

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions Introduction

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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/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 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/xmenc#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>
    </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 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/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 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/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/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 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