZigBee, which means most GBCS commands to gas Devices (the remainder use ASN.1), will return information about one or more ZigBee Clusters, as defined in GBCS, each of which may be a ZIGBEEDataResponse structure (for status about attributes from the Device) or a ZIGBEECommandResponse structure (for status about commands). Note that in many cases data is read using a single command (rather than by attribute), and in these cases the status will be returned in a ZIGBEECommandResponse type.

A Zigbee failure response requires a level of expert interpretation. For some Zigbee failure responses the debug information will need to be augmented with the contextual detail in the Service Request in order to complete the analysis.

Data Item	Description / Valid Set	Type	Mandatory	Valid Values
ClusterName	The name of the ZSE cluster from which the response was received. The XML type also carries the ZigBee Cluster ID of the cluster, e.g. <ra:ClusterName id="0705">Select Available Emergency Credit</ra:ClusterName>	ra:StringIDType (maxLength=60) This type includes attribute numberID, which is type xs:hexBinary	Yes	Defined in GBCS Table 7.2.10b and "ZigBee Commands" tab of Table 20 Mapping Table in section 20
CommandID	ZigBee Smart Energy Protocol command identifier of an operation within the ZSE cluster that is used to update or read from a Device, e.g. 02. Part of a ZIGBEECommandResponse structure.	xs: hexBinary	No	Defined in GBCS Table 7.2.10b and "ZigBee Commands" tab of Table 20 Mapping Table in section 20
AttributeID	For ZSE read by attribute operations – the attribute ID or a value returned For ZSE update operations – the attribute or parameter updated. e.g.0100. Part of a ZIGBEEDataResponse structure.	xs: hexBinary	No	Defined in GBCS Table 7.2.10b and "ZigBee Commands" tab of Table 20 Mapping Table in section 20

Data Item	Description / Valid Set	Type	Mandatory	Valid Values
ZCLStatus	ZIGBEE status value, one of those defined in section 18.6.2.2 corresponding to the status result of using a CommandID (if part of a ZIGBEECommandResponse) or AttributeID (if part of a ZIGBEEDataResponse structure).	ra:StringIDType (maxLength=60) This type includes attribute numberID, which is type xs:hexBinary	Yes	Defined in GBCS. See section 18.6.2.2 for a summary.

18.6.2.2 ZigBee Smart Energy Response Codes (ZCLStatus Values)

The master reference for these codes is GBCS. A list is included here for convenience.

Response Code	Response Code Name
0x00	SUCCESS
0x01	FAILURE
0x7e	NOT_AUTHORIZED
0x7f	RESERVED_FIELD_NOT_ZERO
0x80	MALFORMED_COMMAND
0x81	UNSUP_CLUSTER_COMMAND
0x82	UNSUP_GENERAL_COMMAND
0x83	UNSUP_MANUF_CLUSTER_COMMAND
0x84	UNSUP_MANUF_GENERAL_COMMAND
0x85	INVALID_FIELD
0x86	UNSUPPORTED_ATTRIBUTE
0x87	INVALID_VALUE
0x88	READ_ONLY
0x89	INSUFFICIENT_SPACE
0x8a	DUPLICATE_EXISTS
0x8b	NOT_FOUND
0x8c	UNREPORTABLE_ATTRIBUTE
0x8d	INVALID_DATA_TYPE
0x8e	INVALID_SELECTOR
0x8f	WRITE_ONLY
0x90	INCONSISTENT_STARTUP_STATE
0x91	DEFINED_OUT_OF_BAND
0x92	INCONSISTENT
0x93	ACTION_DENIED

Response Code	Response Code Name
0x94	TIMEOUT
0x95	ABORT
0x96	INVALID_IMAGE
0x97	WAIT_FOR_DATA
0x98	NO_IMAGE_AVAILABLE
0x99	REQUIRE_MORE_IMAGE
0xc0	HARDWARE_FAILURE
0xc1	SOFTWARE_FAILURE
0xc2	CALIBRATION_ERROR
[any other]	RESPONSE_CODE_NOT_KNOWN

Table 3 ZigBee Smart Energy Response Codes

If a response code is issued by a device which is not part of this list then the number will be included in the response and the text will be "RESPONSE_CODE_NOT_KNOWN".

18.6.2.3 Sample ZigBee Error Response

Below there is sample Service Response document Body showing ZigBee error status for both a Command response and a data response. Note that in some cases there may be partial data in SMETSData format, if some was sent by the Device which could be interpreted by Parse software, but in this example there is no data in SMETSData apart from the overall message status.

```
<ra:ResponseMessage>
  <ra:SMETSData>
    <ra:ReadDeviceConfigurationDataBillingCalendarRsp MessageSuccess="false"/>
  </ra:SMETSData>
  <ra:DebugInfo>
    <ra:ZIGBEEDebug>
      <ra:ZIGBEEClusterResponse>
        <ra:ClusterName id="0700">Price</ra:ClusterName>
        <ra:ZIGBEECommandResponse>
          <ra:CommandID>09</ra:CommandID>
          <ra:Status ResponseCode="7e">
            <ra:ZCLStatus>NOT_AUTHORIZED</ra:ZCLStatus>
          </ra:Status>
        </ra:ZIGBEECommandResponse>
      </ra:ZIGBEEClusterResponse>
    </ra:ZIGBEEDebug>
  </ra:DebugInfo>
</ra:ResponseMessage>
```

Figure 13 Sample ZigBee Error Response – Command Response

```
<ra:ResponseMessage>
  <ra:SMETSData>
    <ra:ReadDeviceConfigurationDataBillingCalendarRsp MessageSuccess="false"/>
  </ra:SMETSData>
  <ra:DebugInfo>
    <ra:ZIGBEEDebug>
      <ra:ZIGBEEClusterResponse>
        <ra:ClusterName id="0702">Metering</ra:ClusterName>
        <ra:ZIGBEEDataResponse>
          <ra:AttributeID>0205</ra:AttributeID>
          <ra:Status ResponseCode="00">
            <ra:ZCLStatus>SUCCESS</ra:ZCLStatus>
          </ra:Status>
        </ra:ZIGBEEDataResponse>
        <ra:ZIGBEEDataResponse>
          <ra:AttributeID>0014</ra:AttributeID>
          <ra:Status ResponseCode="c1">
            <ra:ZCLStatus>SOFTWARE_FAILURE</ra:ZCLStatus>
          </ra:Status>
        </ra:ZIGBEEDataResponse>
      </ra:ZIGBEEClusterResponse>
    </ra:ZIGBEEDebug>
  </ra:DebugInfo>
</ra:ResponseMessage>
```

Figure 14 Sample ZigBee Error Response – Data Response

18.6.3 COSEMDebug Status Structure

Debug information for DLMS/COSEM messages is returned using the structure below. The number of COSEMResponse structures depends on the GBCS Use Case and corresponds to the number of DLMS/COSEM instructions in the GBCS Command, in the order returned by the Device.

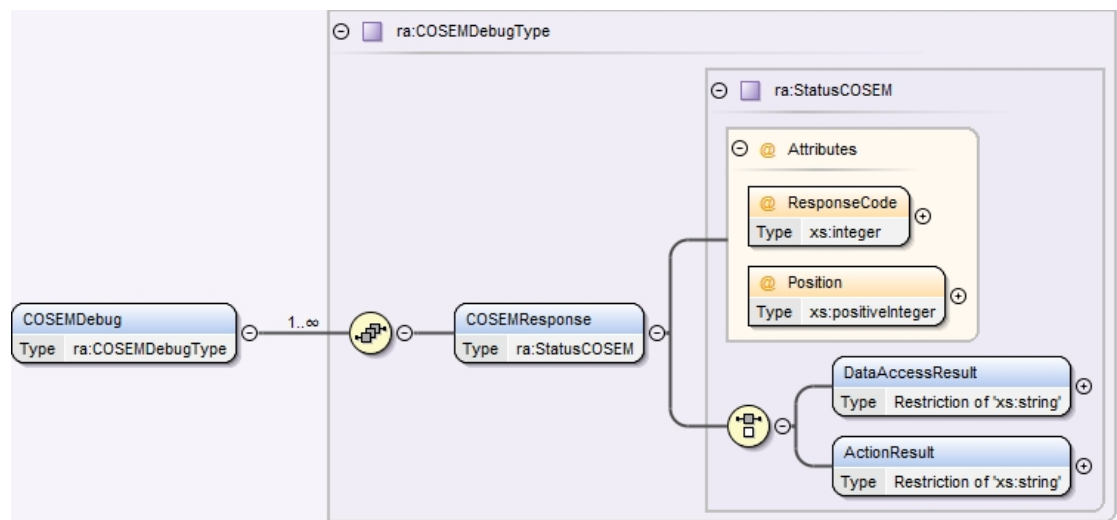


Figure 15 - COSEMDebug Structure

18.6.3.1 Data Items Definition

A command based on DLMS/COSEM, which is used for most of the commands to ESME and Communications Hub Devices, will return status using data access results and action results, the type and number depending on the type of operation. There may be just one data access result, one or more action results, or one of each.

Data Item	Description / Valid Set	Type	Mandatory	Valid Values
ResponseCode (attribute of COSEMResponse)	This contains the numerical code returned by the Device, which corresponds to the text string.	xs:integer	Yes	See sections 18.6.3.2 & 18.6.3.3
Position	This is an incrementing value showing the position of the response code in the order in which it was executed.	xs:positiveInteger	Yes	Positive integer starting from 1
DataAccessResult	Status string denoting the result of a get or set operation.	ra:StringIDType (maxLength=60) This type includes attribute numberID, which is type xs:hexBinary	Choice of this or DataActionResult	Defined in GBCS. See section 18.6.3.3 for a summary.
DataActionResult	Status string denoting the result of an action operation.	ra:StringIDType (maxLength=60) This type includes attribute numberID, which is type xs:hexBinary	Choice of this or DataAccessResult	Defined in GBCS. See section 18.6.3.2 for a summary.

18.6.3.2 DLMS/COSEM Response Codes - Action

The master reference for these codes is GBCS. A list is included here for convenience.

These codes are a result of Action commands in DLMS/COSEM e.g. updating a configuration setting.

Response Code	Response Code Name	Response Code Type
0	success	Action
1	hardware-fault	Action
2	temporary-failure	Action
3	read-write-denied	Action
4	object-undefined	Action
9	object-class-inconsistent	Action
11	object-unavailable	Action
12	type-unmatched	Action
13	scope-of-access-violated	Action
14	data-block-unavailable	Action
15	long-action-aborted	Action
16	no-long-action-in-progress	Action

Response Code	Response Code Name	Response Code Type
250	other-reason	Action
[any other]	response-code-not-known	In case response code not known

Table 4 DLMS/COSEM Action Response Codes

18.6.3.3 DLMS/COSEM Response Codes – Data Access

The master reference for these codes is GBCS. A list is included here for convenience.

These codes are a result of data access commands in DLMS/COSEM e.g. reading a register.

Response Code	Response Code Name	Response Code Type
0	success	Data access
1	hardware-fault	Data access
2	temporary-failure	Data access
3	read-write-denied	Data access
4	object-undefined	Data access
9	object-class-inconsistent	Data access
11	object-unavailable	Data access
12	type-unmatched	Data access
13	scope-of-access-violated	Data access
14	data-block-unavailable	Data access
15	long-get-aborted	Data access
16	no-long-get-in-progress	Data access
17	long-set-aborted	Data access
18	no-long-set-in-progress	Data access
19	data-block-number-invalid	Data access
250	other-reason	Data access
[any other]	response-code-not-known	In case response code not known

Table 5 DLMS/COSEM Data Access Response Codes

18.6.3.4 Sample DLMS/COSEM Error Response

A sample Service Response document Body containing a DLMS/COSEM error status is as follows. Note that in some cases there may be partial data in SMETSData format, if some was sent by the Device which could be interpreted by Parse software, but in this example there is no data in SMETSData apart from the overall message status.

```
<ra:ResponseMessage>
  <ra:SMETSDData>
    <ra:UpdatePricePrimaryElementRsp MessageSuccess="false"/>
  </ra:SMETSDData>
  <ra:DebugInfo>
    <ra:COSEMDDebug>
      <ra:COSEMResponse ResponseCode="0" Position="1">
        <ra:ActionResult>success</ra:ActionResult>
      </ra:COSEMResponse>
      <ra:COSEMResponse ResponseCode="0" Position="2">
        <ra:ActionResult>success</ra:ActionResult>
      </ra:COSEMResponse>
      <ra:COSEMResponse ResponseCode="3" Position="3">
        <ra:ActionResult>hardware-fault</ra:ActionResult>
      </ra:COSEMResponse>
      <ra:COSEMResponse ResponseCode="250" Position="4">
        <ra:ActionResult>other-reason</ra:ActionResult>
      </ra:COSEMResponse>
      <ra:COSEMResponse ResponseCode="250" Position="5">
        <ra:ActionResult>other-reason</ra:ActionResult>
      </ra:COSEMResponse>
      <ra:COSEMResponse ResponseCode="250" Position="6">
        <ra:ActionResult>other-reason</ra:ActionResult>
      </ra:COSEMResponse>
    </ra:COSEMDDebug>
  </ra:DebugInfo>
</ra:ResponseMessage>
```

Figure 16 Sample DLMS/COSEM Error Response

18.6.4 ASN.1 Errors

A small number of GBCS Use Cases are encoded in ASN.1, as defined in GBCS section 13, and apply to both Electricity and Gas Smart Meter Devices as well as other Devices. Unlike GBCS Use Cases where the underlying specific protocol is DLMS/COSEM or ZigBee Smart Energy Protocol, MMC XML Schema responses based on GBCS payload responses which are encoded in ASN.1 have error statuses embedded in the structures, rather than using a separate DebugInfo structure as described in section 18.6.

18.6.4.1 ASN.1 Error Response Codes

The master reference for these codes is GBCS. A list is included here for convenience.

Note that in some cases the same response code numbers are used with different meanings in different ASN.1 Service Responses, as can be seen in the table below.

Service Request	Response Code Name	Response Code
All ASN.1 SRs	success	0
Potentially any ASN.1 SR	notKnown (for cases where the ASN.1 response code is not recognised by the Parse software)	As returned by device
6.11 (gas only), 8.1.1 (gas only)	reliable	0
6.11 (gas only) , 8.1.1 (gas only)	invalid	1
6.11 (gas only) , 8.1.1 (gas only)	unreliable	2
6.15.1, 6.21, 6.23, 8.5	badCertificate	5

Service Request	Response Code Name	Response Code
6.15.1, 6.21, 6.23, 8.5	noTrustAnchor	10
6.15.1, 6.21, 6.23, 8.5	insufficientMemory	17
6.15.1, 6.21, 6.23, 8.5	resourcesBusy	30
6.15.1, 6.21, 6.23, 8.5	other	127
6.15.2	invalidCertificate	1
6.15.2	wrongDeviceIdentity	2
6.15.2	invalidKeyUsage	3
6.15.2	noCorrespondingKeyPair	4
6.15.2	wrongPublicKey	5
6.15.2	certificateStorageFailed	6
6.15.2	privateKeyChangeFailed	7
6.17	invalidKeyUsage	1
6.17	keyPairGenerationFailed	2
6.17	cRProductionFailed	3
6.24.1	trustAnchorNotFound	25
6.24.1	other	127
6.24.2	invalidKeyUsage	1
6.24.2	noCertificateHeld	2
6.24.2	certificateRetrievalFailure	3
8.7.1, 8.7.2	invalidMessageCodeForJoinMethodAndRole	1
8.7.1, 8.7.2	invalidJoinMethodAndRole	2
8.7.1, 8.7.2	incompatibleWithExistingEntry	3
8.7.1, 8.7.2	deviceLogFull	4
8.7.1, 8.7.2	writeFailure	5
8.7.1, 8.7.2	keyAgreementNoResources	6
8.7.1, 8.7.2	keyAgreementUnknownIssuer	7
8.7.1, 8.7.2	keyAgreementUnsupportedSuite	8
8.7.1, 8.7.2	keyAgreementBadMessage	9
8.7.1, 8.7.2	keyAgreementBadKeyConfirm	10
8.7.1, 8.7.2	invalidOrMissingCertificate	11
8.7.1, 8.7.2	noPartnerLinkKeyReceived	12
8.7.1, 8.7.2	noCBKEResponse	13
8.8.1, 8.8.2	otherDeviceNotInDeviceLog	1

Service Request	Response Code Name	Response Code
8.8.1, 8.8.2	otherFailure	2
8.9	readFailure	1
8.12.2	incompatibleWithExistingEntry	3
8.12.2	deviceLogFull	4
8.12.2	writeFailure	5
11.3	noImageHeld	1
11.3	hashMismatch	2
11.3	activationFailure	3

Table 6 ASN.1 Response Codes

18.6.4.2 Sample ASN.1 Error Response

Unlike errors in response messages which use DLMS/COSEM or ZigBee, ASN.1 messages have error codes embedded in the message, so they do not use a separate DebugInfo structure.

18.7 Encrypted fields

In some cases encrypted data is returned by Devices, as defined in GBCS. This can be individual data items such as a single meter register, or a set of data which would require a complex XML structure to represent it.

There will need to be 2 calls from the DCC Service User to Parse software (as defined further in the Parse software Interface Specification) where the GBCS payload includes encrypted data, and the Parse Output XML Schema contains features to support this. There are several interactions, including 3 stages of XML data (in stages 2, 3 and 4 below):

1. The DCC Service User calls the Parse software with GBCS payload in which there is embedded encrypted data. The DCC Service User cannot decrypt this yet, since it is in GBCS format, so the data is passed to the Parse software to decode it.
2. The Parse software cannot decode the encrypted data, so it breaks the GBCS payload into fragments of GBCS, some plain and some encrypted. The XML it returns to the DCC Service User will be passed in a set of XML elements called GBCSData, with the "format" attribute set to "plain" or "encrypted".
3. The DCC Service User decrypts the encrypted data, so the data is now plain text GBCS format, and writes the decrypted data back into the XML GBCSData element, changing the "format" attribute to "plain". This could happen at several points in the XML message, depending on the Service Request. It passes the amended XML to the Parse software.
4. The Parse software is now able to decode the GBCS data and populates the XML message. The Parse software is then able to return the fully decrypted and decoded XML message back to the DCC Service User.

Note that Parse software will not partially decode GBCS data, it will return either a mixture of plain and encrypted GBCSData groups or fully decoded XML.

See section 18.8 for illustrations of this behaviour.

18.8 Interaction Diagrams

The following diagram illustrates the decoding of GBCS payload into XML in the case where there is no encrypted data.

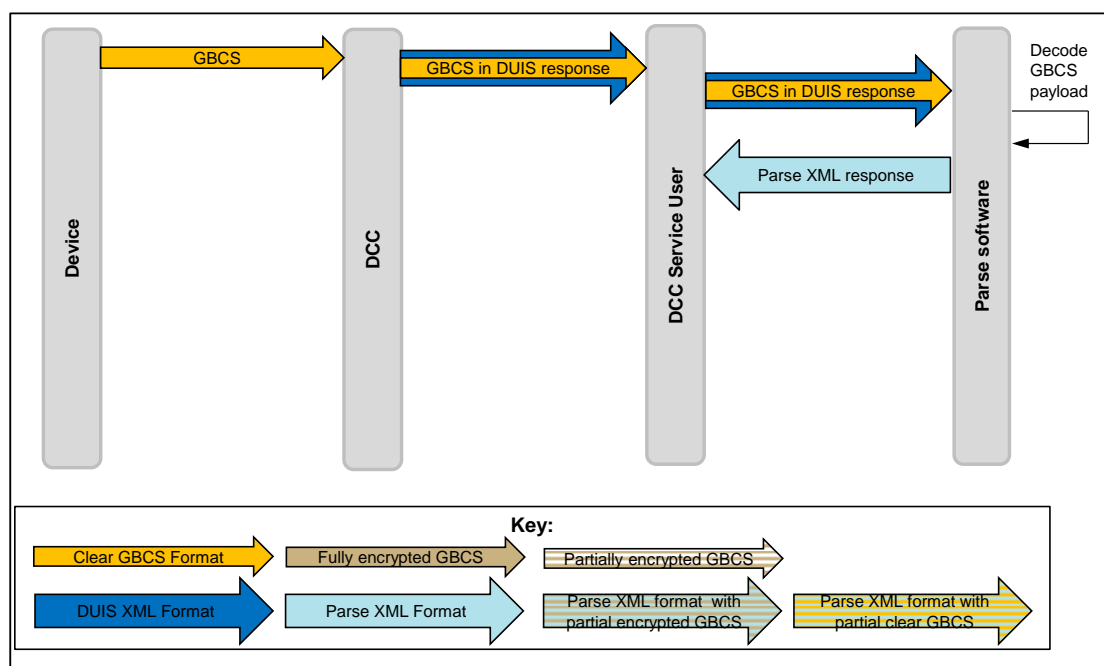


Figure 17 Parse of GBCS payload from Device with no encrypted data

The following diagram illustrates decryption in the interaction between DCC Service Users and the Parse software. For full details see the interface specification for the Parse software.

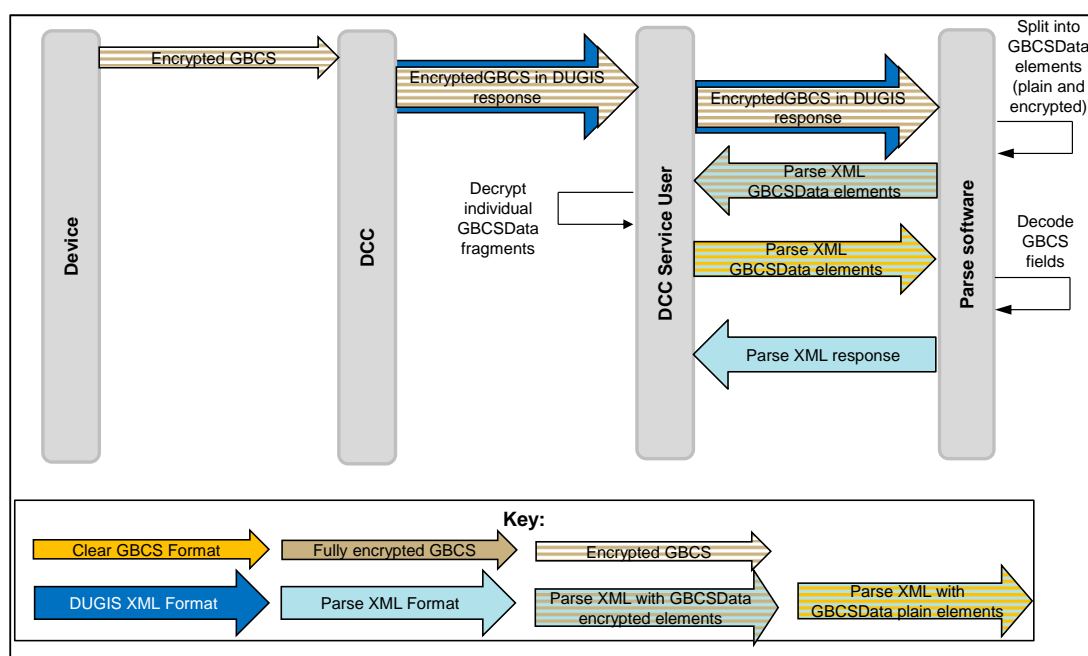


Figure 18 Parse of GBCS payload from Device with encrypted data

18.9 Status-Only Responses

Many responses from Devices in response to commands, e.g. commands which perform updates, contain no substantial payload, just status information. In successful cases these will

simply contain an overall success or failure, within an XML type. The name of the XML type which corresponds to the XML type of the Service Request in the DUIS XML Schema, with the suffix "Rsp", e.g. ActivateEmergencyCreditRsp for Service Request to activate emergency credit on a meter.

Cases where an error message has been returned from the Device will follow the normal approach to unsuccessful responses, as described in section 18.5.

See the next section 18.9.1 in this document for examples of responses which contain no substantial data other than the status.

In general, annexes in this DUGIDS document set will not contain structure diagrams, data diagrams or XML samples for cases like this, as they all follow the pattern in the next section 18.9.1.

18.9.1 Sample Status-Only Responses

Sample status-only MMC XML Schema response documents are shown below, one successful and one unsuccessful for each of Electricity and Gas Smart Meter Devices.

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>20-10-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0020</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>2.5</ra:ServiceReference>
    <ra:ServiceReferenceVariant>2.5</ra:ServiceReferenceVariant>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ActivateEmergencyCreditRsp MessageSuccess="true"/>
      </ra:SMETSData>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 19 Sample Activate Emergency Credit Parse Response Document for Electricity

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>20-10-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0020</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>2.5</ra:ServiceReference>
    <ra:ServiceReferenceVariant>2.5</ra:ServiceReferenceVariant>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ActivateEmergencyCreditRsp MessageSuccess="false"/>
      </ra:SMETSData>
      <ra:DebugInfo>
        <ra:COSEMDebug>
          <ra:COSEMResponse ResponseCode="1" Position="1">
            <ra:ActionResult>hardware-fault</ra:ActionResult>
          </ra:COSEMResponse>
        </ra:COSEMDebug>
      </ra:DebugInfo>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 20 Sample (Failed) Activate Emergency Credit Parse Response Document for Electricity

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>20-10-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0070</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>2.5</ra:ServiceReference>
    <ra:ServiceReferenceVariant>2.5</ra:ServiceReferenceVariant>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ActivateEmergencyCreditRsp MessageSuccess="true"/>
      </ra:SMETSData>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 21 Sample Activate Emergency Credit Parse Response Document for Gas

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:GBCSResponse xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:sr="http://www.dccinterface.co.uk/ServiceUserGateway"
xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.dccinterface.co.uk/ResponseAndAlert" schemaVersion="1.0">
  <ra:Header>
    <ra:BusinessOriginatorID>10-00-00-00-00-00-00-00</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>20-10-00-00-00-00-00-00</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:GBCSHexadecimalMessageCode>0070</ra:GBCSHexadecimalMessageCode>
    <ra:ServiceReference>2.5</ra:ServiceReference>
    <ra:ServiceReferenceVariant>2.5</ra:ServiceReferenceVariant>
  </ra:Header>
  <ra:Body>
    <ra:ResponseMessage>
      <ra:SMETSData>
        <ra:ActivateEmergencyCreditRsp MessageSuccess="false"/>
      </ra:SMETSData>
      <ra:DebugInfo>
        <ra:ZIGBEEDebug>
          <ra:ZIGBEEClusterResponse>
            <ra:ClusterName id="0705">Select Available Emergency Credit</ra:ClusterName>
            <ra:ZIGBEECommandResponse>
              <ra:CommandID>0705</ra:CommandID>
              <ra:Status ResponseCode="c0">
                <ra:ZCLStatus>HARDWARE_FAILURE</ra:ZCLStatus>
              </ra:Status>
            </ra:ZIGBEECommandResponse>
          </ra:ZIGBEEClusterResponse>
        </ra:ZIGBEEDebug>
      </ra:DebugInfo>
    </ra:ResponseMessage>
  </ra:Body>
</ra:GBCSResponse>
```

Figure 22 Sample (Failed) Activate Emergency Credit Parse Response Document for Gas

18.10 Mandatory Fields

The data which comes back from the Device in response to Service Requests and is represented in XML in the SMETSData group must all be regarded as non-mandatory, because in error cases there might not be any data to bring back, or partial data may be returned in an error case where the Device was able to return some of the data successfully. The only mandatory data item in SMETSData is the overall success status (true or false).

In the annex sections of this document set which describe responses conforming to the MMC XML Schema, specifically the "Specific Data Items" sub-sections within "Parse Output Format" sections, a convention has been adopted that data will be present in normal cases where commands completed without errors and data has been returned successfully by the Device, unless otherwise stated. Data items which are not always present in successful Service Responses, e.g. a secondary element of an Electricity Smart Meter, will be indicated in the "Description/Valid Set" columns.

18.11 Schema Version

The MMC XML Schema has a schema version as an attribute of the main element GBCSResponse, called schemaVersion. Please note that the samples included in this document have not been updated to reflect the change in schemaVersion number.

In later versions of the schema it is possible that Service Requests may change to use different GBCS Use Cases and thus the MMC XML Schema will need to maintain XML definitions that support all GBCS Use Cases for backwards compatibility. The Parse Software will use the appropriate MMC XML Schema definitions to represent the data returned according to the GBCS Use Case in the payload.

The schema version will be constructed of a major and minor version. In development of version 1.0, this schema version will always be 1.0 and a separate DUIS/MMC development version will be notified within the schema comments.

Once version 1.0 is in use in the Production environment, the XML schema version will be updated with minor version increments (eg 1.1, 1.2 etc) for minor updates to the current baseline, whilst major version updates (eg 2.0) will be used for significant changes to the baseline – for example a new version of GBCS.

It is expected that the latest version of Parse Software will always support the parsing of all GBCS Use Cases and Device Alerts that exist in any version of GBCS and that these will always be added to over time and never replaced. This ensures that the latest version of Parse and Correlate software supports all SMETS2 or later devices for any version of the technical specifications

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

19 – SMETS1 Device Response and Alert

Author: DCC
Version: 5.2a
Date: June 2023

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19 SMETS1 Responses and SMETS1 Alerts

19.1 Introduction

This document contains the description of the SMETS1 Response Message, which is defined in the DUIS XML Schema and is the XML structure used by the DCC Data Systems to return Countersigned SMETS1 Responses and Countersigned SMETS1 Alerts to DCC Service Users. The SMETS1 Response Message structure contains the Service Responses and Alerts as defined in the MMC XML Schema. These 2 XML Schemas are referred to as follows:

- The DUIS XML Schema XSD (document 3 of this documentation set);
- the MMC XML Schema XSD (document 4 of this documentation set).

The DCC Data Systems receives SMETS1 Responses and SMETS1 Alerts from the SMETS1 Service Provider(s) and forwards these responses to DCC Service Users.

The SEC SMETS1 Supporting Requirements Document defines obligations on S1SPs and alternative definitions to replace GBCS definitions for SMETS1 Devices.

This section and its contents shall only be used by DCC Service Users who interact with SMETS1 Devices via Service Requests. The content of this Annex 19 is not applicable to other DCC Service Users.

19.2 Context

Where possible and to minimise impact on the DCC Service User systems, the SMETS1 Response Format is identical to that of the Parse Output for the same Service Response for SMETS2 or later Devices.

The Main Document section 2.10 describes the context in which the SMETS1 Responses are applicable.

19.3 Use of XML Schemas

The DUIS XML representation of the SMETS1 Response in response to each Service Request incorporates XML elements defined in the MMC XML Schema, including information based on the same name as the corresponding Service Request in the DUIS XML schema, with the addition of the suffix "Rsp" at the end, for example UpdateMeterBalance and UpdateMeterBalanceRsp. The SMETS1 Response also includes additional information from the S1SP such as a signature. Service Requests for which there is no corresponding response from a Device, e.g. DCC Only Service Requests, will continue to use the existing DUIS XML Response corresponding to the SMETS2 or later Service Request, i.e. Acknowledgement or DCC Only specific response.

SMETS1 Alerts are also passed from the DCC Data Systems to the DCC Service Users in conformance to the DUIS and MMC XML Schemas, as described in section 19.4.3.2.

The DSP wraps and signs a SMETS1 Response to produce a Countersigned SMETS1 Response and a SMETS1 Alert to produce a Countersigned SMETS1 Alert.

19.4 XML High-Level Response Structure

Because SMETS1 Responses and Alerts are included in the DUIS XML Schema, their high level structure (SMETS1 Response Message) is as defined in the Main Document section 9.3.

SMETS1 DCC Only Service Responses and DCC Alerts also use the XML structure defined in the Main Document section 9.3.

This Annex 19 defines the specific XML structure for SMETS1 Responses and SMETS1 Alerts.

The top-level structure DUIS Response (see Main Document section 9.3 for details) is shown in the following diagram:

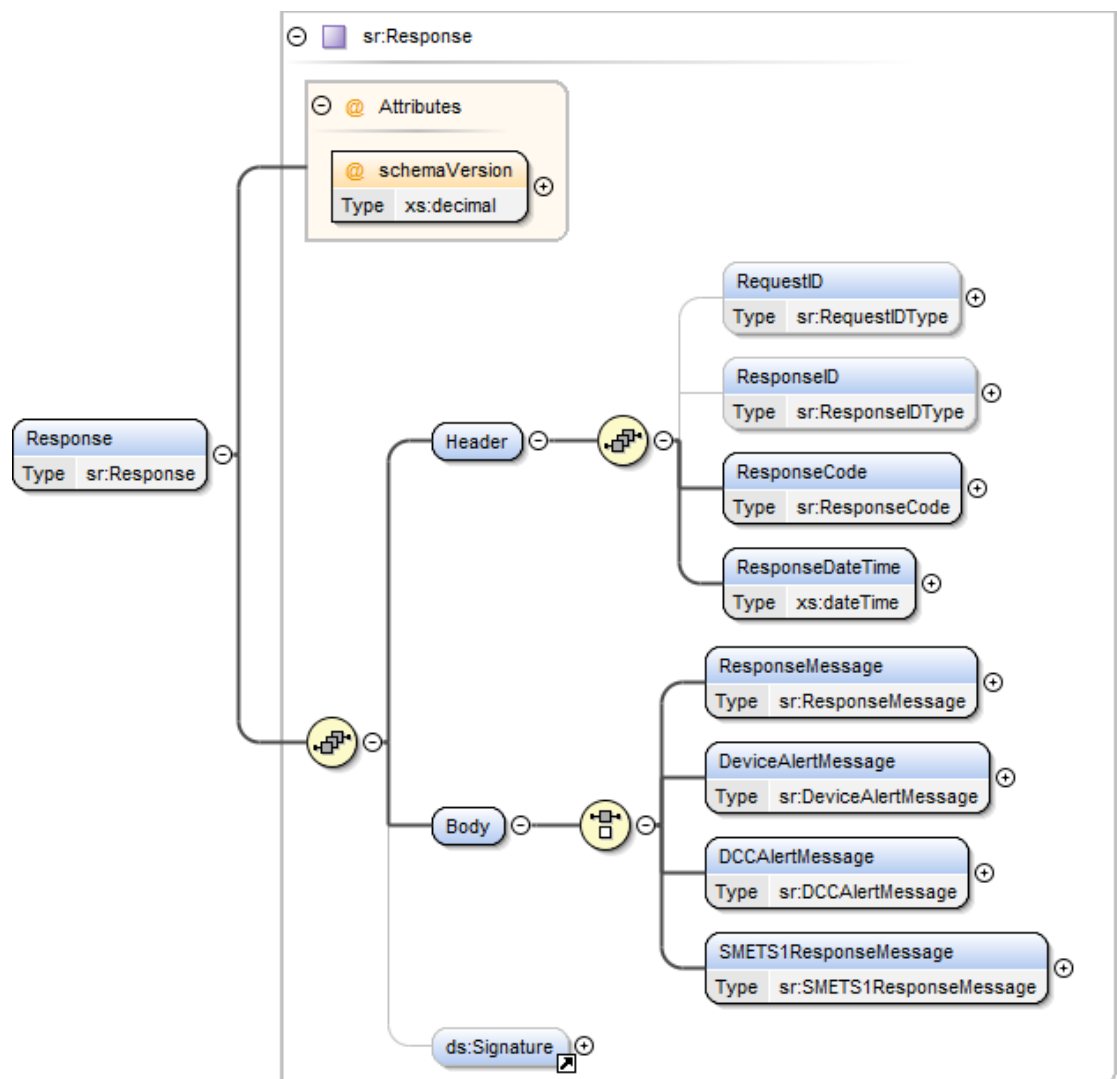


Figure 1 High-level DUIS XML Response structure

The Main Document section 9.3 defines the Header and the Response Message, Device Alert Message and DCC Alert Message. This Annex 19 defines the SMETS1 Response Message, which includes the SMETS1 Response Message and the SMETS1 Alert Message.

19.4.1 SMETS1 Response Message Structure

The SMETS1ResponseMessage format is used for all solicited SMETS1 Responses and unsolicited SMETS1 Alerts received from SMETS1 Devices.

The Service Response specific XML section depends on the actual Service Request or Alert. See the corresponding Annex for details of each SMETS1 Response, e.g. Annex section 4 contains the Service Responses to read Service Requests such as 4.1.1. For SMETS1 Alerts with specific payload see Annex section 15.

The Response structure for a SMETS1 Response Message is as follows:

- Header.
 - SMETS1 Responses:

- It shall always include a RequestID (except for DSP Scheduled Service Requests, this will be the RequestID of the original single Service Request sent by the DCC Service User for which this is the response), a ResponseID (generated by the DSP from data provided by the SMETS1 Service Provider), a Response Code (generated by the DCC Data Systems) and a Response Date Time (generated by the DCC Data Systems).
 - SMETS1 Alerts:
 - It shall always include a ResponseID (generated by the SMETS1 Service Provider), a Response Code (generated by the SMETS1 Service Provider) and a Response Date Time (generated by the SMETS1 device) .
- Body.
 - SMETS1 Responses:
 - It shall always include the Service Reference and Service Reference Variant. For DSP Scheduled Requests, it will also include the DSP Schedule ID generated when the Schedule was created via Service Request 5.1.
 - It shall also include the SMETS1 Signed Response generated by the SMETS1 Service Provider corresponding to the Service Response.
 - SMETS1 Alerts:
 - It shall always include the SMETS1 Signed Response generated by the SMETS1 Service Provider corresponding to the Device Alert.
- Signature. All SMETS1 Response Messages will be signed by the DCC Data Systems using the same security credentials as for SMETS2 or later Responses.

This is illustrated in the following diagram:

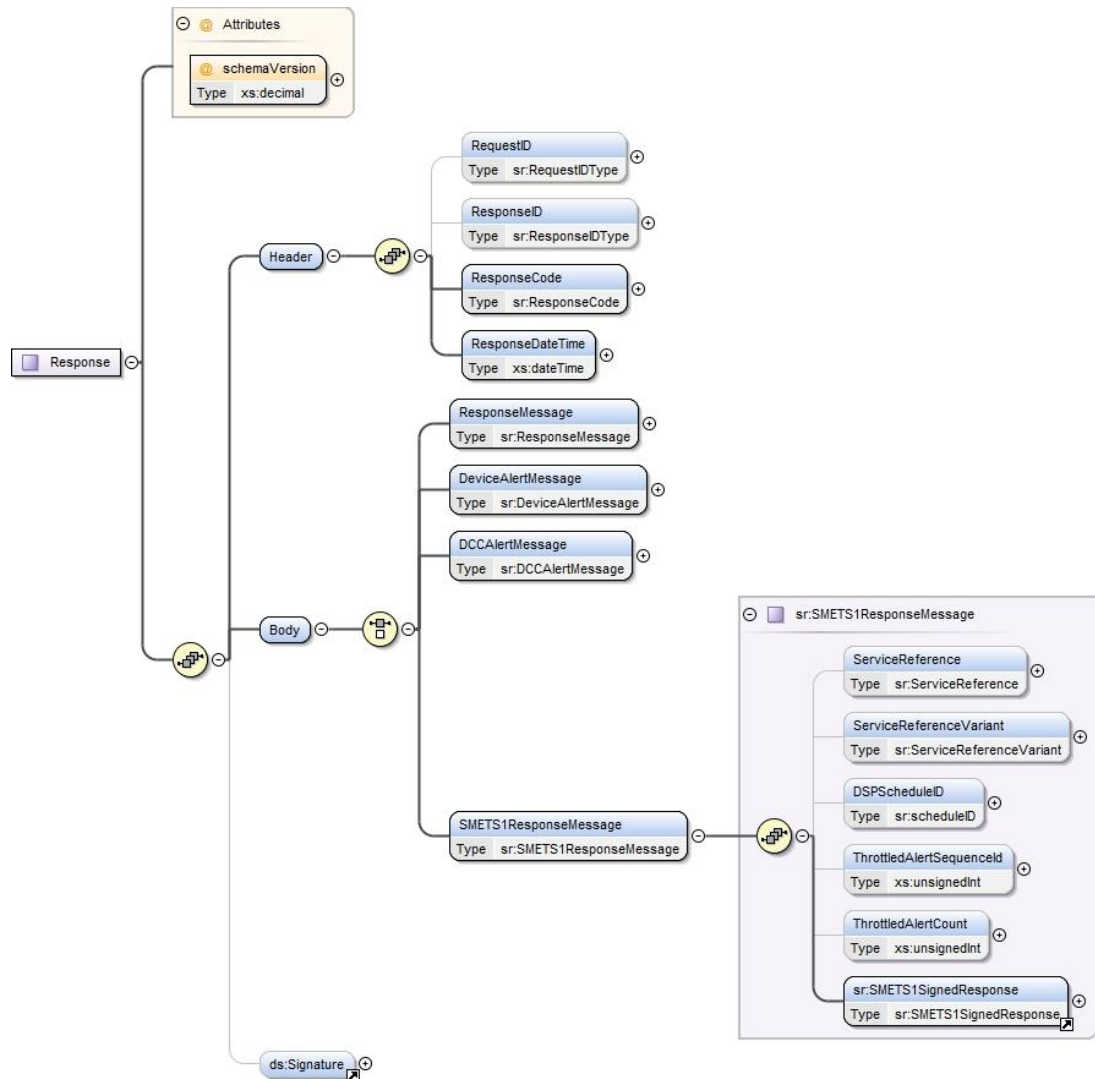


Figure 2 Response Body SMETS1ResponseMessage XML type

The following table details the data items in the SMETS1ResponseMessage format.

The XML elements “ThrottledAlertSequenceID and ThrottledAlertCount are used for throttling of Alerts; see section 2.12 in the main document of this DUGIDS document set for further information.

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ServiceReference	Identifier that signals the particular Request to DCC (and is driven from the DCC Service User's selection of Request) See 'Service Reference' column in Main Document section 9.4 table	sr:ServiceReference (see Annex section 17)	SMETS1 Response: Yes SMETS1 Alert: N/A	None	N/A	Non-Sensitive
ServiceReferenceVariant	Identifier that signals the particular Request Variant to DCC (and is driven from the DCC Service User's selection of Request) See 'Service Reference Variant' column in Main Document section 9.4 table	sr:ServiceReferenceVariant (see Annex section 17)	SMETS1 Response: Yes SMETS1 Alert: N/A	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DSPScheduleID	Schedule ID generated by the DCC Data Systems when the Schedule was created >= 0	sr:scheduleID (See Annex section 17)	SMETS1 DSP Scheduled Service Response: Yes SMETS1 Alert: N/A	None	N/A	Non-Sensitive
ThrottledAlertSequenceID	An optional data item that identifies that this Alert Code is currently subject to throttling by the DCC Data Systems. If this attribute is included in the Alert then it indicates the sequence number for this Alert message since Alert throttling began.	xs:unsignedInt	No	None	N/A	Non-Sensitive
ThrottledAlertCount	An optional data item used to indicate the number of Alerts that have been consolidated by DCC Data Systems since the last Alert was forwarded to the Service User.	xs:unsignedInt	No	None	N/A	Non-Sensitive
SMETS1SignedResponse	Message sent and signed by the SMETS1 Service Provider to the DCC Data Systems. It contains a SMETS1 Response or a SMETS1 Alert	sr:SMETS1SignedResponse (see section 19.4.2)	Yes	None	N/A	Non-Sensitive

Table 1 Response – SMETS1ResponseMessage Data Items

Note: For DSP Scheduled responses, the ServiceReference and ServiceReferenceVariant are those of the original single ServiceReferenceVariant being scheduled, e.g. if SR 5.1 Create Schedule includes DSPScheduledServiceReference = 4.8 and DSPScheduledServiceReferenceVariant = 4.8.1, each activation instance SMETS1 Response will include ServiceReference = 4.8 and ServiceReferenceVariant = 4.8.1.

There is an XML sample showing the use of throttling of SMETS1 Alerts in Annex 15 section 15.2.3.

19.4.2 SMETS1 Signed Response Structure

The SMETS1SignedResponse format is used for all solicited and unsolicited SMETS1 Responses received from the Device. It includes the SMETS1Response and the SMETS1 Service Provider signature.

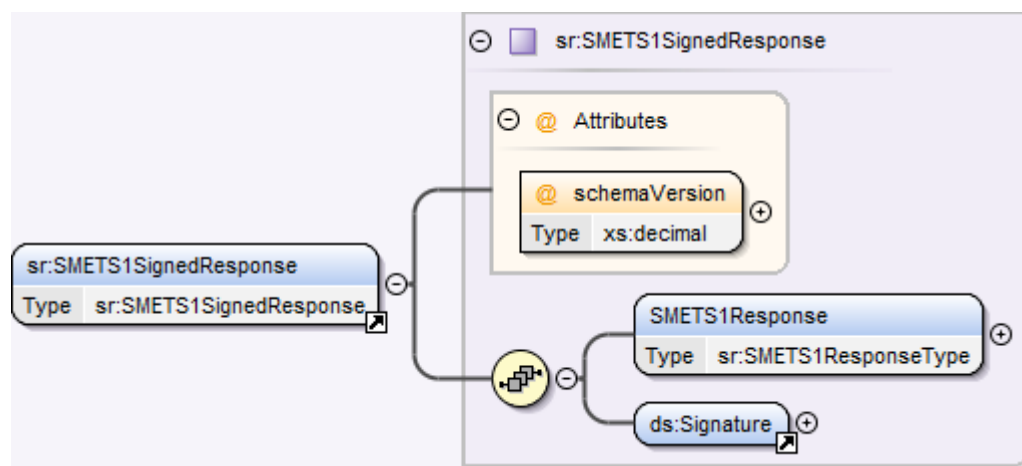


Figure 3 SMETS1SignedResponse XML type

The following table details the data items in the SMETS1SignedResponse format:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SMETS1Response	Contains the SMETS1 Response or SMETS1 Alert as received from the SMETS1 Service Provider	sr:SMETS1ResponseType (see section 19.4.3)	Yes	None	N/A	Non-Sensitive
ds:signature	SMETS1 Service Provider Digital Signature (defined in a separate schema). See Main Document XMLDGIS XSD for details on the signature schema	ds:signature	Yes	None	N/A	Non-Sensitive

Table 2 Response – SMETS1SignedResponse Data Items

19.4.3 SMETS1 Response Structure

The SMETS1Response format is used for all solicited SMETS1 Responses and unsolicited SMETS1 Alerts received from the Device.

The SMETS1 Response structure is as follows:

- Header.
 - SMETS1 Responses
 - It will always include the Response Business Originator ID (Device), Business Target ID (DCC Service User ID or DSP Access Control Broker for DSP Scheduled Service Requests), Originator Counter, [Service Reference](#) and [Service Reference Variant](#). See Annex 18 section 18.4.1 for details.
 - SMETS1 Alerts
 - It will always include the Response Business Originator ID (Device), Business Target ID (DCC Service User ID, provided by the SMETS1 Service Provider) and Originator Counter. See Annex 18 section 18.4.1 for details.
- Body.
 - SMETS1 Responses
 - It will include the specific data for the SMETS1 Response in ResponseMessage. See section 19.4.3.1 for details.
 - SMETS1 Alerts
 - It will include the SMETS1 Alert in DeviceAlertMessage. See section 19.4.3.2 for details.

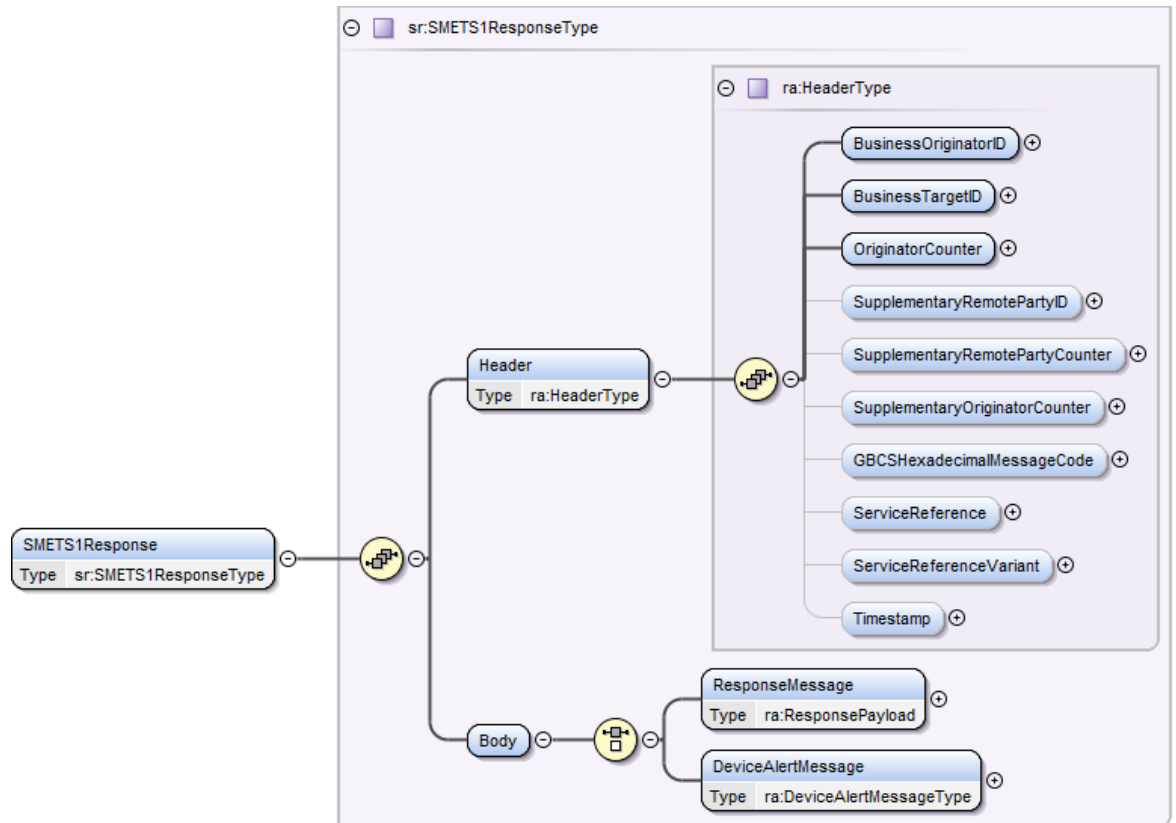


Figure 4 SMETS1Response XML type

The following table details the data items in the SMETS1Response format:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Header	See Annex 18 section 18.4.1	ra:HeaderType	Yes	None	N/A	Non-Sensitive
ResponseMessage	It contains the SMETS1 Response details	ra:ResponsePayload (see section 19.4.3.1)	SMETS1 Response: Yes SMETS1 Alert: N/A	None	N/A	Non-Sensitive
DeviceAlertMessage	It contains the SMETS1 Alert details	ra:DeviceAlertMessageType (see section 19.4.3.2)	SMETS1 Response: N/A SMETS1 Alert: Yes	None	N/A	Non-Sensitive

Table 3 Response – SMETS1Response Data Items

19.4.3.1 ResponseMessage Structure

The ResponseMessage format is used for all solicited SMETS1 Responses received from SMETS1 Devices.

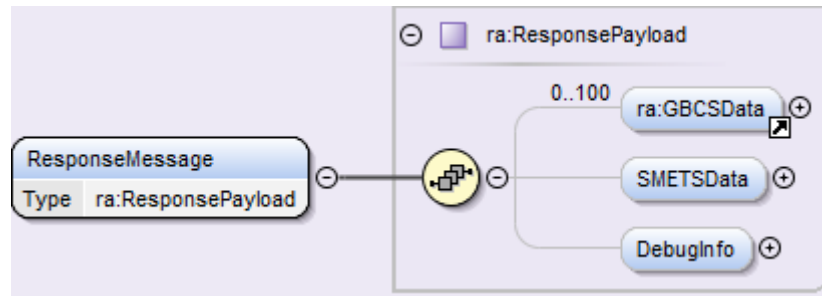


Figure 5 ResponseMessage

The following table details the data items in the ResponseMessage format:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ra:GBCSData	N/A to SMETS1 Devices	ra:GBCSDataType	N/A	None	N/A	Non-Sensitive
SMETSData	This structure will always be present It holds the SMETS1 Device Response translated to XML by the S1SP. In most cases this will be the only XML structure in the ResponseMessage. It contains the overall status of the SMETS1 Device response and, where applicable, specific data from SMETS1 responses. This is the same structure as used for SMETS2 or later Device responses	ra:SMETSData (see Annex 18 section 18.4. 2)	Yes	None	N/A	Non-Sensitive
DebugInfo	It contains error / status information returned as part of an unsuccessful SMETS1 Device Response. This structure will be present when SMETSData includes an indication of error (specific Service Response Message Success set to "false") and the Service Request is not one of: 6.11 (Gas), 6.15.1, 6.21, 6.23, 8.1.1 (Gas), 8.7.2 – Note that for these Service Requests the error response is embedded in SMETSData	ra:DebugInfo (see section 19.6)	No	None	N/A	Non-Sensitive

Table 4 Response – ResponseMessage Data Items

The SMETSData element contains a choice of structures dependent on which Service Request it is responding to. Each structure will include:

- A Boolean attribute called MessageSuccess, which defines the overall status of the message, where the Boolean attribute shall be **true** for a message which was returned by the SMETS1 Service Provider with no errors from the Device, and **false** if any error responses were returned by the SMETS1 Service Provider;
- a set of elements corresponding to individual data items relevant to the SMETS1 Response. These are the same elements used for SMETS2 or later Device responses.

The following diagram shows an illustration of some of the response types available in SMETSData. In the full list (available in the MMC XML Schema) there is an XML type for the Service Response corresponding to each SMETS2 or later and / or SMETS1 Service Request.

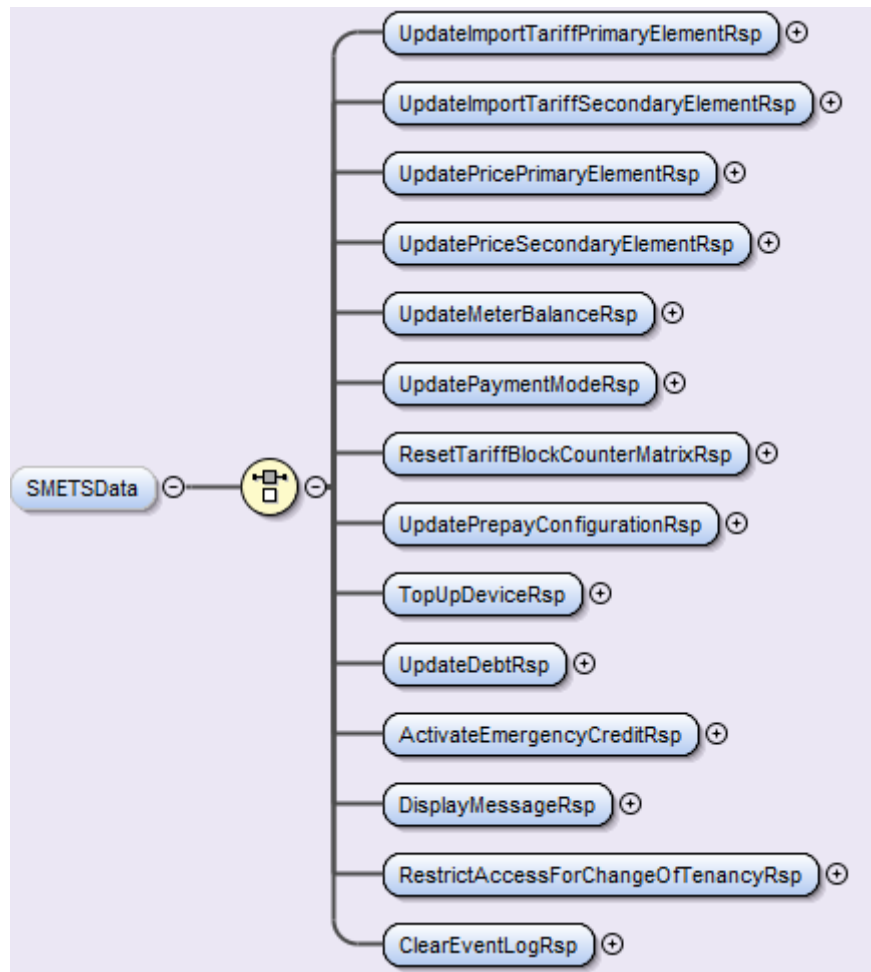


Figure 6 SMETSData with subset of response XML types (truncated for readability)

The structures corresponding to individual SMETS1 Response types are shown in the annexes corresponding to groups of Service Requests, e.g. Annex section 4 contains the SMETS1 Responses to read Service Requests such as 4.1.1.

Where applicable, common data returned by Electricity Smart Meters and Gas Smart Meters or Gas Proxy Functions are shared data items in the Service Responses to individual Service Requests. In cases where a response data item is applicable only to one of gas or electricity, this is found in a fuel-specific XML choice structure within the response message, and identified in data description tables for the response in the appropriate annex.

An example of Service Response with data differences between electricity and gas is shown below.

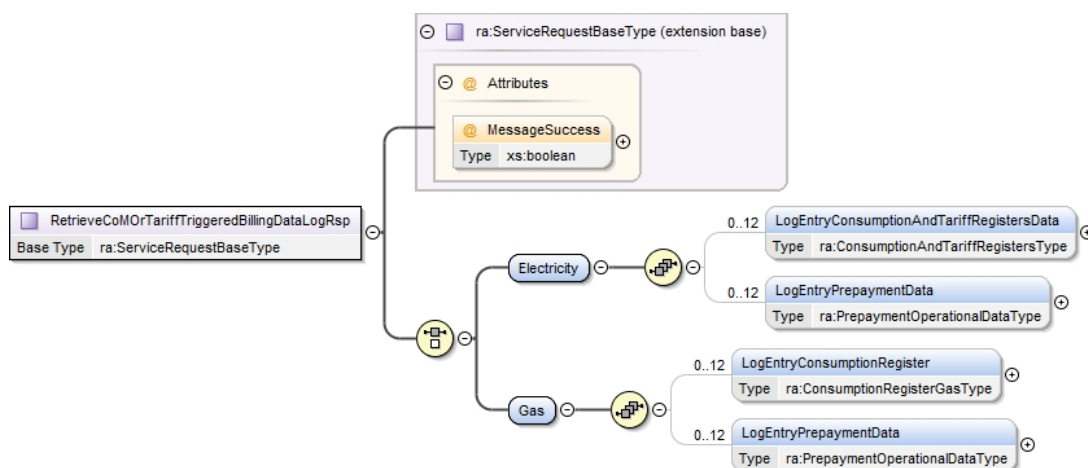


Figure 7 Response Body Example

19.4.3.2 DeviceAlertMessage Structure

The DeviceAlertMessage format is used for all unsolicited SMETS1 Alerts from the Device.

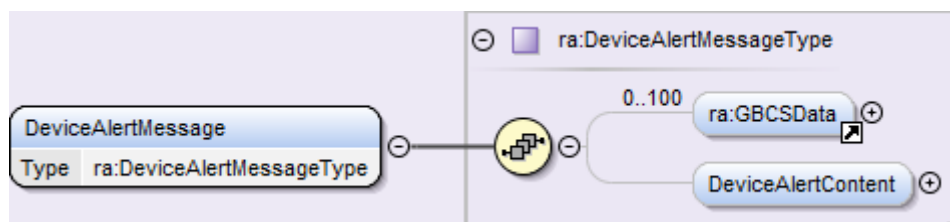


Figure 8 DeviceAlertMessage

The following table details the data items in the DeviceAlertMessage format:

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ra:GBCSData	N/A to SMETS1 Devices	ra:GBCSDataType	N/A	None	N/A	Non-Sensitive
DeviceAlertContent	It contains data from the SMETS1 Alert. SMETS1 Alerts do not return any specific additional information other than the identifier of the SMETS1 Alert and the time it was generated by the SMETS1 Device. Data common to all SMETS1 Alerts is shown in Table 6 SMETS1 Alert Data Items below. Each SMETS1 Alert will also have a timestamp, which is included within the header of the SMETS1Response XML	ra:DeviceAlertContent Type (see Annex 18 section 18.4.3)	Yes	None	N/A	Non-Sensitive

Table 5 Response – DeviceAlertMessage Data Items

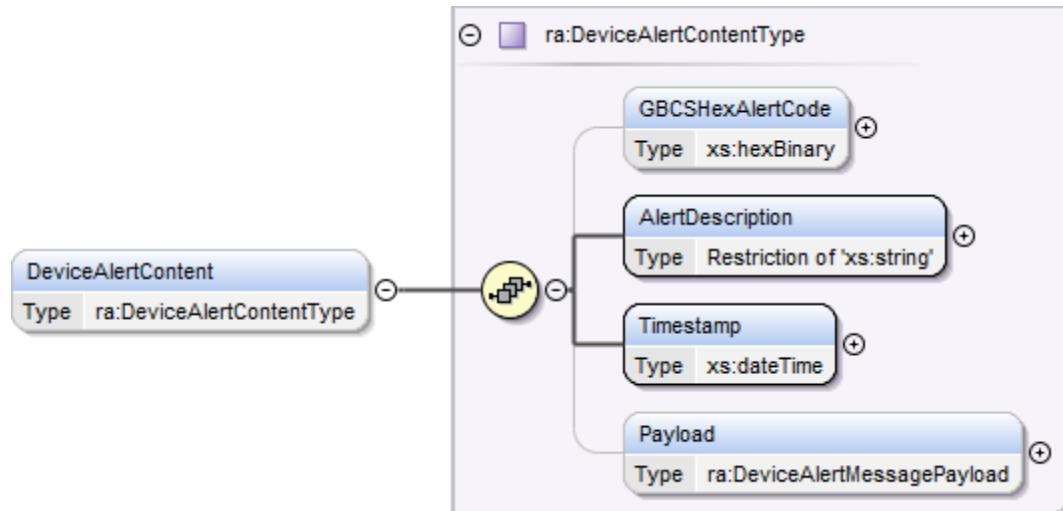


Figure 9 DeviceAlertContent

The Device Alert Content XML structure includes the following fields:

Data Item	Description	Type	Mandatory	Valid Values
GBCSHexAlertCode	The Alert Code corresponding to the Device Alert defined in GBCS, e.g. 0x000C. This is displayed in XML in format of 4 characters e.g. 000C. This field will be populated where the SMETS1 Alert can be mapped to an equivalent GBCS Alert code.	xs:hexBinary	Yes	GBCS: Values in 16 bit hexadecimal from 0001, as defined in GBCS section 16. SMETS1: Subset of GBCS values
AlertDescription	Description of the Device Alert as defined in GBCS or SMETS1 Supporting Requirements	xs:string (maxLength = 250)	Yes	GBCS: See GBCS section 16 SMETS1: SMETS1 Supporting Requirements
Timestamp	The SMETS1 Alert timestamp as sent by the Device, in UTC time.	xs:dateTime (formatted as described in the Main Document section 2.6)	Yes	UTC Date-Time
Payload	This is additional data specific to the GBCS Use Case, where there is data additional to the Alert Code. Most Alerts will not have additional data.	ra:DeviceAlertMessagePayload	GBCS: No SMETS1: N/A	See Annex section 15.

Table 6 SMETS1 Alert Data Items

19.5 Sample Successful Responses

Two sample XML documents conforming to the DUIS XML Schema are shown below, one each for Electricity and Gas Smart Meters. These are shown as full XML documents conforming to the DUIS XML Schema.

In other annexes in this documentation set, header sections and the wrapping Body, SMETS1ResponseMessage, SMETS1SignedResponse, SMETS1Response and ResponseMessage data types are omitted from XML samples for specific Service Requests and corresponding responses.

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>10</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <ServiceReference>4.1</ServiceReference>
      <ServiceReferenceVariant>4.1.1</ServiceReferenceVariant>
      <SMETS1SignedResponse schemaVersion="3.0">
        <SMETS1Response>
          <Header>
            <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
            <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
            <ra:OriginatorCounter>50</ra:OriginatorCounter>
            <ra:ServiceReference>4.1</ra:ServiceReference>
            <ra:ServiceReferenceVariant>4.1.1</ra:ServiceReferenceVariant>
          </Header>
          <Body>
            <ResponseMessage>
              <ra:SMETSData>
                <ra:ReadInstantaneousImportRegistersRsp MessageSuccess="true">
                  <ra:Electricity>
                    <ra:ActiveImportRegister>
                      <ra:Value>10</ra:Value>
                      <ra:ActiveEnergyUnit>Wh</ra:ActiveEnergyUnit>
                    </ra:ActiveImportRegister>
                    <ra:ReactiveImportRegister>
                      <ra:Value>20</ra:Value>
                      <ra:ReactiveEnergyUnit>varh</ra:ReactiveEnergyUnit>
                    </ra:ReactiveImportRegister>
                  </ra:Electricity>
                </ra:ReadInstantaneousImportRegistersRsp>
              </ra:SMETSData>
            </ResponseMessage>
          </Body>
        </SMETS1Response>
      <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
        <SignedInfo>
          <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
          <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
          <Reference URI="">
            <Transforms>
              <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
            </Transforms>
            <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig#sha256" />
            <DigestValue>ZGVmYXVsdA==</DigestValue>
          </Reference>
        </SignedInfo>
        <SignatureValue>ZGVmYXVsdA==</SignatureValue>
      <KeyInfo>
        <X509Data>
          <X509IssuerSerial>
            <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
            <X509SerialNumber>7432112348</X509SerialNumber>
          </X509IssuerSerial>
        </X509Data>
      </KeyInfo>
    </Signature>
  </SMETS1SignedResponse>
</SMETS1ResponseMessage>
</Body>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
```

```

<SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256"/>
<Reference URI="">
  <Transforms>
    <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
  </Transforms>
  <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
  <DigestValue>ZGVmYXVsdA==</DigestValue>
</Reference>
</SignedInfo>
<SignatureValue>ZGVmYXVsdA==</SignatureValue>
<KeyInfo>
  <X509Data>
    <X509IssuerSerial>
      <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
      <X509SerialNumber>7432112347</X509SerialNumber>
    </X509IssuerSerial>
  </X509Data>
</KeyInfo>
</Signature>
</Response>

```

Figure 10 Sample ReadInstantaneousImporRegistersRsp SMETS1 Response Document for Electricity

```

<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <ServiceReference>4.1</ServiceReference>
      <ServiceReferenceVariant>4.1.1</ServiceReferenceVariant>
      <SMETS1SignedResponse schemaVersion="3.0">
        <SMETS1Response>
          <Header>
            <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
            <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
            <ra:OriginatorCounter>50</ra:OriginatorCounter>
            <ra:ServiceReference>4.1</ra:ServiceReference>
            <ra:ServiceReferenceVariant>4.1.1</ra:ServiceReferenceVariant>
          </Header>
          <Body>
            <ResponseMessage>
              <ra:SMETSData>
                <ra:ReadInstantaneousImporRegistersRsp MessageSuccess="true">
                  <ra:Gas>
                    <ra:ConsumptionRegister>
                      <ra:Value>10</ra:Value>
                      <ra:Unit>m3</ra:Unit>
                    </ra:ConsumptionRegister>
                  </ra:Gas>
                </ra:ReadInstantaneousImporRegistersRsp>
              </ra:SMETSData>
            </ResponseMessage>
          </Body>
        </SMETS1Response>
      </SMETS1SignedResponse>
    </SMETS1ResponseMessage>
    <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
      <SignedInfo>
        <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/>
        <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256"/>
        <Reference URI="">
          <Transforms>
            <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
          </Transforms>
          <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
          <DigestValue>ZGVmYXVsdA==</DigestValue>
        </Reference>
      </SignedInfo>
      <SignatureValue>ZGVmYXVsdA==</SignatureValue>
      <KeyInfo>
        <X509Data>
          <X509IssuerSerial>
            <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
            <X509SerialNumber>7432112348</X509SerialNumber>
          </X509IssuerSerial>
        </X509Data>
      </KeyInfo>
    </Signature>
  </Body>
</Response>

```

```

        </X509IssuerSerial>
        </X509Data>
        </KeyInfo>
        </Signature>
        </SMETS1SignedResponse>
        </SMETS1ResponseMessage>
    </Body>
    <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
        <SignedInfo>
            <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
            <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
            <Reference URI="">
                <Transforms>
                    <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
                </Transforms>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig#sha256" />
                <DigestValue>ZGVmYXVsdA==</DigestValue>
            </Reference>
        </SignedInfo>
        <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    </KeyInfo>
    <X509Data>
        <X509IssuerSerial>
            <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
            <X509SerialNumber>7432112347</X509SerialNumber>
        </X509IssuerSerial>
    </X509Data>
    </KeyInfo>
    </Signature>
</Response>

```

Figure 11 Sample ReadInstantaneousImporRegistersRsp SMETS1 Response Document for Gas

19.6 Error Status in MMC XML Schema for SMETS1 Responses

19.6.1 Overview

This section applies to SMETS1 Responses. SMETS1 Alerts do not have a status of this nature, since if a SMETS1 Alert has been received it must have been produced successfully by definition.

For each SMETS1 Response, the SMETSData XML structure in the response Body has an overall Boolean status, called MessageSuccess, indicating the overall status of the message, where the Boolean attribute shall be true (success) or false (failure). The status will be provided by the SMETS1 Service Provider.

Where there has been a failure in the execution of the request to a Device, the error statuses and descriptions are described below. An exception to this are Service Requests 6.11 (Gas), 6.15.1, 6.21, 6.23, 8.1.1 (Gas), 8.7.2, since for these Service Requests the error response is embedded in SMETSData.

19.6.1.1 SMETS1Debug Structure

Debug information for SMETS1 messages are returned using the structure below.

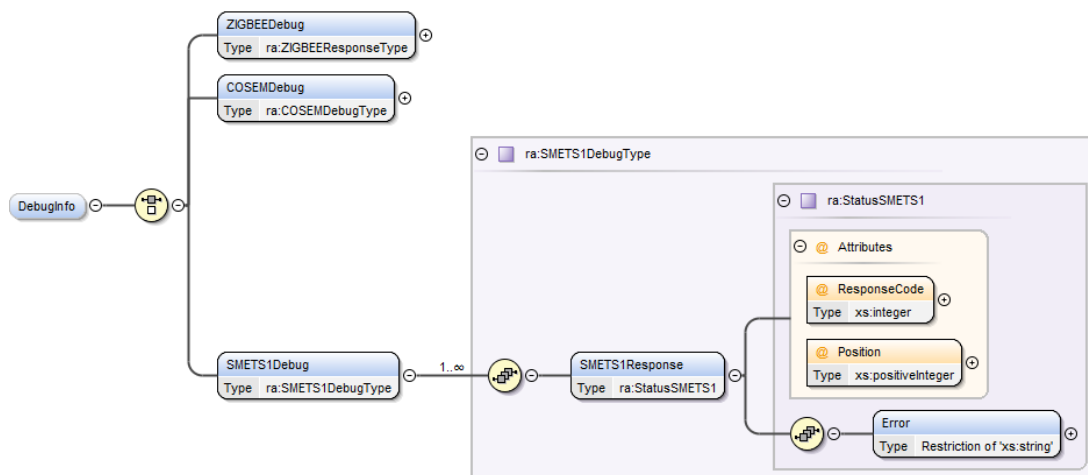


Figure 12 – SMETS1Debug Structure

19.6.1.1.1 Data Items Definition

The following table details the data items in the SMETS1Debug format:

Data Item	Description / Valid Set	Type	Mandatory	Valid Values
ResponseCode	This contains the numerical code returned by the Device, which corresponds to the text string.	xs:integer	Yes	TBD
Position	This is an incrementing value showing the position of the response code in the order in which it was executed.	xs:positiveInteger	Yes	Positive integer starting from 1
Error	A string detailing an error	xs:string	Yes	As defined in the SMETS1 Supporting Requirements

Table 7 Response – SMETS1Debug Data Items

19.6.2 Sample SMETS1 Error Response

Below there is a sample SMETS1 Response document Body showing error status.

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>10</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <ServiceReference>4.1</ServiceReference>
      <ServiceReferenceVariant>4.1.1</ServiceReferenceVariant>
      <SMETS1SignedResponse schemaVersion="3.0">
```

```
<SMETS1Response>
  <Header>
    <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
    <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
    <ra:OriginatorCounter>50</ra:OriginatorCounter>
    <ra:ServiceReference>4.1</ra:ServiceReference>
    <ra:ServiceReferenceVariant>4.1.1</ra:ServiceReferenceVariant>
  </Header>
  <Body>
    <ResponseMessage>
      <ra:SMETSData>
        <ra:ReadInstantaneousImportRegistersRsp MessageSuccess="false">
          <ra:Electricity/>
        </ra:ReadInstantaneousImportRegistersRsp>
      </ra:SMETSData>
      <ra:DebugInfo>
        <ra:SMETS1Debug>
          <ra:SMETS1Response ResponseCode="0" Position="1">
            <ra:Error>Description of data returned</ra:Error>
          </ra:SMETS1Response>
          <ra:SMETS1Response ResponseCode="3" Position="2">
            <ra:Error>Description of data returned</ra:Error>
          </ra:SMETS1Response>
        </ra:SMETS1Debug>
      </ra:DebugInfo>
    </ResponseMessage>
  </Body>
</SMETS1Response>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
    <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
    <Reference URI="">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
      <DigestValue>ZGVmYXVsdA==</DigestValue>
    </Reference>
  </SignedInfo>
  <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>7432112348</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Signature>
</SMETS1SignedResponse>
</SMETS1ResponseMessage>
</Body>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
    <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
    <Reference URI="">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
      <DigestValue>ZGVmYXVsdA==</DigestValue>
    </Reference>
  </SignedInfo>
  <SignatureValue>ZGVmYXVsdA==</SignatureValue>
  <KeyInfo>
    <X509Data>
      <X509IssuerSerial>
        <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
        <X509SerialNumber>7432112347</X509SerialNumber>
      </X509IssuerSerial>
    </X509Data>
  </KeyInfo>
</Signature>
</Response>
```

Figure 13 Sample SMETS1 Error Response - ReadInstantaneousImportRegistersRsp

19.7 Status-Only Responses

Many responses from SMETS1 Devices in response to SMETS1 Service Requests, e.g. those which perform updates, contain no substantial payload, just status information. In successful cases these will simply contain an overall success or failure, within an XML type (under the "SMETSData" attribute). The name is that of the XML type which corresponds to the XML type of the Service Request in the DUIS XML Schema, with the suffix "Rsp", e.g. ActivateEmergencyCreditRsp for Service Request to activate emergency credit on a meter.

Cases where an error message has been returned from the Device will follow the normal approach to unsuccessful responses, as described in section 19.6.

See the next section 19.7.1 in this document for examples of responses which contain no substantial data other than the status.

In general, annexes in this DUGIDS documentation set will not contain structure diagrams, data diagrams or XML samples for cases like this, as they all follow the pattern in the next section 19.7.1.

19.7.1 Sample Status-Only Responses

Sample status-only DUIS XML Schema response documents are shown below, one successful and one unsuccessful.

```

<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88-99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <ServiceReference>2.5</ServiceReference>
      <ServiceReferenceVariant>2.5</ServiceReferenceVariant>
      <SMETS1SignedResponse schemaVersion="3.0">
        <SMETS1Response>
          <Header>
            <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
            <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
            <ra:OriginatorCounter>50</ra:OriginatorCounter>
            <ra:ServiceReference>2.5</ra:ServiceReference>
            <ra:ServiceReferenceVariant>2.5</ra:ServiceReferenceVariant>
          </Header>
          <Body>
            <ResponseMessage>
              <ra:SMETSData>
                <ra:ActivateEmergencyCreditRsp MessageSuccess="true"/>
              </ra:SMETSData>
            </ResponseMessage>
          </Body>
        </SMETS1Response>
        <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
          <SignedInfo>
            <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
            <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
            <Reference URI="">
              <Transforms>
                <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
              </Transforms>
              <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
              <DigestValue>ZGVmYXVsdA==</DigestValue>
            </Reference>
          </SignedInfo>
          <SignatureValue>ZGVmYXVsdA==</SignatureValue>
          <KeyInfo>
            <X509Data>
              <X509IssuerSerial>
                <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
                <X509SerialNumber>7432112348</X509SerialNumber>
              </X509IssuerSerial>
            </X509Data>
          </KeyInfo>
        </Signature>
      </SMETS1SignedResponse>
    </SMETS1ResponseMessage>
  </Body>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
        <DigestValue>ZGVmYXVsdA==</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>ZGVmYXVsdA==</SignatureValue>
    <KeyInfo>
      <X509Data>
        <X509IssuerSerial>
          <X509IssuerName>CN=dsp broker,OU=smart metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
          <X509SerialNumber>7432112347</X509SerialNumber>
        </X509IssuerSerial>
      </X509Data>
    </KeyInfo>
  </Signature>

```

</Signature>
</Response>

Figure 14 Sample Activate Emergency Credit SMETS1 Response Document

```
<?xml version="1.0" encoding="UTF-8"?>
<Response xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.dccinterface.co.uk/ServiceUserGateway"
  xmlns:ra="http://www.dccinterface.co.uk/ResponseAndAlert"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" schemaVersion="3.0">
  <Header>
    <RequestID>11-22-33-44-55-66-77-88:99-00-AA-BB-CC-DD-EE-FF:50</RequestID>
    <ResponseCode>I0</ResponseCode>
    <ResponseDateTime>2017-08-25T03:04:05.00</ResponseDateTime>
  </Header>
  <Body>
    <SMETS1ResponseMessage>
      <ServiceReference>2.5</ServiceReference>
      <ServiceReferenceVariant>2.5</ServiceReferenceVariant>
      <SMETS1SignedResponse schemaVersion="3.0">
        <SMETS1Response>
          <Header>
            <ra:BusinessOriginatorID>99-00-AA-BB-CC-DD-EE-FF</ra:BusinessOriginatorID>
            <ra:BusinessTargetID>11-22-33-44-55-66-77-88</ra:BusinessTargetID>
            <ra:OriginatorCounter>50</ra:OriginatorCounter>
            <ra:ServiceReference>2.5</ra:ServiceReference>
            <ra:ServiceReferenceVariant>2.5</ra:ServiceReferenceVariant>
          </Header>
          <Body>
            <ResponseMessage>
              <ra:SMETSData>
                <ra:ActivateEmergencyCreditRsp MessageSuccess="false"/>
              </ra:SMETSData>
              <ra:DebugInfo>
                <ra:SMETS1Debug>
                  <ra:SMETS1Response ResponseCode="3" Position="1">
                    <ra:Error>Description of data returned</ra:Error>
                  </ra:SMETS1Response>
                </ra:SMETS1Debug>
              </ra:DebugInfo>
            </ResponseMessage>
          </Body>
        </SMETS1Response>
        <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
          <SignedInfo>
            <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
            <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
            <Reference URI="">
              <Transforms>
                <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
              </Transforms>
              <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
              <DigestValue>ZGVmYXVsdA==</DigestValue>
            </Reference>
          </SignedInfo>
          <SignatureValue>ZGVmYXVsdA==</SignatureValue>
        </KeyInfo>
        <X509Data>
          <X509IssuerSerial>
            <X509IssuerName>CN=S1SP,OU=SMETS1,O=S1SP,L=london,ST=england,C=uk</X509IssuerName>
            <X509SerialNumber>7432112348</X509SerialNumber>
          </X509IssuerSerial>
        </X509Data>
      </KeyInfo>
    </Signature>
  </SMETS1SignedResponse>
</SMETS1ResponseMessage>
</Body>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
    <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256" />
    <Reference URI="">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#sha256" />
      <DigestValue>ZGVmYXVsdA==</DigestValue>
    </Reference>
  </SignedInfo>
  <SignatureValue>ZGVmYXVsdA==</SignatureValue>
</KeyInfo>
<X509Data>
```

```
<X509IssuerSerial>
  <X509IssuerName>CN=dsp broker,OU=smart
metering,O=dcc,L=london,ST=england,C=uk</X509IssuerName>
  <X509SerialNumber>7432112347</X509SerialNumber>
</X509IssuerSerial>
</X509Data>
</KeyInfo>
</Signature>
</Response>
```

Figure 15 Sample (Failed) Activate Emergency Credit SMETS1 Response Document

19.8 Mandatory Fields

The data which comes back from the SMETS1 Device in response to Service Requests and is represented in XML in the corresponding SMETS1 Response 'body' must all be regarded as non-mandatory by Users, because in error cases there might not be any data to bring back, or partial data may be returned in an error case where the SMETS1 Device was able to return some of the data successfully. The only mandatory data item in SMETSData is the overall success status (true or false). The status will be provided by the SMETS1 Service Provider.

In the annex sections of this documentation set which describe SMETS1 Responses conforming to the DUIS XML Schema, specifically the "Specific Data Items" sub-sections within "SMETS1 Response Format" sections, a convention has been adopted that data will be present in normal cases where requests completed without errors and data has been returned successfully by the Device, unless otherwise stated. Data items which are not always present in successful Service Responses will be indicated in the "Description/Valid Set" columns.

19.9 Unsupported Values

In some cases SMETS1 Devices do not support the returning of MMC data attributes. In these cases the attributes shall be set to Unsupported Values as follows:

- The largest possible value conforming to the relevant XML type shall be used to indicate a numerical value which the SMETS1 Device in question does not support, namely:
 - for XML type xs:unsignedInt it shall be 4294967295;
 - for XML type xs:int it shall be 2147483647;
 - for XML type xs:integer, xs:positiveInteger & xs:nonNegativeInteger it shall be 4294967295;
 - for XML type xs:decimal it shall be 4294967295.9;
 - for XML type sr:PriceScale or ra:PriceScale it shall be 127;
 - for XML type xs:short it shall be 32767;
- the value "3000-12-31T00:00:00Z" shall be used to indicate a date-time which the SMETS1 Device in question does not support.

Such cases are noted in individual annex Service Reference Variant sections where applicable.

XML samples in individual annex sections are shown for SMETS2 or later cases and do not normally illustrate use of Unsupported Values. An example is shown below of a response to a SMETS1 Service Request where Unsupported Values feature in the Response.

19.9.1 XML Samples With Unsupported Values

The following samples illustrate use of Unsupported Values in Responses.

Figure 16 shows a sample Parse output from the response to the Service Request 6.2.8 Read Device Configuration (Gas) targeted at a SMETS2 or later Device.

Figure 17 shows an equivalent response where the target was a SMETS1 Device, illustrating the use of Unsupported Values in the “FlowStabilisationPeriod” and “FlowMeasurementPeriod” elements.

Note that only the SRV-specific elements are shown, rather than full XML documents.

```
<ra:ReadDeviceConfigurationGasRsp MessageSuccess="true">
  <ra:CalorificValue>110.6</ra:CalorificValue>
  <ra:ConversionFactor>2</ra:ConversionFactor>
  <ra:UncontrolledGasFlowRate>25.5</ra:UncontrolledGasFlowRate>
  <ra:FlowStabilisationPeriod>100</ra:FlowStabilisationPeriod>
  <ra:FlowMeasurementPeriod>200</ra:FlowMeasurementPeriod>
</ra:ReadDeviceConfigurationGasRsp>
```

Figure 16 - Read Device Configuration (Gas) Parse Response Sample

```
<ra:ReadDeviceConfigurationGasRsp MessageSuccess="true">
  <ra:CalorificValue>110.6</ra:CalorificValue>
  <ra:ConversionFactor>2</ra:ConversionFactor>
  <ra:UncontrolledGasFlowRate>25.5</ra:UncontrolledGasFlowRate>
  <ra:FlowStabilisationPeriod>4294967295</ra:FlowStabilisationPeriod>
  <ra:FlowMeasurementPeriod>4294967295</ra:FlowMeasurementPeriod>
</ra:ReadDeviceConfigurationGasRsp>
```

Figure 17 - Read Device Configuration (Gas) SMETS1 Response Sample

Error Handling Strategy

DCC Guidance Document

Version:

5.2

Date:

June 2023

Classification:

DCC Public

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1 Introduction

1.1 Purpose

This document is to provide guidance regarding how the DCC and Users should behave when Errors occur within the DCC Systems.

1.2 Scope

1.2.1 The Error Handling Strategy guidance document:

- a) outlines the classification of error instances, within the DCC Systems (where a Service Request or the Commands or Responses related to it fail to provide the result expected from that type or category of Service Request); and
- b) sets out procedures to be followed and actions to be taken for the purposes of investigating and correcting such error instances.

1.2.2 The Response Codes categorised in this document returned to the User within Service Responses and DCC Alerts are described in the DCC User Interface Specification (DUIS) and are referred to within this document as the common Response Codes.

1.2.3 The document describes error handling processes for common Response Codes returned through the DCC User Interface resulting from Service Requests or related Commands. It does not cover errors returned from online systems (e.g. SSI or OMS) and does not cover the Registration Data Interface.

1.3 General Provisions

1.3.1 This document should be read in conjunction with the DUIS and the Incident Management Policy. The DUIS provides the DCC Systems Response to Errors, with the management strategy for handling Errors provided by this Error Handling Strategy procedure guidance document and the procedure for the resolution of Errors where they generate Incidents is provided by the Incident Management Policy.

1.3.2 The Target Response Time relating to the processing of Service Requests and the Commands and Responses related to the Service Requests are listed in Section H3.14 of the SEC. Retry and Back-off Period calculations are defined in section 2.10.1 of DUIS (Retry Processing).

1.3.3 Where an Error occurs a Response Code is returned to the User Systems in a Service Response or DCC Alert. Possible values are defined in DUIS.

1.3.4 The Incident Management Policy governs any Incidents that arise from Service Requests and their constituent parts.

2 Error Management

2.1 Error Classification

2.1.1 Errors will be classified into categories. The purpose of classification is to group individual Errors and their associated Response Codes, as defined in DUIS, into categories that enable the DCC and Users to handle Errors in the correct manner.

2.1.2 The Error categories are:

Error category	Type	Description
U	Authentication failure	means authentication failures (such as a failure of secure communications channel with an invalid DCCKI Certificate or a failure of a Service Request or Signed Pre-Command which has not been signed with a valid SMKI Certificate);
V	Access control authorisation failure	means access control authorisation failures (such as an invalid or non-active SEC Party or the User Role does not have the access rights to perform the Service Request or Signed Pre-Command for the specified device);
W	Data validation failure	means data validation failure (such as the Service Request or Signed Pre-Command is not consistent with the DUIS XML schema, or the Service Request or Signed Pre-command is not valid or is not complete);
X	Communication	means a time out or communication failure (such as a response is not received within the expected time and/or date,) or a communication event on the HAN reported by the Communications Hub Function (CHF);
Y	Sequencing failure	means sequencing failures; and
Z	IMP error	is to be used where an Error has occurred and the Incident Management Policy may be followed.

Table 1 – Error categories

2.1.3 The DCC Systems generated common Response Codes relating to the Error Handling Strategy procedures are shown in the DCC Systems Response Codes (table 30 within section 3.5.10 of DUIS).

2.1.4 All common Response Codes and Service Request specific Response Codes are listed within DUIS. A Service Request specific Response Code will be a longer Response Code with an associated message such as E010101 “Too many switching rules defined

(exceeds 200)". Service Request specific Response Codes are not listed in the DCC Systems Response Codes table (table 30 within section 3.5.10 of DUIS) and therefore have no related Error Handling Strategy procedure. Where the user receives a Service Request specific Response Code the User may take action to correct the Service Request with reference to the Response Code and associated message returned, and may correct and resubmit the Service Request. Where corrective action is not possible or is unsuccessful the User may follow the steps outlined in the Incident Management Policy Section 2.1.

- 2.1.5** The procedure for handling each of the Error categories is described in Section 2.2 of the Error Handling Strategy.
- 2.1.6** The DCC will, in all cases, attempt to notify the User when an Error occurs, via a Response or DCC Alert, containing the reason for failure as detailed in DUIS.
- 2.1.7** Where DCC is unable to deliver a response or alert to the User, the DCC shall raise a Service Management Event and retry delivery as defined in DUIS.

2.2 Error Handling Strategy procedures

- 2.2.1** The procedures to be followed and actions to be taken for the purposes of investigating and correcting Errors are detailed in the table below.
- 2.2.2** The 'Error Handling Strategy procedure' identifier consists of a letter prefix (defining the Error category) followed by a unique number. The table below details the step(s) to be undertaken by the User.
- 2.2.3** For all common Response Codes (those covered by this document) which are raised as the result of an Error and where the User requires a resolution to the issue, the User may first reference the Response Code in DUIS Section 3.5.10 to confirm the specific failure

reason attributable to that Response Code. The User should then follow the steps outlined under 'Details' in the table below.

Error Handling Strategy procedure	Response Codes	Details
U1	E100, E65	<p>Prior to sending any Service Request the User must ensure the User Certificate is in accordance with the DUIS and will pass the checks set out in section DUIS 3.2.3 Message Authentication. The User must have successfully completed the relevant procedures and satisfied the criteria set out in the Organisation Certificate Policy and the SMKI RAPP.</p> <p>Where the User receives an E100 Response Code, they should validate the status of their Organisation Certificate by checking the Organisation Certificate Revocation List (CRL). If it is an invalid status the User will need to follow the process in the SMKI Registration Authority Policies and Procedures (RAPP). Both documents are available through the SMKI Repository. If the status is valid then the User should follow the process in Z1 to raise an Incident and include the Service Request certificate information held in Key Info and Organisation ID.</p> <p>Where the User receives an E65 Response Code, the User should check that the Remote Party Role of their Organisation Certificate is 'xmlSign'. If it is not then the User should follow the process in the SMKI RAPP to obtain an Organisation Certificate with Remote Party Role 'xmlSign' and use this new Organisation Certificate for signing subsequent Service Requests or Signed Pre-Commands sent to DCC.</p>
V1	E4	<p>Where the User receives an E4 Response Code the User should check that they have access permission to read the Service Audit Trail for the relevant Device via the SSI for the period relevant to the submitted Service Request. Where the User does not have permission to read the Service Audit Trail they will need to check whether the Device is correctly registered to themselves within Industry Registration Data for the relevant period and should follow existing industry processes to correct the Registration Data where it is not accurate.</p> <p>Where the Registration Data has recently changed (since the end of the last working day) the User may resubmit the Service Request after waiting at least one working day after the original submission to allow for daily Registration update files to be received from Industry registration systems and processed by the DCC.</p> <p>Where the User does have permission to see the Service Audit Trail or determines from the Registration Data that they should have permission to see the Service Audit Trail, they may follow the process in Z1 to raise an Incident providing the information from the Business Target ID and User ID.</p>

Error Handling Strategy procedure	Response Codes	Details
V2	E1	Where the User receives an E1 Response Code the sending organisation should check the Business Originator ID and the associated User Role and confirm it is a valid SEC party / User Role combination. Where the User determines that the combination is incorrect, the information should be corrected and the Service Request resubmitted. Where the User determines that the combination is correct, they should follow the process outlined in Z1 to raise an Incident and include the detail of the Service Request, Business Originator ID and the associated User Role.
V3	E3	<p>Where the User receives an E3 Response Code indicating that the User has had its rights suspended with respect to one or more Services; the User should check that the Service Request is subject to the suspension of rights. Where an individual within a User organisation is unaware of the suspension of rights, they should raise the issue within their own organisation to check that the Suspension has been notified.</p> <p>Where the User acknowledges that its rights are suspended but determines that the Service Request should not be subject to the suspension then the User should follow the process in Z1 to raise an Incident and include the detail of the Service Request and a statement of the Users understanding of the extent of the suspension of rights with reference to M8.6 of the SEC.</p> <p>Where the User's organisation does not acknowledge that its rights are suspended, the User should validate its status with the SEC Panel. If the SEC Panel confirms that the User status held by the DCC is incorrect the User may then follow the process in Z1 to raise an Incident.</p>
V4	E2	<p>Where the User receives an E2 Response Code the User should check DUIS to ensure that the User Role that is being used is allowed to carry out that Service Request.</p> <p>The mapping between Service Requests and User Roles is provided in DUIS Section 3.1.1 - Service Request Matrix. The User must check that the User Role is an Eligible User Role for the Service Request being submitted. If appropriate the User should then make the appropriate amendments and re-submit the Service Request to the DCC.</p> <p>Where the User determines that the User Role is an Eligible User Role but receives an E2 Response Code, they should follow the process in Z1 to raise an Incident and include details of the Service Request and User Role.</p>

Error Handling Strategy procedure	Response Codes	Details
W1	E12	<p>Where the User receives an E12 Response Code the User should check DUIS to ensure that the Service Request is applicable to that Command Variant.</p> <p>The mapping of Command Variant to Service Request or Signed Pre-Command is shown in DUIS clause 3.1.1 - Service Request Matrix. When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.</p> <p>Where the User determines that the combination is valid but receives the E12 Response Code, they should follow the process in Z1 to raise an Incident and include details of the Service Request and Command Variant.</p>
W2	E13	<p>Where the User receives an E13 Response Code the User should check DUIS to ensure that the Service Request is applicable to that URL (Web Service).</p> <p>Check DUIS clause 2.4 - Web Services that the Service Request or Signed Pre-Command has been sent to the correct Web Service. The URL for the Web Service should be checked to match that published by DCC. When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.</p> <p>Where the User determines that the Service Request or Signed Pre-Command has been posted to the correct URL they should follow the process in Z1 to raise an Incident and include details of the Service Request and URL.</p>
W3	E19	<p>Where the User receives an E19 Response Code the User should confirm the Device ID on the Self-Service Interface, if the Device ID is incorrect the user should make amendments to the Service Request and then re-submit the Service Request to the DCC. If the Device ID is showing as correct on the Self-Service Interface the User may follow the process in Z1 to raise an Incident and include details of the Service Request and Device ID.</p> <p>Note that for Non-Device Service Requests the Response Code E19 is returned if the Business Target ID is not the DCC Access Control Broker ID.</p>

Error Handling Strategy procedure	Response Codes	Details
W4	E48	<p>Where the User receives an E48 Response Code the User should check within DUIS that the Service Reference is applicable to that Service Reference Variant.</p> <p>The DUIS clause 3.1.1 - Service Request Matrix defines the valid combinations of Service Reference and Service Reference Variant. When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.</p> <p>Where the User determines that the combination is valid they should follow the process in Z1 to raise an Incident with details of the Service Request including the Service Reference and Service Reference Variant as submitted.</p>
W5	E49 E51 E55	<p>Where the User receives an E49, E51, or E55 Response Code, the User should validate the format within DUIS. For each code specifically the User should perform the following validation:</p> <p>E49 – The User should verify that the Service Request format matches the Service Reference Variant in the message header. This check is in addition to the XML format checks defined in DUIS clause 3.2.2, and therefore very few Service Responses are expected with this code as the majority will be identified and reported as HTTP Response Code 400.</p> <p>E51 - For Signed Pre-Commands the User should check the Message Code contained within the Command matches the Service Reference Variant in the message header.</p> <p>E55 - The DCC Systems recognise the Request ID as a duplicate of one that had not been sent a response at the time the error was generated. The User will need to decide what action to take dependent on the status of their processes.</p> <p>Where having completed the appropriate checks the User determines that the Service Request format is valid the User should follow the process in Z1 to raise an Incident and include the full details of the Service Request or Signed Pre-Command.</p>
W6	E5 E17	<p>Where the User receives an E5 or E17 Response Code, the User should use the Smart Metering Inventory query within the SSI to determine the SMI Status of the Device and then reference DUIS clause 3.2.4 to determine that the combination of SMI Status and Service Request or Signed Pre-Command is valid, referencing the combinations for Response Code E5 or E17 as appropriate.</p> <p>Where having completed the appropriate checks the User determines that the Service Request and SMI Status combination is valid the User should follow the process in Z1 to raise an Incident and include the details of the Service Request and Device Id.</p>

Error Handling Strategy procedure	Response Codes	Details
W7	E11	<p>Where the User receives an E11 Response Code, the User should check the Device Type on the Self Service Interface (SSI) and then check in DUIS to ensure that the Service Request is applicable to that Device Type.</p> <p>Where a User remains on DUIS version 1.0, the E11 Response Code may also be used to indicate that the Service Request is not applicable to the GBCS Version that pertains to the Device Model for that Device. In this case the User should follow the process in W10.</p> <p>Where having completed the appropriate checks the User determines the Service Request and Device Type combination to be valid they should follow the process in Z1 to raise an Incident and include the details of the Service Request and Device Id, along with the DUIS version in use.</p>
W8	E50	<p>The E50 error response from a request for a Command for Local Delivery indicates the Service Request has been quarantined. The User should follow the required steps on receipt of the out of band notification as detailed in the Threshold Anomaly Detection document, prior to resubmitting the Service Request.</p> <p>The normal and expected process following threshold anomaly events is that the User will receive an out of band notification and an Incident will be raised, therefore an Incident will exist prior to the E50 Response Code being received. Where the User has either not received an out of band notification or there is no pre-existing Incident the User should follow the steps outlined in the Incident Management Policy Section 2.1 to determine whether an Incident needs to be raised.</p>
W9	E56	<p>The E56 error response indicates that the Service Request which has been sent is no longer supported by the DCC Data Systems. The User should check the version of DUIS currently being used to confirm the currently supported Service Requests.</p> <p>(Note that, at present as of DUIS v2.0, there are no Service Requests that have been removed from use so this response code should not be received by a User.)</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request and the DUIS version in use.</p>

Error Handling Strategy procedure	Response Codes	Details
W10	E57 E11	<p>Where the User receives an E57 Response Code (or for DUIS V1.0 an E11 Response Code and after having followed procedure W7), the User should use the Smart Metering Inventory query within the SSI to determine the GBCS version that pertains to the Device Model of the Device and then check DUIS to ensure that the Service Request is applicable to that version of GBCS.</p> <p>If the User believes that the Device Model information (and in particular the Firmware Version) held in the Smart Metering Inventory for that Device is incorrect then they should send a Service Request 11.2 to read the Firmware Version from the Device and then confirm the Firmware Version returned in the response or repeat the SSI check to determine the GBCS version. If this shows a different GBCS version then the User may re-submit the original Service Request.</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request and Device Id, along with the DUIS version in use.</p>
W11	E60 E61	<p>Where the User receives an E60 or E61 Response Code, the User should check DUIS to ensure that the Service Request and Command Variant are applicable to SMETS1.</p> <p>If the User believes that the Device Model information (and in particular the SMETS Version) held in the Smart Metering Inventory for that Device is incorrect then they should check the information held in the Certified Products List.</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request, Command Variant and Device Id, along with the DUIS version in use.</p>
W12	E62	<p>Where the User receives an E62 Response Code, the User should check the S1SP Alert Code and refer to the "SMETS1 Service Provider Error Handling Document" .</p> <p>When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request and Device Id.</p>

Error Handling Strategy procedure	Response Codes	Details
W13	E63 E64	<p>Where the User receives an E63 or E64 Response Code, the User should check the contents of the Request ID for that Service Request.</p> <p>For each code specifically the User should perform the following validation:</p> <p>E63 – The User should verify that the Originator Counter in the Service Request has not been used before for that Service Request Variant for that device.</p> <p>E64 - The User should verify that the Originator ID in the Service Request matches the Originator ID contained in the Supplier or Network Operator SMKI certificate that was notified to DCC for that device (via 6.15.1, 6.21 or 6.23)</p> <p>When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request and Device Id.</p>
W14	E68	<p>Where the User receives an E68 Response Code in an N26 DCC Alert, the User should check the value of the ECoS Error Code reported in the DCC Alert.</p> <p>If the ECoS Error Code¹ is 004 or 005 then this indicates a mismatch in Registration data between the DCC Data Systems and the ECoS Party. The User should follow the process in Z1 to raise an Incident and include the details of the original SRV6.23 Service Request and MPxN along with the ECoS Error code reported in the DCC Alert.</p> <p>Other ECoS Error Codes indicate an internal processing error between the DCC Data Systems and the ECoS Party. The User should follow the process in Z1 to raise an Incident and include the details of the original SRV6.23 Service Request along with the ECoS Error code reported in the DCC Alert.</p>

¹ ECoS Error Codes as per definitions in Annex 16 DCC Alerts, Table 15.1 Table of ECoS error codes

Error Handling Strategy procedure	Response Codes	Details
W15	E69	<p>Where the User receives an E69 Response Code, the User should check the contents of the Request ID for that Service Request and verify that the Originator Counter in the Service Request has not been used before for a SRV6.23 Service Request.</p> <p>When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request.</p>
W16	E70	<p>Where the User receives an E70 Response Code, this indicates a breach of SRV6.23 Anomaly Detection Thresholds within the DCC Data Systems or ECoS Party.</p> <p>There is no quarantine of SRV6.23 Service Requests and the Service Request will have been discarded.</p> <p>The User should check the Anomaly Detection Threshold they have set for SRV6.23 Service Requests and, if necessary, increase the Threshold and resubmit the Service Request.</p> <p>Where having completed the appropriate checks the User determines the Service Request should be supported they should follow the process in Z1 to raise an Incident and include the details of the Service Request.</p>
W17	E71	<p>Where the User receives an E71 Response Code, this indicates an internal validation error with the contents of the response returned to the DCC Data Systems by the ECoS Party.</p> <p>The User should follow the process in Z1 to raise an Incident and include the details of the Service Request.</p>
X1	E20 E21	<p>Where the User receives an E20 or E21 Response Code indicating a 'communications failure' the User may follow the steps outlined in the Incident Management Policy Section 2.1, checking for the existence of any existing Incident regarding the communications failure, raised by another User or by the DCC. Where no pre-existing Incident exists the User should include details of the Service Request and Device and the installation location of the Device in the Incident.</p>

Error Handling Strategy procedure	Response Codes	Details
X2	E30 E31	<p>Where the User receives an E30 or E31 Response Code indicating a 'time out' the User may follow the steps outlined in the Incident Management Policy Section 2.1, checking for the existence of any existing Incident regarding the 'time out' communications failure, raised by another User or by the DCC. Where no pre-existing Incident exists the User should include details of the Service Request and Device including the installation location of the Device.</p> <p>For both E30 and E31 Response Codes the User may follow procedure X3 once the Incident is resolved.</p>
X3	E30 E31	Where desired and only when the communications have been confirmed as operational through the resolution of the related Incident, the User may submit a new Service Request to the DCC.
X4	E58	<p>The E58 Response Code is used to report the receipt of GBCS Alert 0x8F84 ('Failure to Deliver Remote Party Message to ESME') from a CHF. This Alert indicates that the CHF has failed after 3 attempts to deliver the message to the ESME over the HAN (see GBCS section 10.2.2.3). There is no need for the User to take any immediate action, since the DCC Data Systems will retry the sending of the Service Request and will ultimately return response code E21 or E31 if no response is received, whereupon the User should follow procedure X1 or X2 as above.</p> <p>If this error is reported repeatedly and becomes a persistent problem then the User may follow the process in Z1 to raise an Incident and include the details of the CHF and ESME Device IDs.</p>
X5	E59	<p>The E59 Response Code is used to report the receipt of a GBCS Alert from a CHF relating to a communications event in the Sub GHZ frequency range (see DUIS section 3.5.10 for a complete list). The User should consult GBCS section 10.6.2.4 to determine whether any further action needs to be taken as a result of receipt of this Alert.</p> <p>If this error is reported repeatedly and becomes a persistent problem then the User may follow the process in Z1 to raise an Incident and include the details of the CHF Device ID and GBCS Alert(s) received.</p>
X6	E66, E67	<p>The E66 and E67 Response Codes indicate a failure of internal communications between the DCC Data Systems and the ECoS Party when processing an SRV6.23 Service Request.</p> <p>The User may try to resend the SRV6.23 Service Request after a short period but should not do this repeatedly.</p> <p>If this error is reported repeatedly and becomes a persistent problem then the User may follow the process in Z1 to raise an Incident, after first checking that no Incident has already been raised with respect to communications failure with the ECoS Party.</p>

Error Handling Strategy procedure	Response Codes	Details
Y1	E40 E41 E42 E52	<p>Where the User receives an E40, E41 or E42 Response Code the sequenced Request has been submitted incorrectly. Where the User identifies the issue the Service Request can be resubmitted and where the User cannot identify an error in the sequenced Service Request the User may raise an Incident and include the full details of the sequenced Request.</p> <p>Where the User receives an E52 Response Code indicating a failure to cancel a Future Dated (DSP) Service Request of the same type, the User should check the details of the Service Request match those of the Future Dated (DSP) Service Request to be deleted and where any inconsistency is found, amend and resubmit the Service Request. Where the User determines the details to be correct, the User should follow the process in Z1 to raise an Incident and include the details of the Service Request.</p>
Y2	E43 E44 E45 E46 E47 E53	Where the User receives an E43, E44, E45, E46, E47, E53 or E54 Response Code the sequenced Request has failed during execution and the User should refer to DUIS 3.5.10 for the description of the error and to DUIS 2.6.4 for the detail of Sequenced Services. Where the User identifies the issue the Service Request that has failed can be resubmitted and where the User cannot identify an error in the sequenced Service Request the User may raise an Incident as described in Z1 and include the full details of the sequenced Service Request.
Z1		Should the User continue to receive Error notifications once the issue has been corrected as directed, it may then, and not otherwise, follow the steps outlined in the Incident Management Policy Section 2.1 to determine whether an Incident needs to be raised.

Table 2 – Error Handling Strategy procedures

2.3 HTTP Response Code handling procedures

2.3.1 In addition to the Error categories identified in the table above DUIS identifies HTTP Response Codes that are returned to Users in certain circumstances. The procedures to be followed for each of these are described in the table below:

HTTP Response Codes	Procedure
300: The recipient requires that the client redirects its request to an alternative URL	<ol style="list-style-type: none"> 1. The User should check all the connection information provided by the DCC with respect to URLs provided for the Service. 2. When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.

HTTP Response Codes	Procedure
400: Bad request	<ol style="list-style-type: none"> 1. The User should confirm that the failed Service Request is in the format as defined in the DUIS. 2. When required the User should resolve the underlying cause of the Error occurring prior to submitting a new Service Request to the DCC.
500: Internal Server Error	<ol style="list-style-type: none"> 1. The User may follow the steps outlined in the Incident Management Policy Section 2.1. 2. Where having followed the IMP the User determines that an Incident should be raised the details of the web service instigation, Service Request and Device should be included within the Incident.
503 Service Unavailable	<ol style="list-style-type: none"> 1. The User may follow the steps outlined in the Incident Management Policy Section 2.1. 2. Where having followed the IMP the User determines that an Incident should be raised the details of the web service instigation, the Service Request and Device should be included within the Incident.
Any other HTTP Response Code (excluding 200 the 'success' code)	<ol style="list-style-type: none"> 1. The User should assess the error based on the error response received and where the User decides it to be necessary they may follow the steps outlined in the Incident Management Policy Section 2.1. 2. Where having followed the IMP the User determines that an Incident should be raised the details of the web service instigation, the Service Request and Device should be included within the Incident.

Table 3 – HTTP Response Code Handling procedures