DCC User Gateway Interface Design Specification

Annex - Service Request Definitions

2 – Prepay Service

Author: DCC
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Contents

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	In managing their Prepayment metering estate, DCC Service Users may experience the following business events that initiate use of a Prepay service request: • Following a business event (such as CoT or CoS) a DCC Service User wishes to amend one or more of the following: - 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 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)		
User Roles	This Service is only available to: • Electricity Import Suppliers (EIS) • Gas Import Suppliers (GIS) As it relates to the management of prepayment meters.		

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	• 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:
	  • 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.
	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.

User Role Access	• 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 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: a. If the EIS does not wish to use Maximum Meter Balance Threshold as a control on Prepayment Top Ups: • 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>2147483647</MaxMeterBalance>* b. If the EIS does wish to use Maximum Meter Balance Threshold as a control on Prepayment Top Ups: 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: • Emergency Credit is both 'unavailable' and 'activated'; and / or • Devices cannot ascertain Emergency Credit Used. In these states, Device behaviour is undefined. ~~5.~~ 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.

GBCS Cross Reference	Electricity	Gas
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. ~~1.~~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.

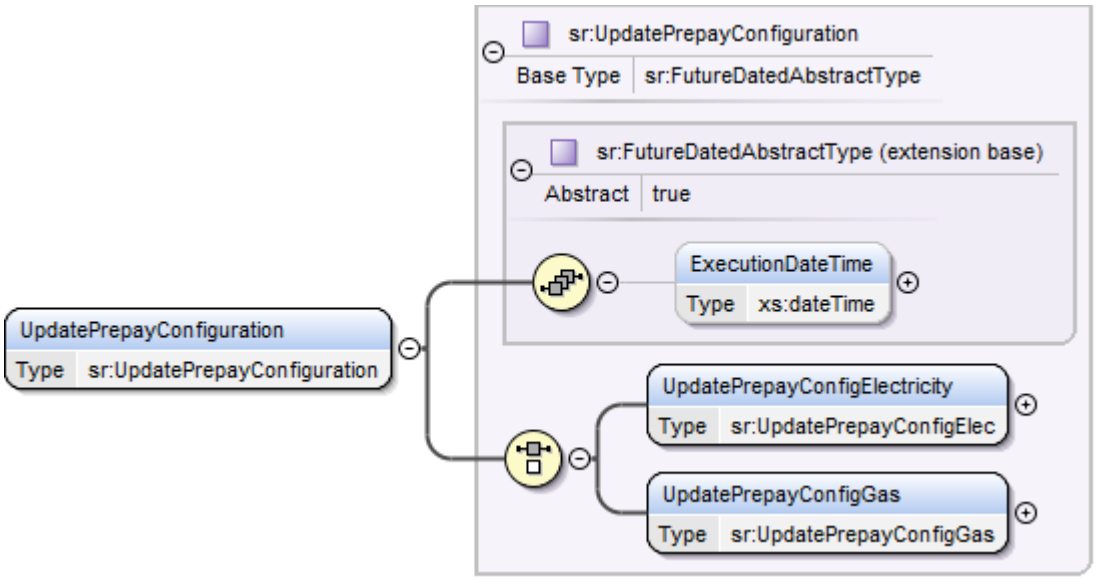

Figure 1 Update Prepay Configuration Service Request Structure

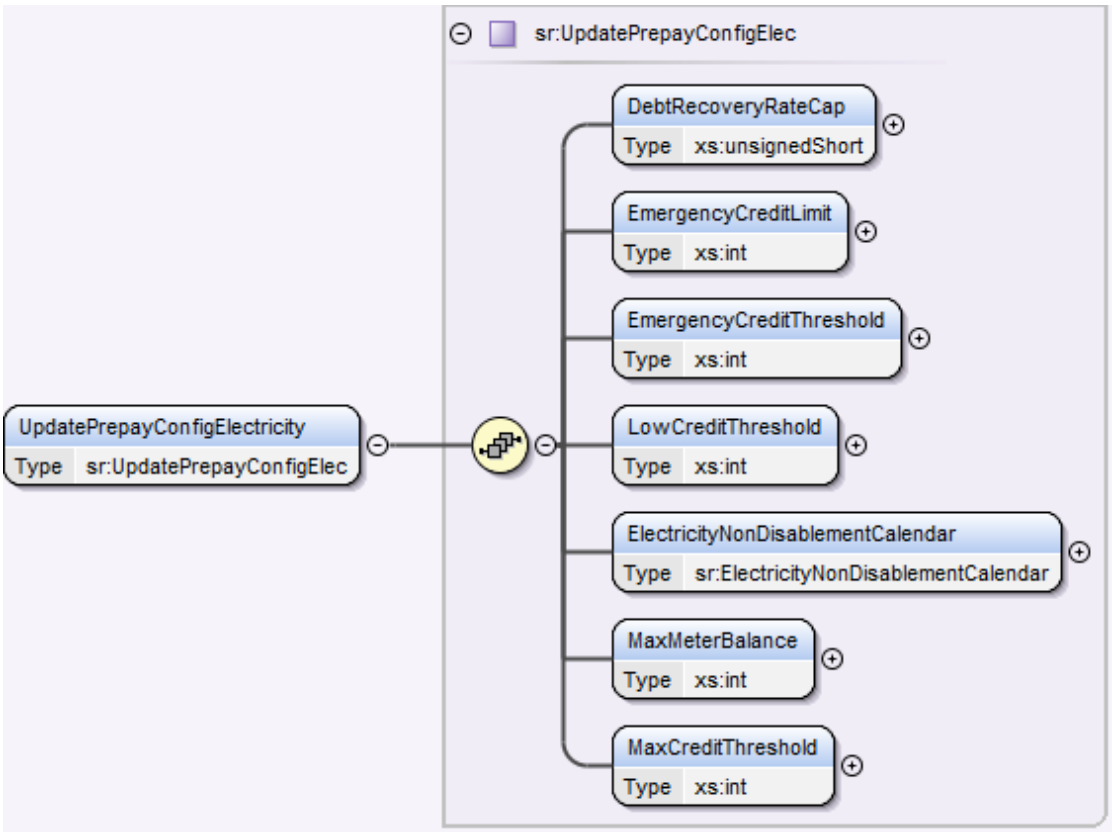

Figure 2 Update Prepay Configuration Service Request – Electricity

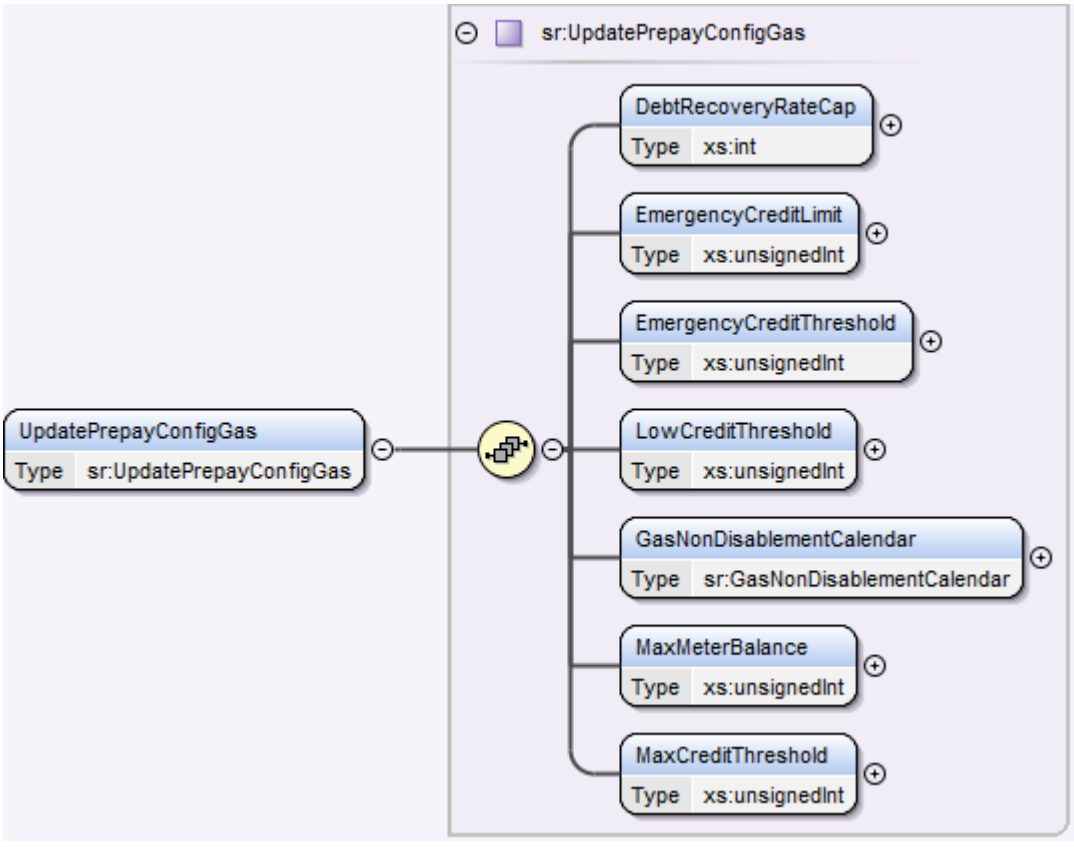

Figure 3 Update Prepay Configuration Service Request – Gas

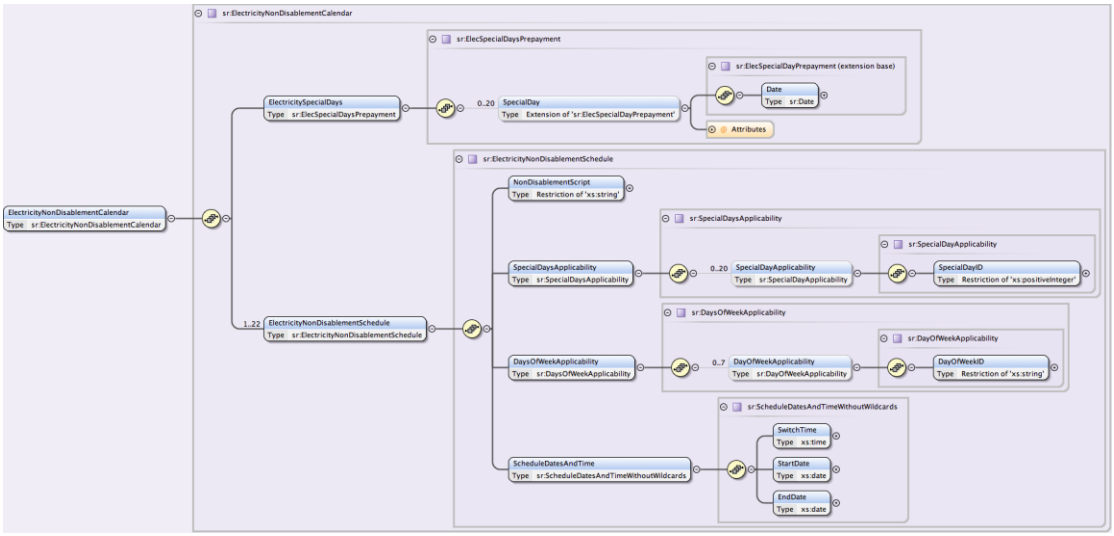

Figure 4 Update Prepay Configuration Service Request – Electricity Non Disablement Calendar Structure

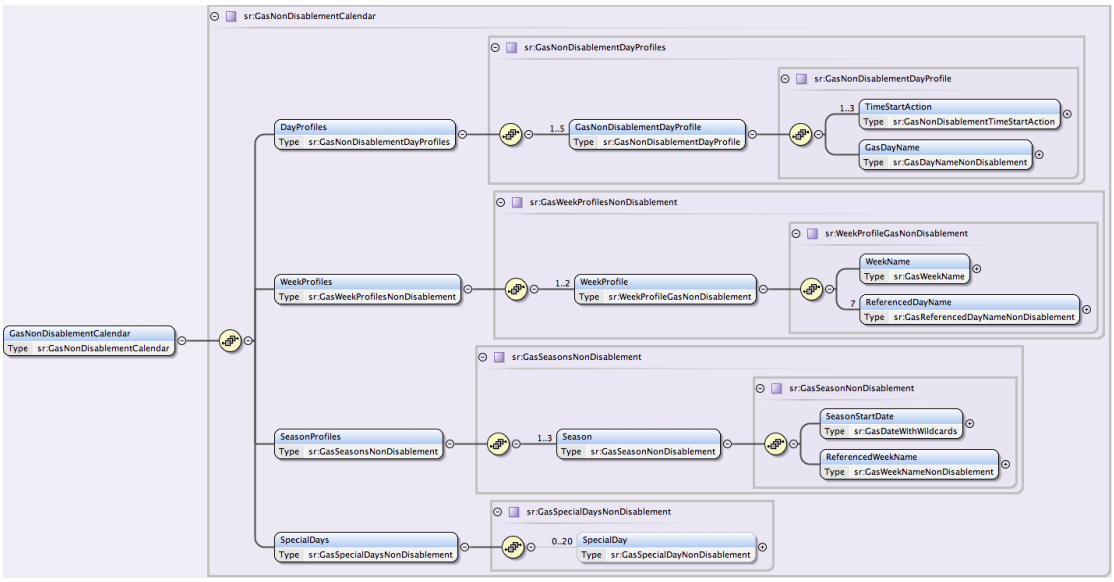

Figure 5 Update Prepay Configuration Service Request – Gas Non Disablement Calendar Structure

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 • 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
UpdatePrepayConfigElectricity	ESME Prepay configuration elements	sr: UpdatePrepayConfigElec (see section 2.1.1.3)	Device Type = ESME, Yes Otherwise, N/A	None	N/A	Non-Sensitive
UpdatePrepayConfigGas	GSME Prepay configuration elements	sr: UpdatePrepayConfigGas (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
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	1000th 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	1000th 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	1000th pence / cent	Non-Sensitive
ElectricityNonDisablementCalendar	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 Disablement schedules	sr:ElectricityNonDisablementCalendar (see section 2.1.1.5)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
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	1000th pence / cent	Non-Sensitive
MaxCreditThreshold	The maximum credit which can be applied by any Add Credit Command. 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	1000th 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	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. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.	xs:int	Yes	None	1000th 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	1000th 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	1000th pence / cent	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
LowCreditThreshold	The threshold in Currency Units below which a low credit Alert is signalled.	xs:unsignedInt	Yes	None	1000th pence / cent	Non-Sensitive
GasNonDisablementCalendar	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. Calendar defining the time periods when Non-Disablement applies or doesn't apply. The calendar includes the definition of: • 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	The Meter Balance threshold in Currency Units above which an Add Credit Command is rejected. 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:unsignedInt	Yes	None	1000th pence / cent	Non-Sensitive
MaxCreditThreshold	The maximum credit which can be applied by any Add Credit Command. 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:unsignedInt	Yes	None	1000th 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 section2.1.1.6)	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-Sensitve

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: • 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
DayOfWeekApplicability	The days of the week to which the schedule applies defined as an array of 7 Day IDs Valid set: • 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: • 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: • 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:GasDayNameNonDisablement	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 Disablement 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 8Figure 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 9Figure 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
GBCS Use Case Number (for information only - not in header)	*ECS08*	*GCS05*
GBCS Use Case Name (for information only - not in header)	*Update Prepayment Configuration on ESME*	*Update Prepayment Configuration on GSME*
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
GBCS Use Case Number (for information only - not in header)	*ECS08a*	*GCS05*
GBCS Use Case Name (for information only - not in header)	*Update Prepayment Configuration on ESME*	*Update Prepayment Configuration on GSME*
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	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. 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).	
User Role Access	• 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)	1. Logically, 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. 2. 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. 3. 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). 4. 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)	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 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. 2. The Command Variants are used as follows: • 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. 3. 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.

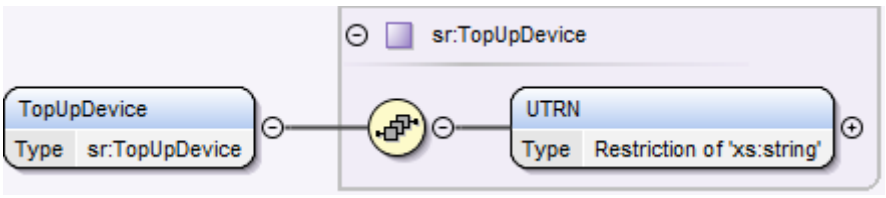

Figure 10 Top Up Device Service Request Structure

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	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. 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.	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>7534567890123456789</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
GBCS Use Case Number (for information only - not in header)	*CS01a*	*CS01b*
GBCS Use Case Name (for information only - not in header)	*Apply Prepayment Top Up to an ESME*	*Apply Prepayment Top Up to a GSME*
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	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. Where debt data is no longer required, DCC Service Users may use this Service Request to overwrite the existing values with appropriate defaults.
User Role Access	• 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 will apply positive and negative adjustments to the *Time Debt Registers* [1 … 2] and the *Payment Debt Register*, as defined in SMETS, when operating in “Prepayment Mode” and also configure the two debt recovery rates on the Smart Meter.

	2. 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. If the device is set to "Credit Mode", the device will not execute the command and a response shall be returned to that effect. 3. Debt can be managed on an ESME or GSME using either Time-based Debt Recovery and/or Payment-based Debt Recovery. **Time Based Debt Recovery** 4. *Time Debt Registers* [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. 5. *Debt Recovery Rates* [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. **Payment-based Debt Recovery** 6. *Payment Debt Register* 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. 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	
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)	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. 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. 2. A SMETS1 device does not necessarily need to be in Prepayment mode to be able to use this Service Request. 3. 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.

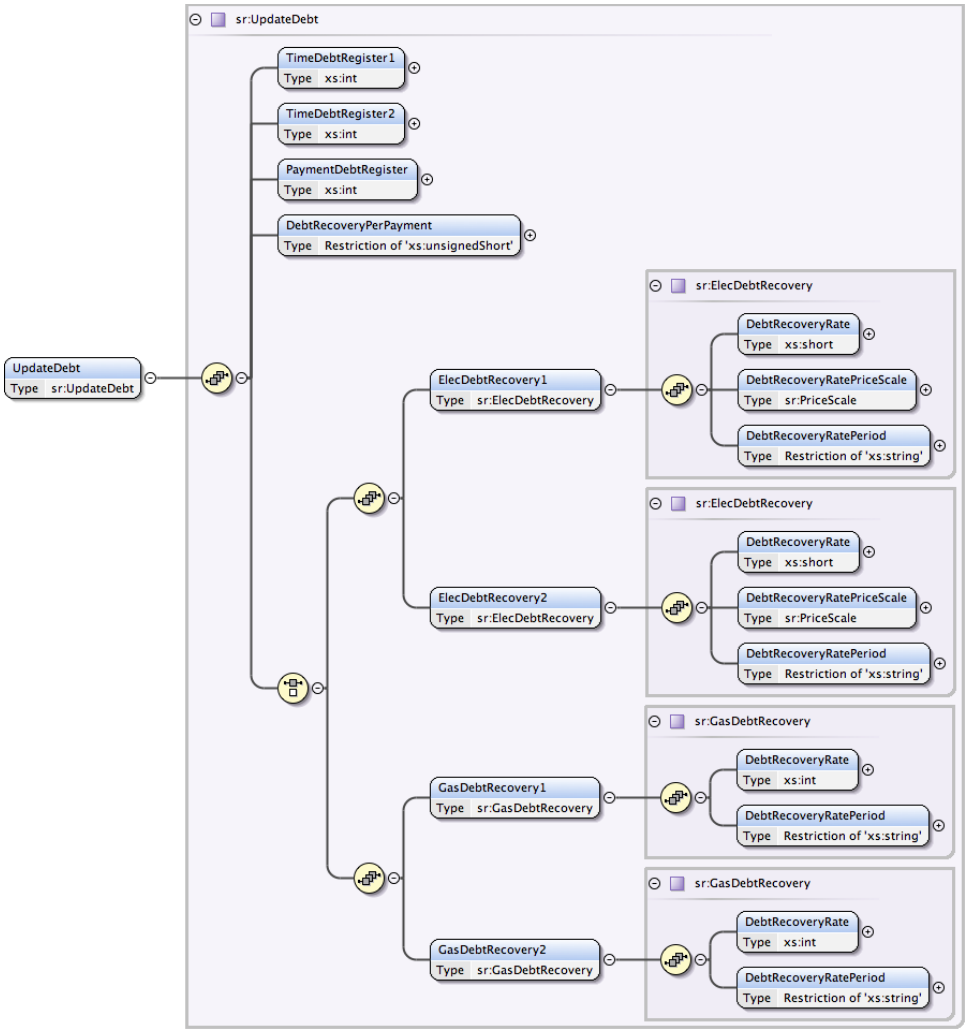

Figure 12 Update Debt Service Request Structure

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	1000th pence / cent	Non-Sensitive
TimeDebtRegister2	The (positive or negative) integer adjustment to apply to the second time-based debt register.	xs:int	Yes	None	1000th pence / cent	Non-Sensitive
PaymentDebtRegister	The (positive or negative) integer adjustment to apply to the PaymentDebtRegister	xs:int	Yes	None	1000th 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	The period after which the debt is recovered. For an Electricity meter this can be; • HOURLY • DAILY 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.	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	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. Service Users are advised not to set this to a negative value as that would lead to undefined Device behaviour.	xs:int	Yes	None	1000th pence / cent	Non-Sensitive
DebtRecoveryRatePeriod	The period after which the debt is recovered. For a Gas meter this period can be; • 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
GBCS Use Case Number *(for information only - not in header)*	*ECS07*	*GCS04*
GBCS Use Case Name *(for information only - not in header)*	*Manage Debt on the ESME*	*Manage Debt on the GSME*
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	To enable a DCC Service User to activate emergency credit on a specified ESME or GSME. 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.

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	• 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)	• 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)	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. 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
GBCS Use Case Number (for information only - not in header)	*ECS09*	*GCS06*
GBCS Use Case Name (for information only - not in header)	*Activate Emergency Credit Remotely on ESME*	*Activate Emergency Credit Remotely on GSME*
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