**Version 4.0 Draft 0.10**

**Message Mapping Catalogue**

# Introduction

## Document Purpose

This document shall be known as the “Message Mapping Catalogue” document and is provided pursuant to Section H11.2.

This Message Mapping Catalogue sets out the mapping of content of Service Responses and Device Alerts issued in GBCS Payload Format to the MMC Output Format.

Additionally requirements in the MMC shall apply to Countersigned SMETS1 Responses and Countersigned SMETS1 Alerts as defined in the DCC User Interface Specification, subject to the variations to such requirements set out in section 1.4.

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## Definitions

|  |  |
| --- | --- |
| **ALCS** | has the meaning set out in the SMETS |

|  |  |
| --- | --- |
| **Alert Code** | has the meaning set out in GBCS or, in relation to SMETS1 Alerts and SMETS1 Responses, the meaning set out in the SMETS1 Supporting Requirements. |

|  |  |
| --- | --- |
| **Electricity Smart Meter** | means ESME. |
| **ESME** | means either a SMETS1 Device which complies with SMETS1 section 5 or a SMETS2+ Device which complies with SMETS2 section 5 or section 9. |

|  |  |
| --- | --- |
| **GBCS Payload Format** | means a base64 encoded format of a GBCS Payload. |
| **GBZ** | has the meaning set out in GBCS. |
| **Message Code** | has the meaning set out in GBCS or, in relation to SMETS1 Alerts and SMETS1 Responses, the meaning set out in the SMETS1 Supporting Requirements. |
| **MMC** | means the Message Mapping Catalogue. |
| **MMC Output Format** | means the XML data format that is defined in this document. |
| **MMC XML Schema** | means the XML schema which delivers the MMC Output Format consistent with the MMC and which is embedded in Annex A. |
| **Zigbee** | means the set of standards as published by the Zigbee Alliance. |
| **Zigbee Smart Energy** | means the subset of the Zigbee standards covering the “Smart Energy” sector. |

Other defined terms in this document shall have the meanings in Section A of the Smart Energy Code.

## Variation of requirements in relation to SMETS1 Responses and SMETS1 Alerts

In relation to Countersigned SMETS1 Responses and Countersigned SMETS1 Alerts, the requirements in sections [2](#_Overview_of_MMC), 3, 4, 5 and 6 shall be varied as follows:

1. Section [2.2.1](#_XML_High-Level_Service) shall not apply.
2. In section 3, section [4.2](#_Device_Alerts), section [5.60](#_Read_Event_or) and section [6.1.2](#_Specific_Body_Data),
   1. references to GBCS shall be references to the SMETS1 Supporting Requirements
   2. Timestamp shall be populated as set out in the SMETS1 Supporting Requirements, and
   3. DeviceAlertContent elements in SMETS1 Alerts shall be populated according to Table 9
3. Section 4.1 shall not apply.

The element named *ResponseMessage* shall always contain a SMETSData element and may also contain a *DebugInfo* element.

The SMETSData group shall always contain a boolean attribute named *MessageSuccess* which shall have the value *true* where DebugInfo is not present and the value *false* otherwise.

The *DebugInfo* group shall contain an element named SMETS1Debug which shall contain an Error element (see Table 1). The Error element shall detail status information related to the SMETS1 Response in question. The DebugInfo group shall only be present where the S1SP is reporting error information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description** | **Type** | **Mandatory** | **Valid Values** |
| Error | A string detailing an error | xs:string | Yes | N/A |

Table 1 : SMETS1Response (ra:StatusSMETS1) MMC Output Format data items

Sections [4.2.1](#_Message_codes_for) and [4.2.2](#_Payload_in_Device) shall not apply for SMETS1 Alerts. SMETS1 Alerts’ Message Codes and payloads shall comply with the requirements of the SMETS1 Supporting Requirements.

Explanatory text in section 5 related to the application of scalars, mulitpliers and divisors from GBCS data shall not apply. For clarity, values in SMETS1 Alerts and SMETS1 Responses shall have the units and format specified in section 5.

Data described as encrypted in sections 4, [5](#_Service_Response_MMC) and [6](#_Device_Alert_MMC) shall not be encrypted in SMETS1 Responses.

# Overview of MMC Output Format

## Introduction

This Message Mapping Catalogue contains a description of the MMC Output Format of data after it has been converted from GBCS Payload Format. The scope of data covered by the Message Mapping Catalogue includes any meaningful and relevant data that is contained within Service Responses and Device Alerts which is in GBCS Payload Format.

DCC Alerts are not included within the scope of the MMC Output Format, nor are Service Responses to Non-Device Service Requests.

The DCC shall ensure that the Parse functionality of the Parse and Correlate software converts all meaningful and relevant GBCS Payload Format data contained within a Service Response or Device Alert into MMC Output Format.

## MMC XML Schema

An XML definition is provided within the MMC XML Schema for each Service Response, where the XML element name shall correspond to the name of the Service Request in the DUIS XML schema, with the addition of the suffix “Rsp” at the end of the name. The MMC XML Schema shall also include an XML definition for all Device Alerts.

Where the content referred to within this document is defined in the DUIS XML Schema the namespace shall be known as “sr”, the full definitions appear in the DUIS document and are not reproduced within the MMC. All XML definitions that appear in the MMC Output Format schema have the namespace “ra”.

The MMC XML Schema delivers an MMC Output Format which is consistent with the further descriptions in Sections [3, 4, 5 and 6] below. For the avoidance of doubt, the MMC XML Schema (and DUIS XML Schema) are provided as the authoritative source for data item definitions. Where any inconsistencies may exist between the definitions contained within the main text within this document and the MMC/DUIS XML Schema data item definitions then the DUIS/MMC XML Schema shall take precedence.

The default within the MMC XML Schema is for items to be optional (minOccurs = 0). Therefore this MMC document does not explicitly show items as ‘optional’ and does not define minOccurs unless it is not set to “minOccurs = 0”. It is recognised that whilst some items are optional within the schema, the item may be mandatory within the business process.

### XML High-Level Service Response Structure

The MMC Output Format complies with the following structures:

1. The top level element shall always be of XML type *GBCSResponse* and shall contain elements as set out immediately below:
2. an XML attribute defining the MMC XML Schema version used;
3. a header element, with element name *Header*, which shall have a format that is common between Service Responses and Device Alerts, as set out in Section 3 of this document; and
4. a body element, which:
   1. for Service Responses, shall have a body element name *ResponseMessage* and shall have the format as set out in Section 4.1 of this document; and
   2. for Device Alerts, shall have a body element name *DeviceAlertMessage* and shall have the format as set out in Section 4.2 of this document.

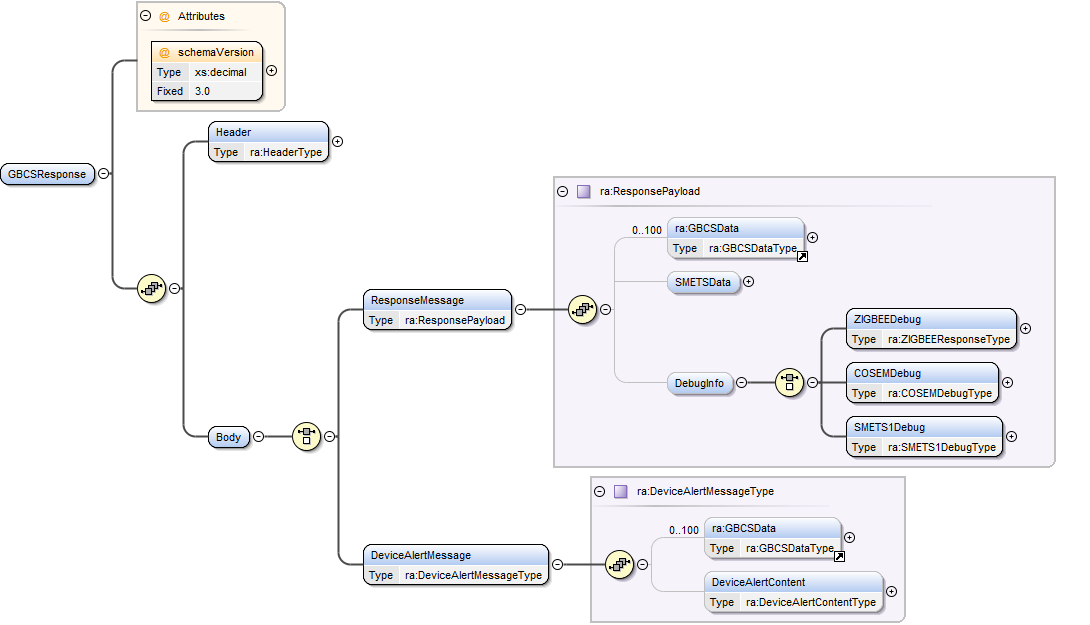


Figure 1 : Overall structure of the MMC Output Format (for information)

## Standard notation and data definitions

Within the MMC Output Format definitions the following notation and data format definitions are used:

1. Wherever the notation “0x” is used as a prefix to a numeric value, this indicates that the numeric value is hexadecimal (base 16), the “0x” does not form part of the value. For example the value denoted as 0x91 equates to a decimal value of 145. This notation is used within GBCS and the SEC.
2. The DCC Systems use UTC (Coordinated Universal Time) for all Requests and Responses. All references to date and/or time in this MMC are references to UTC.
3. All date time items will be returned in the formatted to include the reference to the times zone (UTC) as follows:

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

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

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

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

## Data Types Shared Across Service Responses

This section defines those Data Types that are included in a number of Header Elements within clause 3 and Body Elements within clause below.

### EUI

| **Data Type** | **Description**  **/ Allowable values** | **Type** | **Mandatory** | **Default** | **Units** |
| --- | --- | --- | --- | --- | --- |
| EUI | One EUI-64 value (type ra:EUI) | Restriction of  xs:token  (base type  xs:normalisedString) | No | None | N/A |

### NoType

A type definition to indicate that the specific data item does not have a type associated with it, and is simply an empty tag.

# Header Element of the MMC Output Format

The MMC XML Schema delivers an MMC Output Format for each Service Response and Device Alert that includes a header element consisting of data items as set out in Table 2 immediately below, where the mandatory data items are in all cases included. Each data item that is not indicated as mandatory in Table 2 shall only be included where relevant to the corresponding Service Response or Device Alert, as set out in Sections 5.1 to 5.108 and 6.1 to 6.4 of this document.

| **Data Item** | **Reference or description** | **Type** | **Mandatory** | **Valid Values** |
| --- | --- | --- | --- | --- |
| BusinessOriginatorID | As set out in GBCS, ‘Business Originator ID’ | ra:EUI  (see clause 2.4.1) | Yes | EUI-64 value |
| BusinessTargetID | As set out in GBCS, ‘Business Target ID’ | ra:EUI  (see clause 2.4.1) | Yes | EUI-64 value |
| OriginatorCounter | As set out in GBCS, ‘Originator Counter’ | xs:nonNegativeInteger | Yes | minInclusive = 0, maxInclusive = 18,446,744,073,709,551,615 |
| SupplementaryRemotePartyID | As set out in GBCS, ‘Supplementary Remote Party ID’ | ra:EUI  (see clause 2.4.1) | No | EUI-64 value |
| SupplementaryRemotePartyCounter | As set out in GBCS, ‘Supplementary Remote Party Counter’ | xs:nonNegativeInteger | No | minInclusive = 0, maxInclusive = 18,446,744,073,709,551,615 |
| SupplementaryOriginatorCounter | As set out in GBCS, ‘Supplementary Originator Counter’ | xs:nonNegativeInteger | No | minInclusive = 0, maxInclusive = 18,446,744,073,709,551,615 |
| GBCSHexadecimalMessageCode | As set out in GBCS, ‘Message Code’ | xs:hexBinary | Yes | See GBCS Section 20 mapping table. |
| ServiceReference | As set out in DUIS, ‘Service Reference’  Derived from Service Request | ra:ServiceReference | Yes for Service Responses; No for Device Alerts | See DUIS Service Request Matrix |
| ServiceReferenceVariant | As set out in DUIS, ‘Service Reference Variant’  Derived from Service Request | ra:ServiceReferenceVariant | Yes for Service Responses; No for Device Alerts | See DUIS Service Request Matrix |
| Timestamp | The time as sent by the Device, (UTC) | xs:dateTime | No | UTC Date-Time, taken from the GBCS Grouping Header |

Table 2 : MMC Output Format header data items

# Body Element of the MMC Output Format

## Service Response

The body element of the MMC Output Format in respect of a Service Response shall contain an element name *ResponseMessage* containing one or more of the XML element groups as set out immediately below:

1. SMETSData element group, containing the data extracted from the GBCS Payload as set out in Section 4.1.1 of this document;
2. GBCSData element group, containing data only where there is encrypted data within the Service Response or Device Alert, as set out in Section 4.1.2 of this document; and
3. DebugInfo element group, containing status information generated by an unsuccessful GBCS command as set out in Section 4.1.3 of this document.

### Element group - SMETSData

The *SMETSData* element group shall always be present, except in cases where the GBCS Payload contains encrypted data, and where present, the SMETSData group shall contain:

1. the overall status of the message; a boolean attribute named *MessageSuccess*, contained within the top level element for the Service Response (see 5.1 to 5.108), where the Boolean attribute shall be *true* where the Service Response was returned with no errors, and shall be *false* where the Service Response was not compliant with the GBCS specification or where any errors were returned; and
2. the data extracted from Service Responses in all cases other than where the Service Response only includes the *MessageSuccess* status information; a set of elements which vary according to the corresponding Service Request. The elements to be included in each Service Response are as set out in Sections 5.1 to 5.108 of this document.

### Element group - GBCSData

One or more *GBCSData* element groups will only be present where the Service Response or Device Alert (see 4.2 for Device Alerts) contains some encrypted GBCS Payload Format data. The *GBCSData* element groups contain unencrypted exposed data and/or encrypted unconverted GBCS data, which can be translated to MMC Output Format. Where there is encrypted data in the GBCS Payload, the data may be decrypted as set out in Section 4.3 of this document. Where such encrypted data is contained within the GBCS Payload, the *SMETSData* element group shall not be included within the MMC Output Format.

### Element group - DebugInfo

The *DebugInfo* group will contain any status information returned as part of an unsuccessful DLMS/COSEM or GBZ message as further detailed below, but not in cases where the message is coded in ASN.1 format, the ASN.1 response codes are described under 4.1.3.3. In a few specific cases where a successful response may contain status information indicating a failure, the status is shown in the Service Response definition.

Where there has been a failure in the execution of the Command to a Device, the error statuses shall be handled in a way that is specific to the underlying protocol as defined for the relevant GBCS Use Case within the GBCS. In order to be able to return GBCS protocol-specific status responses, the MMC Output Format includes different status types according to the underlying protocol used by the Command. These relevant underlying protocols are:

1. for GBCS Commands based upon the ZigBee protocol, the Device response status codes shall be in a ZIGBEEDebug structure within the DebugInfo group, as set out in Section 4.1.3.1 of this document;
2. for GBCS Commands based upon the DLMS/COSEM protocol, the Device response status codes shall be in a COSEMDebug structure within the DebugInfo group, as set out in Section 4.1.3.2 of this document; and
3. for security-related Device commands that are implemented in a binary format represented in ASN.1 format, the status codes shall be embedded within the response structure as set out in Section 4.1.3.3 of this document, and the DebugInfo element group shall not be present.

#### Element group - ZIGBEEDebug Status Responses

The *ZIGBEEDebug* element comprises one or more *ZIGBEEClusterResponse* XML elements, the number of which shall depend on the GBCS Use Case.

A Command based on the ZigBee protocol returns information within one or more responses as defined in GBCS (GBZ), each of which may be a *ZIGBEEDataResponse* structure (for attribute related responses) or a *ZIGBEECommandResponse* structure (for command related responses), elements are structured in the order they appear in the Response.

Table 3, as set out immediately below, sets out the debug information associated with a ZigBee message.

A Zigbee failure response requires a level of expert interpretation. For some Zigbee failure responses the debug information will need to be augmented with the contextual detail in the Service Request in order to complete the analysis.

| **Data Item** | **Description / Valid Set** | **Type** | **Mandatory** | **Valid Values** |
| --- | --- | --- | --- | --- |
| ClusterName | The name of the ZSE (ZigBee Smart Energy) cluster from which the response was received. | ra:StringIDType | Yes | See GBCS |
| Id (attribute of ClusterName) | The XML type also carries the ZigBee Cluster identifier of the cluster | xs:string | Yes | See GBCS |
| ZIGBEECommandResponse XML group for each Command which has an error status response (at least one ZIGBEECommandResponse or ZIGBEEDataResponse will be present) | | | | |
| CommandID | ZigBee Smart Energy Protocol command identifier of an operation within the ZSE cluster that is used to update or read from a Device. | xs:string | Yes | See GBCS |
| Status XML group for each status within the response (normally one) | | | | |
| ResponseCode (attribute of Status) | This contains the numerical code returned by the Device, which corresponds to the text string. One of those defined in Table 4 immediately below. | xs:hexBinary | Yes | As defined in GBCS |
| ZCLStatus | ZIGBEE status value, one of those defined in Table 4 immediately below. | xs:string | Yes | As defined in Zigbee |
| ZIGBEEDataResponse XML group for each read attribute operation which has an error status response (at least one ZIGBEECommandResponse or ZIGBEEDataResponse will be present) | | | | |
| AttributeID | ZSE “read attribute” operations where there has been a status returned for an individual attribute.  Note that in some cases data is read by a ZSE Command in which case status will be returned using ZIGBEECommandResponse. | xs:string | Yes | See GBCS |
| Status XML group containing the status within the response | | | | |
| ResponseCode (attribute of Status) | This contains the numerical code returned by the Device, which corresponds to the text string. One of those defined in Table 4 immediately below. | xs:hexBinary | Yes | As defined in GBCS |
| ZCLStatus | ZIGBEE status value, one of those defined in Table 4 immediately below. | xs:string | Yes | As defined in Zigbee |

Table 3 : ZigBee Responses

For each GBCS response code including the Zigbee Smart Energy response codes as set out in Table 4 immediately below, the MMC Output Format shall include the corresponding response code name within the debug information added within the DebugInfo element group. All Zigbee response codes are listed; an error will be identified by one of the failure codes.

| **Response Code** | **Response Code Name (Zigbee status value)** |
| --- | --- |
| 0x00 | SUCCESS |
| 0x01 | FAILURE |
| 0x7e | NOT\_AUTHORIZED |
| 0x7f | RESERVED\_FIELD\_NOT\_ZERO |
| 0x80 | MALFORMED\_COMMAND |
| 0x81 | UNSUP\_CLUSTER\_COMMAND |
| 0x82 | UNSUP\_GENERAL\_COMMAND |
| 0x83 | UNSUP\_MANUF\_CLUSTER\_COMMAND |
| 0x84 | UNSUP\_MANUF\_GENERAL\_COMMAND |
| 0x85 | INVALID\_FIELD |
| 0x86 | UNSUPPORTED\_ATTRIBUTE |
| 0x87 | INVALID\_VALUE |
| 0x88 | READ\_ONLY |
| 0x89 | INSUFFICIENT\_SPACE |
| 0x8a | DUPLICATE\_EXISTS |
| 0x8b | NOT\_FOUND |
| 0x8c | UNREPORTABLE\_ATTRIBUTE |
| 0x8d | INVALID\_DATA\_TYPE |
| 0x8e | INVALID\_SELECTOR |
| 0x8f | WRITE\_ONLY |
| 0x90 | INCONSISTENT\_STARTUP\_STATE |
| 0x91 | DEFINED\_OUT\_OF\_BAND |
| 0x92 | INCONSISTENT |
| 0x93 | ACTION\_DENIED |
| 0x94 | TIMEOUT |
| 0x95 | ABORT |
| 0x96 | INVALID\_IMAGE |
| 0x97 | WAIT\_FOR\_DATA |
| 0x98 | NO\_IMAGE\_AVAILABLE |
| 0x99 | REQUIRE\_MORE\_IMAGE |
| 0xc0 | HARDWARE\_FAILURE |
| 0xc1 | SOFTWARE\_FAILURE |
| 0xc2 | CALIBRATION\_ERROR |
| *Any other number* | RESPONSE\_CODE\_NOT\_KNOWN |

Table 4 : ZigBee Smart Energy Response Codes

#### Element group - COSEMDebug Status Structure

The *COSEMDebug* element shall comprise one or more *COSEMResponse* XML elements, which in turn contain either a *DataAccessResult* element or an *ActionResult* element. The number of *COSEMResponse* structures depends on the GBCS Use Case and the flow taken through the GBCS Use Case determined by the Service Request data items.

For a GBCS response based on DLMS/COSEM, the MMC Output Format shall include either a data access result *DataAccessResult* or a data action result *ActionResult*. The relevant debug information XML output based on DLMS/COSEM messages is set out in Table 5 immediately below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description** | **Type** | **Mandatory** | **Valid Values** |
| ResponseCode (attribute of COSEMResponse) | This contains the numerical code returned by the Device, which corresponds to the text string. | xs:integer | Yes | As defined in GBCS and summarised in Table 6 and Table 7 below |
| Position (attribute of COSEMResponse) | Provides a position within the Command response. A sequence. | xs:positiveInteger | Yes |  |
| DataAccessResult | A status string denoting the result of an operation. | xs:string | Yes, only where ActionResult data item is not present | As defined in GBCS and summarised in Table 7 below |
| ActionResult | A status string denoting the result of an operation. | xs:string | Yes, only where DataAccessResult data item is not present | As defined in GBCS and in Table 6 below |

Table 5 : DLMS/COSEM (ra:StatusCOSEM) MMC Output Format data items

| **Response Code** | **Response Code Name** | **Response Code Type** |
| --- | --- | --- |
| 0 | success | Data action |
| 1 | hardware-fault | Data action |
| 2 | temporary-failure | Data action |
| 3 | read-write-denied | Data action |
| 4 | object-undefined | Data action |
| 9 | object-class-inconsistent | Data action |
| 11 | object-unavailable | Data action |
| 12 | type-unmatched | Data action |
| 13 | scope-of-access-violated | Data action |
| 14 | data-block-unavailable | Data action |
| 15 | long-action-aborted | Data action |
| 16 | no-long-action-in-progress | Data action |
| 250 | other-reason | Data action |
| *Any other number* | response-code-not-known | Data action |

Table 6 : DLMS/COSEM Action Response Codes

| **Response Code** | **Response Code Name** | **Response Code Type** |
| --- | --- | --- |
| 0 | success | Data access |
| 1 | hardware-fault | Data access |
| 2 | temporary-failure | Data access |
| 3 | read-write-denied | Data access |
| 4 | object-undefined | Data access |
| 9 | object-class-inconsistent | Data access |
| 11 | object-unavailable | Data access |
| 12 | type-unmatched | Data access |
| 13 | scope-of-access-violated | Data access |
| 14 | data-block-unavailable | Data access |
| 15 | long-get-aborted | Data access |
| 16 | no-long-get-in-progress | Data access |
| 17 | long-set-aborted | Data access |
| 18 | no-long-set-in-progress | Data access |
| 19 | data-block-number-invalid | Data access |
| 250 | other-reason | Data access |
| *Any other number* | response-code-not-known | Data access |

Table 7 : DLMS/COSEM Data Access Response Codes

#### Status Response Codes

For the GBCS Use Cases that are encoded in the ASN.1 format, the error statuses shall be embedded in the SMETSData element group, rather than using a separate DebugInfo element. In such structures, the MMC Output Format shall include the response code and response code name as set out in Table 8 immediately below.

| **Service Request** | **Response Code Name** | | **Response Code** |
| --- | --- | --- | --- |
| All ASN.1 SRs except 6.11, 8.1.1 | success | | 0 |
| 6.11 (gas only), 8.1.1 (gas only) | reliable | | 0 |
| 6.11 (gas only), 8.1.1 (gas only) | invalid | | 1 |
| 6.11 (gas only), 8.1.1 (gas only) | unreliable | | 2 |
| 6.15.1, 6.21, 6.23, 8.5 | badCertificate | | 5 |
| 6.15.1, 6.21, 6.23, 8.5 | noTrustAnchor | | 10 |
| 6.15.1, 6.21, 6.23, 8.5 | insufficientMemory | | 17 |
| 6.24.1 | trustAnchorNotFound | | 25 |
| 6.15.1, 6.21, 6.23, 8.5 | resourcesBusy | | 30 |
| 6.15.1, 6.21, 6.23, 6.24.1, 8.5 | other | | 127 |
| 6.15.2 | invalidCertificate | | 1 |
| 6.15.2 | wrongDeviceIdentity | | 2 |
| 6.15.2 | invalidKeyUsage | | 3 |
| 6.15.2 | noCorrespondingKeyPair | | 4 |
| 6.15.2 | wrongPublicKey | | 5 |
| 6.15.2 | certificateStorageFailed | | 6 |
| 6.15.2 | privateKeyChangeFailed | | 7 |
| 6.17 | invalidKeyUsage | | 1 |
| 6.17 | keyPairGenerationFailed | | 2 |
| 6.17 | cRProductionFailed | | 3 |
| 6.24.2 | invalidKeyUsage | | 1 |
| 6.24.2 | noCertificateHeld | | 2 |
| 6.24.2 | certificateRetrievalFailure | | 3 |
| 8.7.1, 8.7.2 | invalidMessageCodeForJoinMethodAndRole | | 1 |
| 8.7.1, 8.7.2 | invalidJoinMethodAndRole | | 2 |
| 8.7.1, 8.7.2 | incompatibleWithExistingEntry | | 3 |
| 8.7.1, 8.7.2 | deviceLogFull | | 4 |
| 8.7.1, 8.7.2 | writeFailure | | 5 |
| 8.7.1, 8.7.2 | keyAgreementNoResources | | 6 |
| 8.7.1, 8.7.2 | keyAgreementUnknownIssuer | | 7 |
| 8.7.1, 8.7.2 | keyAgreementUnsupportedSuite | | 8 |
| 8.7.1, 8.7.2 | keyAgreementBadMessage | | 9 |
| 8.7.1, 8.7.2 | keyAgreementBadKeyConfirm | | 10 |
| 8.7.1, 8.7.2 | invalidOrMissingCertificate | | 11 |
| 8.7.1, 8.7.2 | noPartnerLinkKeyReceived | | 12 |
| 8.7.1, 8.7.2 | noCBKEResponse | | 13 |
| 8.8.1, 8.8.2 | otherDeviceNotInDeviceLog | | 1 |
| 8.8.1, 8.8.2 | otherFailure | | 2 |
| 8.12.2 | incompatibleWithExistingEntry | | 3 |
| 8.12.2 | deviceLogFull | | 4 |
| 8.12.2 | writeFailure | | 5 |
| 11.3 | noImageHeld | | 1 |
| 11.3 | hashMismatch | | 2 |
| 11.3 | activationFailure | | 3 |
| All ASN.1 Service Response | notKnown | *Any Response Code where the Response Code/Service Request combination is not listed above* | |

Table 8 : ASN.1 Response Codes

## Device Alerts

The *Body* element of the MMC Output Format in respect of a successful Device Alert shall contain an element named *DeviceAlertMessage* with an underlying element *DeviceAlertContent* containing the XML elements and element groups as set out in Table 9.

Device Alerts containing encrypted data shall be initially processed using the *GBCSData* element of the *DeviceAlertMessage* element, once decrypted (as set out in section 4.3 of this document) the *DeviceAlertContent* structure is used.

The execution of a future dated Service Request may generate one or more Device Alerts to the User in response where the same Service Request executed on demand would generate a Service Response to the User.

All Device Alerts as set out in Sections 6.1 to 6.4 shall contain a Payload XML element with underlying elements specific to the Device Alert.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description** | **Type** | **Mandatory** | **Valid Values** |
| GBCSHexAlertCode | The Alert Code corresponding to the Alert defined in GBCS | xs:hexBinary | Yes | Values in 16 bit hexadecimal, as set out in GBCS |
| AlertDescription | Description of the Alert as defined in GBCS | xs:string  (maxLength = 250) | Yes | As set out in GBCS |
| Timestamp | The Device Alert timestamp as sent by the Device, (UTC) | xs:dateTime | Yes | UTC Date-Time |
| Payload | This is additional data specific to the GBCS Use Case, where there is data additional to the Alert Code, as set out in Sections 6.1 to 6.4 of this document | ra:DeviceAlertMessagePayload | No | As set out in Section 4.2.2 of this document |

Table 9 : Data Items within the DeviceAlertContent element

Where encrypted data is contained within a Device Alert message, such encrypted data shall be contained within the GBCS Payload data item. Where such encrypted data is contained within the GBCS Payload, the *DeviceAlertContent* element group shall not be included within the MMC Output Format. In order to decrypt such data, a User may conduct the steps as set out in Section 4.3 of this document.

### Message codes for Device Alerts

All Device Alerts include both a Message Code within the Header element (see section 3) and an Alert Code within DeviceAlertContent.

Many Device Alerts will share the same common message codes, being either 0x1000 (denoting Critical) or 0x1001 (denoting Non Critical). The Device Alerts that use a specific Message Code instead of such generic codes shall be as defined in GBCS and as listed in Table 10 as set out immediately below.

Device Alerts which use the generic message codes are defined in GBCS and are not listed below.

The MMC Output Format for all Device Alerts which have specific Message Codes shall include additional information within the Payload data item, as set out in Section 4.2.2 of this document. Message Codes shall conform to the “xs:hexBinary” XML type and shall omit any leading “0x” value that would ordinarily appear in the corresponding GBCS code as shown in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **GBCS Version** | **Message Code** | **Purpose** | **Alert Codes** |
| >= 1.0 | 0x0061 | GBCS Use Case ECS68 ESME Critical Sensitive Alert (Billing Data Log) | 0x8F0A |
| >= 1.0 | 0x0067 | GBCS Use Case ECS80 Supply Outage Restore Alert from ESME | 0x8F35, 0x8F36, 0x8F37, 0x8F38, 0x8F39, 0x8F3A, 0x8F3B, 0x8F3C |
| >= 1.0 | 0x008B | GBCS Use Case GCS53, GSME Push Billing Data Log as an Alert | 0x8F0A |
| >= 1.0 | 0x00CA | Future Dated Firmware Activation Alert | 0x8F66, 0x8F67 |
| >= 1.0 | 0x00CB | Future Dated Updated Security Credentials Alert | 0x8F66, 0x8F67 |
| >= 1.0 | 0x00CC | Future Dated Execution Of Instruction Alert (DLMS COSEM) | 0x8F66, 0x8F67 |
| >= 1.0 | 0x00CD | Future Dated Execution Of Instruction Alert (GBZ) | 0x8F66, 0x8F67 |
| >= 1.0 | 0x00CE | Firmware Distribution Receipt Alert (ESME) | 0x8F72, 0x8F1C |
| >= 1.0 | 0x00CF | Firmware Distribution Receipt Alert (GSME) | 0x8F72, 0x8F1C |
| >= 2.0 | 0x00F0 | Meter Integrity Issue Warning Alert - ESME | 0x81A0 |
| >= 2.0 | 0x00F2 | Meter Integrity Issue Warning Alert – GSME | 0x81A0 |
| >= 1.0 | 0x1000 | Generic Critical Alert | As set out in GBCS |
| >= 1.0 | 0x1001 | Generic Non Critical Alert | As set out in GBCS |
| >= 4.0 | 0x0120 | GBCS Use Case ECS100 Command not supported by Device. | 0x8F85 |
| >= 4.0 | 0x0121 | GBCS Use Case ECS101 Limit APC [n] Level Command processed | 0x8F86 |
| >= 4.0 | 0x0122 | GBCS Use Case ECS102 Limit APC [n] Level ended or cancelled | 0x8F87 |
| >= 4.0 | 0x0123 | GBCS Use Case ECS200 Operational Update. | 0x8F88 |
| >= 4.0 | 0x0124 | Future Dated Updated Security Credentials Alert (Load Controller only) | 0x8F66, 0x8F67 |

Table 10 : Device Alert GBCS Message Codes

### Payload in Device Alerts

The MMC Message Format for all Device Alerts which contain additional Payload data are as listed in Table 11 as set out immediately below. Where a Device Alert is associated with a specific GBCS Use Case, this is indicated in Table 11.

| **GBCS Version** | **Alert Code(s)** | **Description** | **GBCS Use Case**  **(where applicable)** | **Message Code** | **Section detailing XML contents** | **Applicable to SMETS1 Alerts**? |
| --- | --- | --- | --- | --- | --- | --- |
| >= 1.0 | 0x8F0A | Billing Data Log Updated (Electricity) | ECS68 ESME Critical Sensitive Alert (Billing Data Log) | 0x0061 | 6.2 | No |
| >= 1.0 | 0x8F0A | Billing Data Log Updated (Gas) | GCS53, GSME Push Billing Data Log as an Alert | 0x008B | 6.2 | No |
| >= 1.0 | 0x8F1C | Firmware Verification Status (Firmware Distribution Receipt) - Failed | CS05b | 0x00CE (Firmware Distribution Receipt Alert (ESME)),  00CF (Firmware Distribution Receipt Alert (GSME)) | 6.1 | Yes |
| >= 1.0 | 0x8F35  0x8F36, 0x8F37, 0x8F38, 0x8F39, 0x8F3A, 0x8F3B, 0x8F3C | Supply Outage Restored Alert | ECS80 Supply Outage Restore Alert from ESME | 0x0067 | 6.3 | No |
| >= 1.0  and modified in 4.0 | 0x8F66 | Future-Dated Command Outcome Action Successful | Any GBCS Use Case that supports Future Dated Services. | 0x00CA (Future Dated Firmware Activation Alert),  0x00CB (Future Dated Updated Security Credentials Alert),  0x00CC (Future Dated Execution Of Instruction Alert - DLMS COSEM) or  0x00CD (Future Dated Execution Of Instruction Alert - GBZ)  GBCS v4.0 or later:  0x0124 (Future Dated Update Load Controller Security Credentials Alert) | 6.4 | No |
| >= 1.0 | 0x8F67 | Future-Dated Command Outcome Action Failed | Any GBCS Use Case that supports Future Dated Services. | As for Alert Code 0x8F66 | 6.4 | No |
| >= 1.0 | 0x8F72 | Firmware Verification Status (Firmware Distribution Receipt) - Successful | CS05b | 0x00CE (Firmware Distribution Receipt Alert (ESME)),  00CF (Firmware Distribution Receipt Alert (GSME)) | 6.1 | Yes |
| >= 2.0 | 0x81A0 | Smart Meter Integrity Issue – Warning | Smart Meter Integrity Issue – Warning from ESME or GSME | 0x00F0 (Meter Integrity Issue Warning Alert – ESME)  0x00F2 (Meter Integrity Issue Warning Alert – GSME) | 6.5 | No |
| >= 4.0 | 0x8F85 | ECS100 Command not supported by Device | ECS100 | 0x0120 | 6.6 | No |
| >= 4.0 | 0x8F86 | ECS101 Limit APC [n] Level Command processed | ECS101 | 0x0121 | 6.7 | No |
| >= 4.0 | 0x8F87 | ECS102 Limit APC [n] Level ended or cancelled | ECS102 | 0x0122 | 6.8 | No |
| >= 4.0 | 0x8F88 | ECS200 Operational Update | ECS200 | 0x0123 | 6.9 | No |

Table 11 : Device Alerts with Additional Payload

## Decryption of encrypted GBCS Payload

Service Responses and Device Alerts that contain encrypted data may be decrypted by a User in order to view the corresponding data. The Service Responses and Device Alerts containing encrypted (Sensitive) data are as set out in Sections 5.1 to 5.108 and Sections 6.1 to 6.4 of this document.

Where a Service Response or Device Alert contains encrypted data, in order to display the unencrypted data in MMC Output Format the User will need to first decrypt the data.

Where a User is utilising the DCC Parse and Correlate Software the steps as set out immediately below shall be performed if the User wishes to decrypt such data and convert to the MMC Output Format:

1. the User shall invoke the Parse component of the Parse and Correlate software with the GBCS Payload as input;
2. the DCC shall ensure that the Parse software breaks the GBCS Payload into fragments of GBCS data, some plain and some encrypted, returning the fragments as a set of XML elements each called GBCSData, each of which has the "format" attribute set to "plain" or "encrypted";
3. the User shall decrypt each encrypted data element, so that data is in plain text GBCS format, and shall write the decrypted data back into the XML GBCSData element(s), changing the "format" attribute to "plain".
4. the User shall again invoke the Parse component of the Parse and Correlate software with the amended GBCSData XML elements as input; and
5. the DCC shall ensure that the Parse component of the Parse and Correlate Software shall convert the GBCS data as provided in step d) into MMC Output Format and shall populate the XML message, returning the fully decrypted and converted XML message back to the User.

# Service Response MMC Output Format definitions

## Update Import Tariff (Primary Element)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateImportTariff(PrimaryElement) |
| **Service Reference** | * 1.1 |
| **Service Reference Variant** | * 1.1.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateImportTariffPrimaryElementRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0019 | 0x006B |
| GBCS Use Case  (for reference - not in header) | ECS01a | GCS01a |
| Timestamp | xs:dateTime | |

Table 12 : Update Import Tariff (Primary Element) MMC Output Format Header data items

## Update Import Tariff (Secondary Element)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateImportTariff(SecondaryElement) |
| **Service Reference** | * 1.1 |
| **Service Reference Variant** | * 1.1.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateImportTariffSecondaryElementRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Electricity Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x00B7 |
| GBCS Use Case  (for reference - not in header) | ECS01c |
| Timestamp | xs:dateTime |

Table 13 : Update Import Tariff (Secondary Element) MMC Output Format Header data items

## Update Price (Primary Element)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdatePrice(PrimaryElement) |
| **Service Reference** | * 1.2 |
| **Service Reference Variant** | * 1.2.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdatePricePrimaryElementRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x00A2 | 0x00A3 |
| GBCS Use Case  (for reference - not in header) | ECS01b | GCS01b |
| Timestamp | xs:dateTime | |

Table 14 : Update Price (Primary Element) MMC Output Format Header data items

## Update Price (Secondary Element)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdatePrice(SecondaryElement) |
| **Service Reference** | * 1.2 |
| **Service Reference Variant** | * 1.2.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdatePriceSecondaryElementRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x00C7 |
| GBCS Use Case  (for reference - not in header) | ECS01d |
| Timestamp | xs:dateTime |

Table 15 : Update Price (Secondary Element) MMC Output Format Header data items

## Update Meter Balance

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateMeterBalance |
| **Service Reference** | * 1.5 |
| **Service Reference Variant** | * 1.5 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateMeterBalanceRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

Service Request 1.5 relates to six different GBCS Commands, depending on the input parameters associated with the Service Request issued by the User, each of which will have a different Service Response. The header elements appear as set out immediately below.

| **Input circumstances** | **GBCSHexadecimalMessageCode** | **GBCS Use Case** |
| --- | --- | --- |
| AdjustMeterBalance for ESME (both PrepaymentMode and CreditMode) | 0x001C | ECS04a |
| ResetMeterBalance for ESME (both PrepaymentMode and CreditMode) | 0x00B3 | ECS04b |
| PrepaymentMode and AdjustMeterBalance for GSME | 0x0086 | GCS40a |
| PrepaymentMode and ResetMeterBalance for GSME | 0x00B4 | GCS40b |
| CreditMode and AdjustMeterBalance for GSME | 0x00C0 | GCS40c |
| CreditMode and ResetMeterBalance for GSME | 0x00C2 | GCS40d |

Table 16 : Update Meter Balance MMC Output Format Header data items

## Update Payment Mode

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdatePaymentMode |
| **Service Reference** | * 1.6 |
| **Service Reference Variant** | * 1.6 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdatePaymentModeRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

This Service Request 1.6 will be implemented by a meter command in one of 4 different GBCS Use Cases, depending on the input parameters sent by the User in the Service Request, so there are 4 different Message Codes which may be returned in the Service Response.

|  |  |  |
| --- | --- | --- |
| **Input circumstances** | **GBCSHexadecimalMessageCode** | **GBCS Use Case** |
| PaymentMode Credit for ESME | 0x001A | ECS02 |
| PaymentMode Prepayment for ESME | 0x001B | ECS03 |
| PaymentMode Credit for GSME | 0x006C | GCS02 |
| PaymentMode Prepayment for GSME | 0x006D | GCS03 |

Table 17 : Update Payment Mode MMC Output Format Header data items

## Reset Tariff Block Counter Matrix

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ResetTariffBlockCounterMatrix |
| **Service Reference** | * 1.7 |
| **Service Reference Variant** | * 1.7 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ResetTariffBlockCounterMatrixRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x001D |
| GBCS Use Case  (for reference - not in header) | ECS05 |

Table 18 : Reset Tariff Block Counter Matrix MMC Output Format Header data items

## Update Prepay Configuration

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * Update Prepay Configuration |
| **Service Reference** | * 2.1 |
| **Service Reference Variant** | 2.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdatePrepayConfigurationRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x001F | 0x006F |
| GBCS Use Case  (for reference - not in header) | ECS08 | GCS05 |
| Timestamp | xs:dateTime | |

Table 19 : Update Prepay Configuration MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x00DE | 0x006F |
| GBCS Use Case  (for reference - not in header) | ECS08a | GCS05 |
| Timestamp | xs:dateTime | |

Table 20 : Update Prepay Configuration MMC Output Format Header data items – GBCS v2.0

## Top Up Device

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * TopUpDevice |
| **Service Reference** | * 2.2 |
| **Service Reference Variant** | 2.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is TopUpDeviceRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0007 | 0x0097 |
| GBCS Use Case  (for reference - not in header) | CS01a | CS01b |
| Timestamp | xs:dateTime | |

Table 21 : Top Up Device MMC Output Format Header data items

## Update Debt

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDebt |
| **Service Reference** | * 2.3 |
| **Service Reference Variant** | 2.3 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDebtRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x001E | 0x006E |
| GBCS Use Case  (for reference - not in header) | ECS07 | GCS04 |

Table 22 : Update Debt MMC Output Format Header data items

## Activate Emergency Credit

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ActivateEmergencyCredit |
| **Service Reference** | * 2.5 |
| **Service Reference Variant** | 2.5 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ActivateEmergencyCreditRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0020 | 0x0070 |
| GBCS Use Case  (for reference - not in header) | ECS09 | GCS06 |

Table 23 : Activate Emergency Credit MMC Output Format Header data items

## Display Message

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * DisplayMessage |
| **Service Reference** | * 3.1 |
| **Service Reference Variant** | 3.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is DisplayMessageRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0021 | 0x0071 |
| GBCS Use Case  (for reference - not in header) | ECS10 | GCS07 |

Table 24 : Display Message MMC Output Format Header data items

## Restrict Access for Change of Tenancy

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RestrictAccessForChangeOfTenancy |
| **Service Reference** | * 3.2 |
| **Service Reference Variant** | * 3.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is RestrictAccessForChangeOfTenancyRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0022 | 0x0072 |
| GBCS Use Case  (for reference - not in header) | ECS12 | GCS09 |

Table 25 : Restrict Access for Change of Tenancy MMC Output Format Header data items

## Clear Event Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ClearEventLog |
| **Service Reference** | * 3.3 |
| **Service Reference Variant** | * 3.3 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ClearEventLogRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response (ESME)** | **Electricity Response Auxiliary Controller (ALCS)** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0024 | 0x00C1 | 0x0015 |
| GBCS Use Case  (for reference - not in header) | ECS15a | ECS15c | CS11 |

Table 26 : Clear Event Log MMC Output Format Header data items

## Update Supplier Name

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateSupplierName |
| **Service Reference** | * 3.4 |
| **Service Reference Variant** | * 3.4 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateSupplierNameRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0025 | 0x0088 |
| GBCS Use Case  (for reference - not in header) | ECS16 | GCS44 |

Table 27 : Update Supplier Name MMC Output Format Header data items

## Disable Privacy PIN

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * DisablePrivacyPIN |
| **Service Reference** | * 3.5 |
| **Service Reference Variant** | * 3.5 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is DisablePrivacyPINRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0023 | 0x0073 |
| GBCS Use Case  (for reference - not in header) | ECS14 | GCS11 |

Table 28 : Disable Privacy Pin MMC Output Format Header data items

## Read Instantaneous Import Registers

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadInstantaneousImportRegisters |
| **Service Reference** | * 4.1 |
| **Service Reference Variant** | * 4.1.1 |

### MMC Output Format

The xml type within the SMETSData element is ReadInstantaneousImportRegistersRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0027 | 0x0074 |
| GBCS Use Case  (for reference - not in header) | ECS17b | GCS13a |
| Timestamp | xs:dateTime | |

Table 29 : Read Instantaneous Import Registers MMC Output Format Header data items

#### Specific Body Data Items

The XML response structure within ReadInstantaneousImportRegistersRsp differs between Gas and Electricity, the XML groups named *Gas* and *Electricity* are as set out in Table 30 and Table 31 immediately below.

##### Gas Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ConsumptionRegister | Relevant for Gas only  Optional | ra:ConsumptionRegisterDatatype  as set out in Section 5.17.2.2.3 of this document | N/A | Encrypted |

Table 30 : ReadInstantaneousImportRegistersRsp - Gas MMC Output Format Body data items

##### Electricity Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ActiveImportRegister | Relevant for Electricity only  Optional | ra:ActivePowerRegisterDatatype  as set out in Section 5.17.2.2.4 of this document | N/A | Encrypted |
| ReactiveImportRegister | Relevant for Electricity only  Optional | ra:ReactivePowerRegisterDatatype  as set out in Section 5.17.2.2.5 of this document | N/A | Encrypted |
| SecondaryActiveImportRegister | Relevant for Electricity only  Optional | ra:ActivePowerRegisterDatatype  as set out in Section 5.17.2.2.4 of this document | N/A | Encrypted |

Table 31 : ReadInstantaneousImportRegistersRsp - Electricity MMC Output Format Body data items

##### ConsumptionRegisterDatatype Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The total energy imported  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | xs:decimal | m3 | Encrypted |
| Unit | Unit of measure, valid value is m3 | ra:GasConsumptionUnit  (xs:string enumeration) | N/A | Encrypted |

Table 32 : ConsumptionRegisterDatatype MMC Output Format Body data items

##### ActivePowerRegisterDatatype Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The active energy imported, as measured by the measuring element(s)  No scaler applied | xs:integer | Wh | Encrypted |
| ActiveEnergyUnit | Unit of measure, valid value is Wh | ra:ActiveEnergyUnit  (xs:string enumeration) | N/A | Encrypted |

Table 33 : ActivePowerRegisterDatatype MMC Output Format Body data items

##### ReactivePowerRegisterDatatype Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The reactive energy imported, as measured by the measuring element  No scaler applied | xs:integer | varh | Encrypted |
| ReactiveEnergyUnit | Unit of measure, valid value is varh | ra:ReactiveEnergyUnit  (xs:string enumeration) | N/A | Encrypted |

Table 34 : ReactivePowerRegisterDatatype MMC Output Format Body data items

## Read Instantaneous Import TOU Matrices

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadInstantaneousImportTOUMatrices |
| **Service Reference** | * 4.1 |
| **Service Reference Variant** | * 4.1.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadInstantaneousImportTOUMatricesRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0029 | 0x00B6 |
| GBCS Use Case  (for reference - not in header) | ECS17d | GCS13c |
| Timestamp | xs:dateTime | |

Table 35 : Read Instantaneous Import TOU Matrices MMC Output Format Header data items

#### Specific Body Data Items

The XML response structure within ReadInstantaneousImportTOUMatricesRsp differs between Gas and Electricity, the XML groups named *Gas* and *Electricity* are as set out in Table 36 and Table 37 immediately below.

##### Gas Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Gas | XML Group element for gas items | | | |
| TariffTOURegisterMatrix | Relevant for Gas only | ra:TariffTOURegisterMatrixType  as set out in Section 5.18.2.2.3 of this document |  |  |

Table 36 : Gas MMC Output Format Body data items

##### Electricity Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Electricity | XML Group element for electricity items | | | |
| TariffTOURegisterCollection | Relevant for Electricity only | ra:TariffTOURegisterCollectionType  as set out in Section 5.18.2.2.4 of this document |  |  |

Table 37 : Electricity MMC Output Format Body data items

##### TariffTOURegisterMatrixType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| TOURegisterMatrixValue | Accumulated consumption for each TOU rate register.  (max 4)  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS  Index value maps to register matrix | ra:DecimalWithIndex  maxOccurs = 4  (value type is xs:decimal with attribute Index also xs:decimal) | m3 | Encrypted |

Table 38 : TariffTOURegisterMatrixType MMC Output Format Body data items

##### TariffTOURegisterCollectionType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| TOUPrimaryRegisterValue | Tariff Registers for Time-of-use Pricing for the primary element  (max 48)  No scaler applied | ra:IntegerWithIndex maxOccurs = 48  (value type is xs:decimal with attribute Index also xs:decimal) | Wh | Encrypted |
| TOUSecondRegisterValue | Tariff Registers for Time-of-use Pricing for the secondary element, (max 4)  No scaler applied | ra:IntegerWithIndex  maxOccurs = 4  (value type is xs:decimal with attribute Index also xs:decimal) | Wh | Encrypted |

Table 39 : TariffTOURegisterCollectionType MMC Output Format Body data items

## Read Instantaneous Import TOU with Blocks Matrices

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadInstantaneousImportTOUWithBlocksMatrices |
| **Service Reference** | * 4.1 |
| **Service Reference Variant** | * 4.1.3 |

### MMC Output Format

The xml type within the SMETSData element is ReadInstantaneousImportTOUWithBlocksMatricesRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x002A |
| GBCS Use Case  (for reference - not in header) | ECS17e |
| Timestamp | xs:dateTime |

Table 40 : Read Instantaneous Import TOU with Blocks Matrices MMC Output Format Header data items

#### Specific Body Data Items

The data items are organised as two sets of 8 values, one set for the block primary registers and one set for the block counter registers, within a repeating group of up to 4 Tariff Blocks, as set out immediately below, where the numeric values shown would correspond to index values.

*Block 1*

*Register Matrix 1*

*Register Matrix 2*

*:*

*Register Matrix 8*

*Counter Matrix 1*

*Counter Matrix 2*

*:*

*Counter Matrix 8*

*Block 2*

*Register Matrix 1*

*etc.*

##### ReadInstantaneousImportTOUWithBlocksMatricesRsp Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| --- | --- | --- | --- |
| TariffBlockTOURegisterCollection | Relevant for Electricity only | ra:TariffBlockTOUType  as set out in Section 5.19.2.2.2 of this document | Encrypted |

Table 41 : ReadInstantaneousImportTOUWithBlocksMatricesRsp MMC Output Format Body data items

##### TariffBlockTOUType Specific Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| TariffBlock | Tariff Register matrices for Time-of-use with Block Pricing. Max 4 | As set out in Section 5.19.2.2.3 of this document  maxOccurs = 4 | Encrypted |

Table 42 : TariffBlockTOUType MMC Output Format Body data items

##### TariffBlock Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| RegisterMatrixTOUValue | Tariff Registers for Time-of-use with Block Pricing. Max 8 | ra:IntegerWithIndex  maxOccurs = 8  (value type is xs:decimal with attribute Index also xs:decimal) | Wh | Encrypted |
| CounterMatrixTOUValue | Tariff Registers for Time-of-use with Block Pricing. Max 8 | ra:IntegerWithIndex  maxOccurs = 8  (value type is xs:decimal with attribute Index also xs:decimal) | Wh | Encrypted |
| Index (attribute of TariffBlock) | Value 1-4 | xs:positiveInteger |  |  |

Table 43 : TariffBlock MMC Output Format Body data items

## Read Instantaneous Import Block Counters

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadInstantaneousImportBlockCounters |
| **Service Reference** | * 4.1 |
| **Service Reference Variant** | * 4.1.4 |

### MMC Output Format

The xml type within the SMETSData element is ReadInstantaneousImportBlockCountersRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x00B8 |
| GBCS Use Case  (for reference - not in header) | GCS13b |
| Timestamp | xs:dateTime |

Table 44 : Read Instantaneous Import Block Counters MMC Output Format Header data items

#### Specific Body Data Items

##### ReadInstantaneousImportBlockCountersRsp Specific Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| ImportBlockCounters | Relevant for Gas only | ra:ImportBlockCounters  As set out in Section 5.20.2.2.2 of this document | Encrypted |

Table 45 : Read Instantaneous Import Block Counters MMC Output Format Body data items

##### ImportBlockCounters Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| TariffBlockCounterValue | Accumulated consumption within each block (max 4).  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS  Index value maps to tariff | ra:DecimalWithIndex  maxOccurs = 4  (value type is xs:decimal with attribute Index also xs:decimal) | m3 | Encrypted |

Table 46 : ImportBlockCounters MMC Output Format Body data items

## Read Instantaneous Export Registers

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadInstantaneousExportRegisters |
| **Service Reference** | * 4.2 |
| **Service Reference Variant** | * 4.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadInstantaneousExportRegistersRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0026 |
| GBCS Use Case  (for reference - not in header) | ECS17a |
| Timestamp | xs:dateTime |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party |

Table 47 : Read Instantaneous Export Registers MMC Output Format Header data items

#### Specific Body Data Items

##### ReadInstantaneousExportRegistersRsp Specific Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| ActiveExportRegister | Relevant for Electricity only - an optional element | ra:ActivePowerRegisterDataType | Unencrypted |
| ReactiveExportRegister | Relevant for Electricity only - an optional element | ra:ReactivePowerRegisterDataType | Unencrypted |

Table 48 : ReadInstantaneousExportRegistersRsp MMC Output Format Body data items

##### ActivePowerRegisterDataType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The register recording the active energy exported, as measured by the measuring element.  No scaler applied | xs:integer | Wh | Unencrypted |
| ActiveEnergyUnit | Unit of measure, valid value is Wh | xs:string | N/A | Unencrypted |

Table 49 : ActivePowerRegisterDataType MMC Output Format Body data items

##### ReactivePowerRegisterDataType Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Value | The register recording the cumulative Reactive Energy Exported.  No scaler applied | xs:integer | varh | Unencrypted |
| ReactiveEnergyUnit | Unit of measure, valid value is varh | xs:string | N/A | Unencrypted |

Table 50 : ReactivePowerRegisterDataType MMC Output Format Body data items

## Read Instantaneous Prepay Values

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadInstantaneousPrepayValues |
| **Service Reference** | * 4.3 |
| **Service Reference Variant** | * 4.3 |

### MMC Output Format

The xml type within the SMETSData element is ReadInstantaneousPrepayValuesRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x002D | 0x0075 |
| GBCS Use Case  (for reference - not in header) | ECS19 | GCS14 |
| Timestamp | xs:dateTime | |

Table 51 : Read Instantaneous Prepay Values MMC Output Format Header data items

#### Specific Body Data Items

The XML elements within the ReadInstantaneousPrepayValuesRsp block are the same for Gas and Electricity.

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| EmergencyCreditBalance | The amount of emergency credit remaining  No scaler applied | xs:integer | 1000th pence/cent | ESME – Encrypted  GSME – Encrypted |
| AccumulatedDebtRegister | The debt accumulated on the meter for time based charges (standing charge and time based debt recovery) but only used whilst EmergencyCredit is in use, and where SuspendDebtEmergency value is equal to true  No scaler applied | xs:integer | 1000th pence/cent | ESME – Encrypted  GSME – Encrypted |
| PaymentDebtRegister | Debt to be recovered as a percentage of payment when using Payment-based Debt Recovery in Prepayment Mode.  No scaler applied | xs:integer | 1000th pence/cent | ESME – Encrypted  GSME – Encrypted |
| TimeDebtRegister1 | First of two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery in Prepayment Mode.  No scaler applied | xs:integer | 1000th pence/cent | ESME - Encrypted  GSME – Encrypted |
| TimeDebtRegister2 | Second of two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery in Prepayment Mode.  No scaler applied | xs:integer | 1000th pence/cent | ESME – Encrypted  GSME – Encrypted |
| MeterBalance | The credit available to the consumer  No scaler applied | xs:integer | 1000th pence/cent | ESME – Encrypted  GSME – Encrypted |

Table 52 : Read Instantaneous Pre-Pay Values MMC Output Format Body data items

## Retrieve Change Of Mode / Tariff Triggered Billing Data Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveCoMOrTariffTriggeredBillingDataLog |
| **Service Reference** | * 4.4 |
| **Service Reference Variant** | * 4.4.2 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveCoMOrTariffTriggeredBillingDataLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x002F | 0x00C3 |
| GBCS Use Case  (for reference - not in header) | ECS20b | GCS15b |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |
| SupplementaryOriginatorCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 53 : Retrieve Change of Mode or Tariff Triggered Billing Data Log MMC Output Format Header data items

#### Specific Body Data Items

The XML response structure within RetrieveCoMOrTariffTriggeredBillingDataLogRsp differs between Gas and Electricity, the XML groups named *Gas* and *Electricity* are as set out in Table 55 : immediately below.

##### Electricity Specific Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| LogEntryConsumptionAndTariffRegistersData *(maximum of 12)* | Arrays of tariff triggered service data  Relevant to Electricity only | ra:ConsumptionAndTariffRegistersType, as set out in Section 5.23.2.2.3 of this document  maxOccurs = 12 | Encrypted |
| LogEntryPrepaymentData *(maximum of 12)* | Arrays of Prepayment Data | ra:PrepaymentOperationalDataType, as set out in Section 5.38.2.2.1 of this document  maxOccurs = 12 | Encrypted |

Table 54 : Electricity MMC Output Format Body data items

##### Gas Specific Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| *LogEntryConsumptionRegister(maximum of 12)* | Arrays of Consumption register data.  Relevant to Gas only | ra:ConsumptionRegisterGasType, as set out in Section 5.23.2.2.4 of this document  maxOccurs = 12 | Encrypted |
| LogEntryPrepaymentData *(maximum of 12)* | Arrays of Prepayment Data | ra:PrepaymentOperationalDataType, as set out in Section 5.38.2.2.1 of this document  maxOccurs = 12 | Encrypted |

Table 55 : Gas MMC Output Format Body data items

##### ConsumptionAndTariffRegistersType Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ActiveImportRegisterConsumption | The register recording the cumulative Active Energy Imported. | xs:integer | Wh | Encrypted |
| TariffTOURegisterMatrixValue (maximum of 48) | Tariff Registers for Time-of-use Pricing. | ra:IntegerWithIndex  maxOccurs = 48  (value type is xs:integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock1RegisterMatrixValue (maximum of 8) | Tariff Registers for Time-of-use with Block Pricing. | ra:IntegerWithIndex  maxOccurs = 8  (value type is xs:integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock2RegisterMatrixValue (maximum of 8) | Tariff Registers for Time-of-use with Block Pricing. | ra:IntegerWithIndex  maxOccurs = 8 (value type is xs:integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock3RegisterMatrixValue (maximum of 8) | Tariff Registers for Time-of-use with Block Pricing. | ra:IntegerWithIndex  maxOccurs = 8  (value type is xs:integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock4RegisterMatrixValue (maximum of 8) | Tariff Registers for Time-of-use with Block Pricing. | ra:IntegerWithIndex  maxOccurs = 8  (value type is xs:integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| SecondaryActiveImportRegisterConsumption | The register recording the cumulative Active Energy Imported via the secondary measuring element of the Electricity Meter, only present if ESME variant is equal to “B” twin element. | xs:integer | Wh | Encrypted |
| SecondaryTariffTOURegisterMatrixValue (maximum of 4) | Secondary measurement element Tariff Registers for Time-of-use Pricing, only present if ESME variant is equal to “B” twin element. | ra:IntegerWithIndex  maxOccurs = 4  (value type is xs:integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| Timestamp | Time when the snapshot was taken. | xs:dateTime | N/A | Encrypted |

Table 56 : Retrieve Change of Mode or Tariff Triggered Billing Data Log – ConsumptionAndTariffRegistersType Specific Data Items

##### ConsumptionRegisterGasType Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ConsumptionRegister | Consumption Register data  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | xs:decimal | m3 | Encrypted |
| Timestamp | Time when the snapshot was taken. | xs:dateTime | N/A | Encrypted |
| TariffTOURegisterMatrixValue | A 1 x 4 matrix for storing Tariff Registers for Time-of-use Pricing.  Index value maps to register matrix  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | ra:DecimalWithIndex maxOccurs = 4  (value type is xs:decimal with attribute Index also xs:decimal) | m3 | Encrypted |
| BlockRegisterMatrixValue | A 1 x 4 matrix for storing Block Counters for Block Pricing  Index value maps to register matrix  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | ra:DecimalWithIndex maxOccurs = 4  (value type is xs:decimal with attribute Index also xs:decimal) | m3 | Encrypted |

Table 57 : Retrieve Change of Mode or Tariff Triggered Billing Data Log – ConsumptionRegisterGasType Specific Data Items

## Retrieve Billing Calendar Triggered Billing Data Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | RetrieveBillingCalendarTriggeredBillingDataLog |
| **Service Reference** | * 4.4 |
| **Service Reference Variant** | * 4.4.3 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveBillingCalendarTriggeredBillingDataLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0030 | 0x0076 |
| GBCS Use Case  (for reference - not in header) | ECS20c | GCS15c |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |
| SupplementaryOriginatorCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 58 : Retrieve Billing Calendar Triggered Billing Data Log MMC Output Format Header data items

#### Specific Body Data Items

The XML response structure within RetrieveBillingCalendarTriggeredBillingDataLogRsp differs between Gas and Electricity, the XML groups named *Gas* and *Electricity* are as set out in Table 72 immediately below.

##### Electricity Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ESMEBillingDataLogEntry (maximum of 12) | Electricity Smart Meter Billing Data Log Entry | ra:ESMEBillingDataLogType, as set out in Section 6.2.2.3 of this document  maxOccurs = 12 | N/A | Encrypted |
| ESMEBillingPrepaymentDataLogEntry | Electricity Smart Meter Billing Prepayment Data Log Entry | ra:PrepaymentOperationalDataType, as set out in Section 5.38.2.2.1 of this document  maxOccurs = 12 | N/A | Encrypted |

Table 59 : Electricity MMC Output Format Body data items

##### Gas Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GSMEBillingDataLogEntry (maximum of 12) | Gas Smart Meter Billing Data Log Entry | ra:GSMEBillingDataLogType, as set out in Section 6.2.2.4 of this document  maxOccurs = 12 | N/A | Encrypted |
| GSMEBillingPrepaymentDataLogEntry | Gas Smart Meter Billing Prepayment Data Log Entry | ra:PrepaymentOperationalDataType, as set out in Section 5.38.2.2.1 of this document  maxOccurs = 12 | N/A | Encrypted |

Table 60 : Retrieve Billing Calendar Triggered Billing Data Log MMC Output Format Body data items

## Retrieve Billing Data Log (Payment Based Debt Payments)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | RetrieveBillingDataLog(PaymentBasedDebtPayments) |
| **Service Reference** | * 4.4 |
| **Service Reference Variant** | * 4.4.4 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveBillingDataLogDebtPaymentsRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x002E | 0x00C4 |
| GBCS Use Case  (for reference - not in header) | ECS20a | GCS15d |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 61 : Retrieve Billing Data Log (Payment Based Debt Payments) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| PaymentBasedDebtRepayment | Array of amount of debt recovered as part of the Credit Added | ra:PaymentBasedDebtRepaymentType, as set out in Section 5.25.2.2.1 of this document | N/A | Unencrypted |

Table 62 : Retrieve Billing Data Log (Payment Based Debt Payments) MMC Output Format Body data items

##### PaymentBasedDebtRepaymentType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LogEntry (maximum of 10) | Amount of debt recovered as part of the credit added and the time stamp of recovery | ra:BillingDataLogAmountTimestamp  maxOccurs = 10  as set out in Section 5.25.2.2.2 of this document | N/A | Unencrypted |

Table 63 : PaymentBasedDebtRepaymentType MMC Output Format data items

##### BillingDataLogAmountTimestamp Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Amount | For PaymentBasedDebtRepayment, is the amount of debt recovered as part of the credit added.  For Prepayment Credits, is the  amount of Prepayment Credit Added | xs:integer | 1000th pence /cent | Unencrypted |
| Timestamp | For PaymentBasedDebtRepayment, the timestamp of recovery.  For Prepayment Credits, the timestamp of application. | xs:dateTime | UTC Date-Time | Unencrypted |

Table 64 : Log Entry (ra:BillingDataLogAmountTimestamp) Specific MMC Output Format data items

## Retrieve Billing Data Log (Prepayment Credits)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveBillingDataLog(PrepaymentCredits) |
| **Service Reference** | * 4.4 |
| **Service Reference Variant** | * 4.4.5 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveBillingDataLogPrepaymentCreditsRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x00C9 | 0x00C5 |
| GBCS Use Case  (for reference - not in header) | ECS20d | GCS15e |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 65 : Retrieve Billing Data Log (Prepayment Credits) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| PrepaymentCredits | Array of 0-5 Prepayment Credits and timestamps | ra:PrepaymentCreditsType, as set out in Section 5.26.2.2.1 of this document | N/A | Unencrypted |

Table 66 : Retrieve Billing Data Log (Prepayment Credits) MMC Output Format Body data items

##### PrepaymentCreditsType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LogEntry (maximum of 5) | Amount of Prepayment Credit Added and timestamp of application | ra:BillingDataLogAmountTimestamp,  maxOccurs = 5  as set out in Section 5.25.2.2.2 of this document | N/A | Unencrypted |

Table 67 : PrepaymentCreditsType MMC Output Format data Items

## Retrieve Import Daily Read Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveImportDailyReadLog |
| **Service Reference** | * 4.6 |
| **Service Reference Variant** | * 4.6.1 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveImportDailyReadLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0033 | 0x0077 |
| GBCS Use Case  (for reference - not in header) | ECS21a | GCS16a |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |
| SupplementaryOriginatorCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 68 : Retrieve Import Daily Read Log MMC Output Format Header data items

#### Specific Body Data Items

The data items, as set out in Table 69 immediately below, appear within the “LogEntry” group, which may repeat up to thirty-one times. The specific Electricity and Gas elements appear within a “Gas” or “Electricity” XML block as defined in Table 69 immediately below.

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Timestamp | The time at which the corresponding log entry was taken, (UTC) | xs:dateTime | UTC Date-Time | Encrypted |
| Gas | XML Block for Gas | | | |
| GasActiveImportRegisterConsumption | The register recording the cumulative Active Energy Imported.  Relevant to Gas only  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | xs:decimal | m3 | Encrypted |
| TariffBlockCounterMatrix | Block Counters for Block Pricing.  Max 4  Index value maps to register matrix  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | ra:DecimalWithIndex maxOccurs = 4  (xs:decimal with attribute Index xs: decimal) | m3 | Encrypted |
| TariffTOURegisterMatrix | Tariff Registers for Time-of-use Pricing.  Max 4  Index value maps to register matrix  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | ra:DecimalWithIndex  maxOccurs = 4  (xs:decimal with attribute Index xs: decimal) | m3 | Encrypted |
| Electricity | XML Block for Electricity | | | |
| ElecActiveImportRegisterConsumption | The register recording the cumulative Active Energy Imported.  Relevant to Electricity only | xs:integer | Wh | Encrypted |
| SecondaryActiveImportRegisterConsumption | The register recording the cumulative Active Energy Imported via the secondary measuring element of the Electricity Meter.  Twin element ESME only. | xs:integer | Wh | Encrypted |
| SecondaryTariffTOURegisterMatrixValue | Tariff Registers for Time-of-use Pricing (max 4).  Twin element ESME only. | ra:IntegerWithIndex maxOccurs = 4  (xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOURegisterMatrixValue | Tariff Registers for Time-of-use Pricing. (max 48) | ra:IntegerWithIndex maxOccurs = 48  (xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock1RegisterMatrixValue | Block Counters for Block Pricing (max 8). | ra:IntegerWithIndex maxOccurs = 8  (xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock2RegisterMatrixValue | Block Counters for Block Pricing (max 8). | ra:IntegerWithIndex maxOccurs = 8  (xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock3RegisterMatrixValue | Block Counters for Block Pricing (max 8). | ra:IntegerWithIndex maxOccurs = 8  (xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock4RegisterMatrixValue | Block Counters for Block Pricing (max 8). | ra:IntegerWithIndex maxOccurs = 8  (xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |

Table 69 : Retrieve Import Daily Read Log (ra:ImportDailyReadLogType) MMC Output Format Body data items

## Retrieve Export Daily Read Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveExportDailyReadLog |
| **Service Reference** | * 4.6 |
| **Service Reference Variant** | * 4.6.2 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveExportDailyReadLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Electricity Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x0035 |
| GBCS Use Case  (for reference - not in header) | ECS21c |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 70 : Retrieve Export Daily Read Log MMC Output Format Header data items

#### Specific Body Data Items

The data items as shown in Table 70 immediately below appear as pairs within the “LogEntry” group, which may repeat up to thirty-one times.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ActiveExportRegisterValue | The log value recording the cumulative Active Energy Exported | xs:integer | Wh | Unencrypted |
| Timestamp | The time at which the corresponding log entry was taken, (UTC) | xs:dateTime | UTC Date-Time | Unencrypted |

Table 71 : Retrieve Export Daily Read Log MMC Output Format Body data items

## Read Active Import Profile Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadActiveImportProfileData |
| **Service Reference** | * 4.8 |
| **Service Reference Variant** | * 4.8.1 |

### MMC Output Format

The xml type within the SMETSData element is ReadActiveImportProfileDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Electricity Response** | **Gas Response** |
| --- | --- | --- |
| GBCSHexadecimalMessageCode | 0x0037 | 0x0078 |
| GBCS Use Case  (for reference - not in header) | ECS22b | GCS17 |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or originator is Unknown Remote Party | |
| SupplementaryOriginatorCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 72 : Read Active Import Profile Data MMC Output Format Header data items

#### Specific Body Data Items

The data items, as set out in Table 73 immediately below, appear within the “LogEntry” group which repeats as necessary (max 19056).

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Timestamp | The date-time stamp at the end of the 30 minute period to which the value relates | xs:dateTime | UTC | Encrypted |
| Electricity | XML Block for Electricity only items | | | |
| PrimaryValue | The total active energy imported in this 30 minute period (if a twin element meter, this is for the primary element; if on a polyphase meter, it is cumulative across the phases).  An invalid half-hourly sample may result in a null value | xs:integer | Wh | Encrypted |
| SecondaryValue | The total active energy imported in this 30 minute period on the secondary element  Relevant to Electricity only  Optional | xs:integer | Wh | Encrypted |
| Gas | XML Block for Gas only items | | | |
| PrimaryValue | The total gas imported in this 30 minute period.  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS  An invalid half-hourly sample may result in a ‘high value’ of 16,777,215 (0xFFFFFF) | xs:decimal | m3 | Encrypted |

Table 73 : Read Active Import Profile Data LogEntry (ra:ProfileDataLogActiveImportType) MMC Output Format Body data items

## Read Reactive Import Profile Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadReactiveImportProfileData |
| **Service Reference** | * 4.8 |
| **Service Reference Variant** | * 4.8.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadReactiveImportProfileDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0038 |
| GBCS Use Case  (for reference - not in header) | ECS22c |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or originator is Unknown Remote Party |

Table 74 : Read Reactive Import Profile Data MMC Output Format Header data items

#### Specific Body Data Items

The data items, as set out in Table 75 immediately below, appear as pairs within the “LogEntry” group and repeats as necessary (max 4464).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ReactiveEnergyImportedValue | The total reactive import energy imported in this 30 minute period (if a twin element meter, this is across the primary and secondary element; if on a polyphase meter, it is cumulative across the phases)  An invalid half-hourly sample may result in a null value. | xs:integer | varh | Unencrypted |
| Timestamp | The date-time stamp at the end of the 30 minute period to which the value relates | xs:dateTime | UTC | Unencrypted |

Table 75 : Read Reactive Import Profile Data MMC Output Format Body data items

## Read Export Profile Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadExportProfileData |
| **Service Reference** | * 4.8 |
| **Service Reference Variant** | * 4.8.3 |

### MMC Output Format

The xml type within the SMETSData element is ReadExportProfileDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0036 |
| GBCS Use Case  (for reference - not in header) | ECS22a |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or originator is Unknown Remote Party |

Table 76 : Read Export Profile Data MMC Output Format Header data items

#### Specific Body Data Items

The data items, as set out in Table 77 immediately below, appear within the “LogEntry” group and repeats as necessary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ActiveEnergyExportedValue | The total active energy exported in this 30 minute period (if a twin element meter, this is for the primary element; if on a polyphase meter, it is cumulative across the phases)  An invalid half-hourly sample may result in a null value. | xs:integer | Wh | Unencrypted |
| ReactiveEnergyExportedValue | The total reactive energy exported in this 30 minute period (if a twin element meter, this is for the primary element; if on a polyphase meter, it is cumulative across the phases)  An invalid half-hourly sample may result in a null value. | xs:integer | varh | Unencrypted |
| Timestamp | The date-time stamp at the end of the 30 minute period to which the value relates | xs:dateTime | UTC | Unencrypted |

Table 77 : Read Export Profile Data MMC Output Format Body data items

## Read Network Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadNetworkData |
| **Service Reference** | * 4.10 |
| **Service Reference Variant** | * 4.10 |

### MMC Output Format

The xml type within the SMETSData element is ReadNetworkDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Electricity Response (Single Phase)** | **Electricity Response (Poly Phase)** | **Gas Response** |
| --- | --- | --- | --- |
| GBCSHexadecimalMessageCode | 0x0039 | 0x00BC | 0x0079 |
| GBCS Use Case  (for reference - not in header) | ECS23 | ECS23b | GCS18 |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or originator is Unknown Remote Party | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or originator is Unknown Remote Party | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or originator is Unknown Remote Party | xs:nonNegativeInteger  Where DSP Scheduled or originator is Unknown Remote Party | xs:nonNegativeInteger  Where DSP Scheduled or originator is Unknown Remote Party |
| SupplementaryOriginatorCounter | N/A | N/A | xs:nonNegativeInteger Where DSP Scheduled or originator is Unknown Remote Party |
| Timestamp | xs:dateTime | | |

Table 78 : Read Network Data MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** | |
| --- | --- | --- | --- | --- | --- |
| Electricity | XML Block for Electricity only items | | | | |
| SinglePhaseESME | Voltage operational data for the single phase of an Electricity Single Phase Meter | ra:VoltageOperationalData, as set out in Section 5.32.2.2.1 of this document | N/A | | Unencrypted |
| PolyPhaseESME | Voltage operational data for each of the 3 phases of an Electricity Poly Phase Meter | ra:VoltagePolyPhaseESME, as set out in Section 5.32.2.2.4 of this document | N/A | | Unencrypted |
| Gas | XML Block for Gas only items | | | | |
| NetworkDataLog | Network Data Log  Relevant to Gas only | ra:GasNetworkDataLog, as set out in Section 5.32.2.2.7 of this document | N/A | | Encrypted |

Table 79 : Read Network Data MMC Output Format Body data items

##### VoltageOperationalData Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AvgRMSOverVoltageCounter | The Average RMS Over Voltage Counter since last reset | ra:AvgRMSVoltageCounterType | N/A | Unencrypted |
| AvgRMSUnderVoltageCounter | The Average RMS Under Voltage Counter since last reset | ra:AvgRMSVoltageCounterType | N/A | Unencrypted |
| AvgRMSVoltageProfileDataLog | A log arranged as a circular buffer such that when full, further writes cause the oldest entry to be overwritten | ra:AvgRMSVoltageProfileDataType, as set out in Section 5.32.2.2.2 of this document | N/A | Unencrypted |

Table 80 : Read Network Data – VoltageOperationalData Specific Data Items

##### AvgRMSVoltageCounterType Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Value | The Average RMS Over/Under Voltage Counter since last reset  No scaler applied | xs:integer | N/A | Unencrypted |
| Unit | The Average RMS Over/Under Voltage Counter Unit  Valid values are: “255”  (where 255 defines - No units) | xs:string | N/A | Unencrypted |

Table 81 : Read Network Data – AvgRMSVoltageCounterType Specific Data Items

##### AvgRMSVoltageProfileDataType Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LogEntry *(maximum of 4320 log)* | The Average RMS Value measured and timestamp for end of the period | ra:AvgRMSVoltageProfileLogEntryType  as set out in Section 5.32.2.2.4 of this document  maxOccurs = 4320 | N/A | Unencrypted |
| MeasurementPeriod | The period in seconds over which the average RMS is averaged | xs:nonNegativeInteger | Seconds | Unencrypted |

Table 82 : Read Network Data – AvgRMSVoltageProfileDataType Specific Data Items

##### AvgRMSVoltageProfileLogEntryType Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The Average RMS Value measured to the nearest 10th of a volt.  No scaler applied | xs:decimal | Volts | Unencrypted |
| Timestamp | The date-time at the end of the corresponding measurement period, (UTC) | xs:dateTime | UTC Date-Time | Unencrypted |

Table 83 : Read Network Data – AvgRMSVoltageProfileLogEntryType Specific Data Items

##### VoltagePolyPhaseESME Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| PhaseVoltageOperationalData *(maximum of three entries, one per phase)* | The Voltage Operational Data for each of the 3 phases | ra:PhaseVoltageOperationalData, as set out in Section 5.32.2.2.6 of this document  maxOccurs = 3 | N/A | Unencrypted |

Table 84 : Read Network Data - VoltagePolyPhaseESME Specific Data Items

##### PhaseVoltageOperationalData Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| VoltageOperationalData | The Voltage Operational Data for each of the 3 phases | ra:VoltageOperationalData, as set out in Section 5.32.2.2.1 of this document | N/A | Unencrypted |
| Phase | Each of the 3 phases in the Meter  Value is between 1 and 3 inclusive | Restriction of  xs:positiveInteger  (minInclusive = 1,  maxInclusive = 3) | N/A | Unencrypted |

Table 85 : Read Network Data – PhaseVoltageOperationalData Specific Data Items

##### GasNetworkDataLog Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LogEntry  *(maximum of 41 entries)* | Log of consumption data | ra:GasNetworkDataLogEntryType, as set out in Section 5.32.2.2.8 of this document  maxOccurs = 41 | N/A | Encrypted |

Table 86 : Read Network Data – GasNetworkDataLog Specific Data Items

##### GasNetworkDataLogEntryType Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | Consumption value within log data taken at 6-minute intervals over a 4-hour period  No scaler applied  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | xs:decimal | m3 | Encrypted |
| Timestamp | The date-time at the end of the corresponding measurement period, (UTC) | xs:dateTime | UTC Date-Time | Encrypted |

Table 87 : Read Network Data – GasNetworkDataLogEntryTypeSpecific Data Items

## Read Tariff (Primary Element)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadTariff(PrimaryElement) |
| **Service Reference** | * 4.11 |
| **Service Reference Variant** | * 4.11.1 |

### MMC Output Format

The xml type within the SMETSData element is ReadTariffPrimaryElementRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x003A | 0x009F |
| GBCS Use Case  (for reference - not in header) | ECS24 | GCS21f |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where the originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party | |

Table 88 : Read Tariff Primary Element MMC Output Format Header data items

#### Specific Body Data Items

The XML response structure within ReadTariffPrimaryElementRsp differs between Gas and Electricity, the XML groups named *Gas* and *Electricity* are as set out in Table 89 and Table 90 immediately below.

##### Electricity Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| PrimaryActiveTariffPrice | Number representing the price | xs:unsignedInt | 1000th pence/cent per kWh | Unencrypted |
| CurrencyUnitsLabel | Valid currency values are:   * GBP * ECB   denoting GB Pounds and Euros | Restriction of  xs:string  (Enumeration) | N/A | Unencrypted |
| CurrencyUnitsName | Valid values are:   * Millipence * Millicent   A value denoting denomination and currency. Either 1000th GBP pence or 1000th Euro cent. | Restriction of  xs:string  (Enumeration) | N/A | Unencrypted |
| StandingCharge | Value with scalar applied is in GBP/Euro per day.  Scaler supplied as separate item | ra:PriceType  (xs:short) | GBP /Euro per day  (after scalar applied) | Unencrypted |
| StandingChargeScale | Multiplier applied to StandingCharge where scalar value is n in 10n (10 to the power n) | ra:PriceScale  (xs:integer  min -128, max 128) | N/A | Unencrypted |
| PriceScale | Multiplier applied to TOU/Block price values where scalar value is n in 10n (10 to the power n) | ra:PriceScale  (xs:integer  min -128, max 128) | N/A | Unencrypted |
| TariffBlockPriceMatrix | Electricity Smart Meter: A 4 by 8 matrix containing prices for Block Pricing  Optional  Scaler applied as defined in GBCS | ra:ElecTariffBlockPriceMatrix *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr: ElecBlockTariff Service Reference Variant 1.2.1) | N/A | Unencrypted |
| TariffTOUPriceMatrix | Electricity Smart Meter: A 1 by 48 matrix containing prices for Time-of-use Pricing  Optional  Scaler applied as defined in GBCS | ra:ElecTariffTOUPriceMatrix *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecPrimaryTOUPrice Service Reference Variant 1.2.1) | N/A | Unencrypted |
| TariffSwitchingTable | A calendar defining times, days and dates for switching the Primary Element tariff, (UTC) | ra:ElecTariffSwitchingTablePrimaryElement *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecSwitchingTablePrimary Service Reference Variant 1.1.1) | N/A | Unencrypted |
| TariffSwitchingTableSpecialDays | A calendar defining special dates for switching the Primary Element tariff | ra:ElecTariffSwitchingTableSpecialDaysPrimaryElement*(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecSpecialDaysPrimary Service Reference Variant 1.1.1) | N/A | Unencrypted |
| TariffThresholdMatrix | A 3 (thresholds) by 8 (rows) matrix capable of holding thresholds for controlling Block Tariffs. | ra:ElecTariffThresholdMatrix*(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecThresholdMatrix Service Reference Variant 1.1.1) | N/A | Unencrypted |

Table 89 : Read Tariff Primary Element - Electricity MMC Output Format Header data items

##### Gas Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| PrimaryActiveTariffPrice | Number representing the price per unit consumed. Related to tariff values through calorific conversion.  Scaler supplied as separate item | xs:unsignedInt | GBP/ Euro per m3  (after scalar applied) | Unencrypted |
| PrimaryActiveTariffPriceScale | A multiplier applied to the PrimaryActiveTariffPrice value. Note this is the value of n in 10^n (10 to the power of n). | ra:PriceScale  (xs:integer  min -128, max 128) | N/A | Unencrypted |
| CurrencyUnitsLabel | Valid currency values are:   * GBP * ECB   denoting GB Pounds and Euros | Restriction of  xs:string  (Enumeration) | N/A | Unencrypted |
| StandingCharge | Valid values are greater than or equal to zero  Scaler applied as defined in GBCS | xs:unsignedInt | 1000th pence /cent per day | Unencrypted |
| TariffSwitchingTable | A calendar defining times, days and dates for switching the tariff, (UTC) | ra:GasTariffSwitchingTable*(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:GasSwitchingTableService Reference Variant 1.1.1) | N/A | Unencrypted |
| TariffSwitchingTableSpecialDays | A calendar defining special dates for switching the Primary Element tariff | ra:GasTariffSwitchingTableSpecialDays*(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:GasSpecialDaysService Reference Variant 1.1.1) | N/A | Unencrypted |
| TariffThresholds | A 3 by 1 matrix capable of holding thresholds for controlling Block Tariffs  Multiplier and divisor have been applied | ra:GasTariffThresholds*(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:GasThresholdMatrix Service Reference Variant 1.1.1) | N/A | Unencrypted |
| TOUTariff | A 4 by 1 matrix containing Prices for Time-of-use Pricing  Optional, these values are applicable only where a Gas Smart Meter is operating a TOU tariff | ra:GasTariffTOUPriceMatrix *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:GasTOUPriceMatrix Service Reference Variant 1.2.1) | N/A | Unencrypted |
| BlockTariff | Gas Smart Meter: A 4 x 1 matrix containing Prices for Block Pricing  Optional, these values are applicable only where a Gas Smart Meter is operating a Block tariff | ra:GasTariffBlockPrices *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:GasBlockPriceMatrix  Service Reference Variant 1.2.1) | N/A | Unencrypted |

Table 90 : Read Tariff Primary Element - Gas MMC Output Format Body data items

## Read Tariff (Secondary Element)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadTariff(SecondaryElement) |
| **Service Reference** | * 4.11 |
| **Service Reference Variant** | * 4.11.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadTariffSecondaryElementRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x00BD |
| GBCS Use Case  (for reference - not in header) | ECS24b |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where the originator is an Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party |

Table 91 : Read Tariff Secondary Element MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| SecondaryActiveTariffPrice | Price in 1000th pence/cent per kWh | xs:unsignedInt | 1000th pence /cent per kWh | Unencrypted |
| PriceScale | Multiplier applied to TOU price values where scalar value is n in 10n (10 to the power n) | ra:PriceScale  (xs:integer  min -128, max 128) | N/A | Unencrypted |
| TariffTOUPriceMatrix*(maximum of 4 entries)* | Twin Element Electricity Smart Meter: A 1 by 4 matrix containing prices for Time-of-use Pricing Tariffs relating to Supply via the secondary measuring element of the Electricity Meter  Scaler applied as defined in GBCS | ra:ElecTariffTOUPriceMatrixSecondaryElement*(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecSecondaryTOUPrice Service Request 1.2.2) | N/A | Unencrypted |
| TariffSwitchingTable | A calendar defining times, days and dates for switching the Secondary Element tariff, (UTC) | ra:ElecTariffSwitchingTableSecondaryElement *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecSwitchingTableSecondary under Service Request 1.1.2) | N/A | Unencrypted |
| TariffSwitchingTableSpecialDays | A calendar defining special dates for switching the Secondary Element tariff | ra:ElecTariffSwitchingTableSpecialDaysSecondaryElement *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElecSpecialDaysSecondary under Service Request 1.1.2) | N/A | Unencrypted |

Table 92 : Read Tariff Secondary Element MMC Output Format Body data items

## Read Maximum Demand Import Registers

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadMaximumDemandImportRegisters |
| **Service Reference** | * 4.12 |
| **Service Reference Variant** | * 4.12.1 |

### MMC Output Format

The xml type within the SMETSData element is ReadMaximumDemandImportRegistersRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x002C |
| GBCS Use Case  (for reference - not in header) | ECS18b |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where DSP Scheduled |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled |
| Timestamp | xs:dateTime |

Table 93 : Read Maximum Demand Import Registers MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| MaxDemandConfigurableTimeActivePowerImport | See Section 5.35.2.2.1 | ra:MaxDemandConfigurableTimeActivePowerImportDataType, as set out in Section 5.35.2.2.1 of this document | N/A | Unencrypted |
| MaxDemandActiveEnergyImport | See Section 5.35.2.2.2 | ra:MaxDemandActiveEnergyImportDataType, as set out in Section 5.35.2.2.2 of this document | N/A | Unencrypted |
| MaxDemandConfigurableTimePeriod | A data structure to identify 2 switch times (at the start of minutes 00 and 30 in each hour) at which recording of the Maximum Demand (Configurable Time) Active Energy Import Value is enabled or disabled in each 24 hour period, to be applied on a daily basis | ra:MaximumDemandTimePeriodSchedule | N/A | Unencrypted |

Table 94 : Read Maximum Demand Import Registers MMC Output Format Body data items

##### MaxDemandConfigurableTimeActivePowerImportDataType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The largest average value of active power since last reset No scaler applied. | xs:integer | W | Unencrypted |
| CaptureTime | The date and time, (UTC), at the end of the 30 minute period to which the value relates | xs:dateTime | UTC Date-Time | Unencrypted |
| LastResetDateTime | UTC date time at which the “Maximum Demand Configurable Time Active Power Import Value” was last used/reset. | xs:dateTime | UTC Date-Time | Unencrypted |

Table 95 : Read Maximum Demand Import Registers – MaxDemandConfigurableTimeActivePowerImportDataType Specific Data Items

##### MaxDemandActiveEnergyImportDataType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The largest average value of active power imported since last reset No scaler applied. | xs:integer | W | Unencrypted |
| CaptureTime | The date and time, (UTC), at the end of the 30 minute period to which the value relates | xs:dateTime | UTC Date-Time | Unencrypted |
| LastResetDateTime | UTC date time at which the “Maximum Demand Active Energy Import Value” was last used/reset. | xs:dateTime | UTC Date-Time | Unencrypted |

Table 96 : Read Maximum Demand Import Registers – MaxDemandActiveEnergyImportDataType Specific Data Items

##### MaximumDemandTimePeriodSchedule Specific Definition

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| StartTime | The Start time from which the Maximum Demand period begins. | xs:time | N/A | Unencrypted |
| EndTime | The End Time at which the Maximum Demand period ends. | xs:time | N/A | Unencrypted |

Table 191 : MaximumDemandTimePeriodSchedule (ra:MaximumDemandTimePeriodSchedule) data items

## Read Maximum Demand Export Registers

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadMaximumDemandExportRegisters |
| **Service Reference** | * 4.12 |
| **Service Reference Variant** | * 4.12.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadMaximumDemandExportRegistersRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x002B |
| GBCS Use Case  (for reference - not in header) | ECS18a |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where DSP Scheduled or the originator is an Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or the originator is an Unknown Remote Party |
| Timestamp | xs:dateTime |

Table 97 : Read Maximum Demand Export Registers MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| MaxDemandActiveEnergyExport | See 5.36.2.2.1 | ra:MaxDemandRegisterDataType, as set out in Section 5.36.2.2.1 of this document | N/A | Unencrypted |

Table 98 : Read Maximum Demand Export Registers MMC Output Format Body data items

##### MaxDemandRegisterDataType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The largest average value of active power exported since last reset  No scaler applied. | xs:integer | W | Unencrypted |
| CaptureTime | The date and time, (UTC), at the end of the 30 minute period to which the value relates | xs:dateTime | UTC Date-Time | Unencrypted |
| LastResetDateTime | UTC date time at which the “Maximum Demand Active Energy Export Value” was last used/reset. | xs:dateTime | UTC Date-Time | Unencrypted |

Table 99 : Read Maximum Demand Export Registers – MaxDemandRegisterDataType Specific Data Items

## Read Prepayment Configuration

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadPrepaymentConfiguration |
| **Service Reference** | * 4.13 |
| **Service Reference Variant** | 4.13 |

### MMC Output Format

The xml type within the SMETSData element is ReadPrepaymentConfigurationRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Electricity Response** | **Gas Response** |
| --- | --- | --- |
| GBCSHexadecimalMessageCode | 0x003B | 0x00B5 |
| GBCS Use Case  (for reference - not in header) | ECS26a | GCS21b |

Table 100 : Read Prepayment Configuration MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | | **Sensitivity** |
| --- | --- | --- | --- | --- | --- |
| 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%) | xs:Integer | 0.01% | | Unencrypted |
| DebtRecoveryRateCap | The maximum amount per week that can be recovered through Payment-based Debt Recovery when the Meter is operating in Prepayment Mode. | xs:integer | Electricity:  GBP / ECB per week  Gas:  1000th pence / cent / week | | Unencrypted |
| DisablementThreshold | The threshold for controlling when to Disable the Supply. | xs:integer | 1000th pence / cent | | Unencrypted |
| EmergencyCreditLimit | The amount of Emergency Credit to be made available to a Consumer when Emergency Credit is activated by the Consumer. | xs:integer | 1000th pence / cent | | Unencrypted |
| EmergencyCreditThreshold | The threshold below which Emergency Credit may be activated by the Consumer, if so configured, when the Meter is operating in Prepayment Mode. | xs:integer | 1000th pence / cent | | Unencrypted |
| LowCreditThreshold | The threshold below which a low credit Alert is signalled. | xs:integer | 1000th pence / cent | | Unencrypted |
| CreditMaxCreditThreshold | Maximum amount of credit permitted per top up. | xs:integer | 1000th pence / cent | | Unencrypted |
| MaxCreditMaxMeterBalance | Maximum amount of credit permitted on the meter. | xs:integer | 1000th pence / cent | | Unencrypted |
| SuspendDebtDisabled | A setting controlling whether debt should be collected when the Meter is operating in Prepayment Mode and Supply is Disabled. See SMETS for details.  Valid values are:   * true (if the supply is disabled due to lack of credit as per GBCS definition, then the Meter shall not collect the Time Debts however the Standing Charge is still collected from the Meter Balance); or * false (if the supply is disabled due to lack of credit as per GBCS definition, then the Meter shall collect the Time Debts and the Standing Charge from the Meter Balance).   Relevant for Electricity only. | xs:boolean | N/A | | Unencrypted |
| SuspendDebtEmergency | A setting controlling whether debt should be collected when the Meter is operating in Prepayment Mode and Emergency Credit has been activated. See SMETS for details.  Valid values are:   * true (if Emergency Credit is in use as per GBCS definition, then the Meter shall not collect the Standing Charge or Time Debts from the Emergency Credit Balance and will instead increment the Accumulated Debt Register); or * false (if Emergency Credit is in use as per GBCS definition, then the Meter shall collect the Standing Charge and Time Debts from the Emergency Credit Balance).   Relevant for Electricity only. | xs:boolean | N/A | | Unencrypted |
| Electricity | XML Block for Electricity | | | | |
| PaymentMode | The payment mode in which the meter is operating.  Valid set:  • Prepayment  • Credit | ra:PaymentMode  (xs:string  enumeration) | | N/A | Unencrypted |
| NonDisablementCalendar | Structure defining the Non Disablement schedules | ra:ElectricityNonDisablementCalendar *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for sr:ElectricityNonDisablementCalendar) | | N/A | Unencrypted |
| DebtRecovery1 | Debt recovery group item | ra:ElecDebtRecovery  as set out in Section 5.37.2.3 of this document | | N/A | Unencrypted |
| DebtRecovery2 | Debt recovery group item | ra:ElecDebtRecovery  as set out in Section 5.37.2.3 of this document | | N/A | Unencrypted |
| Gas | XML Block for Gas | | | | |
| NonDisablementCalendar | Calendar defining the time periods when Non-Disablement shall apply or not apply. | ra:GasNonDisablementCalendar *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for  sr:GasNonDisablementCalendar) | | N/A | Unencrypted |
| DebtRecovery1 | Debt recovery item group | ra:GasDebtRecovery  as set out in Section 5.37.2.4 of this document | | N/A | Unencrypted |
| DebtRecovery2 | Debt recovery item group | ra:GasDebtRecovery  as set out in Section 5.37.2.4 of this document | | N/A | Unencrypted |

Table 101 : Read Prepayment Configuration MMC Output Format Body data items

#### ElecDebtRecovery Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| DebtRecoveryRate | Debt recovery rate when the Meter is using Time-based Debt Recovery in Prepayment Mode.  Scaler supplied as a separate data item | xs:integer | BGP/Euro per time period (after scalar applied) | Unencrypted |
| DebtRecoveryRatePriceScale | A multiplier applied to the DebtRecoveryRate value. Note this is the value of n in 10n (10 to the power n). | ra:PriceScale  (xs:integer  min -128, max 128) | N/A | Unencrypted |
| DebtRecoveryRatePeriod | The unit time in which DebtRecoveryRate will apply.   * HOURLY * DAILY * WEEKLY * MONTHLY * QUARTERLY | xs:string  enumeration | N/A | Unencrypted |

Table 102 : ElecDebtRecovery MMC Output Format Body data items

#### GasDebtRecovery Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| DebtRecoveryRate | Debt recovery rate when the Meter is using Time-based Debt Recovery in Prepayment Mode.  No scaler applied | xs:integer | 1000th pence/cent per time period | Unencrypted |
| DebtRecoveryPeriod | The unit time in which DebtRecoveryRate will apply.   * HOURLY * DAILY | xs:string  enumeration | N/A | Unencrypted |

Table 103 : GasDebtRecovery MMC Output Format Body data items

## Read Prepayment Daily Read Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadPrepaymentDailyReadLog |
| **Service Reference** | * 4.14 |
| **Service Reference Variant** | * 4.14 |

### MMC Output Format

The xml type within the SMETSData element is ReadPrepaymentDailyReadLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0034 | 0x0096 |
| GBCS Use Case  (for reference - not in header) | ECS21b | GCS16b |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where DSP Scheduled or the originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or the originator is an Unknown Remote Party | |
| SupplementaryOriginatorCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party | |

Table 104 : Read Prepayment Daily Read Log MMC Output Format Header data items

#### Specific Body Data Items

The “LogEntry” XML group will appear within either a “Gas” or “Electricity” XML group.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LogEntry *(maximum 31 entries)* | Up to 31 entries of the Prepayment Daily Read Log. This log is capable of storing thirty one date and time stamped entries (UTC) arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. Only log entries within the date range specified in the Service Request will be returned.  See 5.38.2.2.1 | ra:PrepaymentOperationalDataType, as set out in Section 5.38.2.2.1 of this document  maxOccurs = 31 | N/A | Encrypted |

Table 105 : Read Prepayment Daily Read Log MMC Output Format Body data items

##### PrepaymentOperationalDataType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| AccumulatedDebtRegister | The debt resulting from the collection of Standing Charge and/or time-based debt when Emergency Credit is in Use as configured by Suspend Debt Emergency, when operating in Prepayment Mode | xs:integer | 1000th pence/cent | Encrypted |
| EmergencyCreditBalance | The amount of Emergency Credit available to the Consumer after it has been activated. | xs:integer | 1000th pence/cent | Encrypted |
| MeterBalance | When operating in Prepayment Mode, the Meter Balance represents the Smart Meter’s determination of the amount of credit available to the Consumer (excluding any Emergency Credit Balance) | xs:integer | 1000th pence/cent | Encrypted |
| PaymentDebtRegister | Amount of debt.  (Debt to be recovered as a percentage of payment when using Payment-based Debt Recovery in Prepayment Mode) | xs:integer | 1000th pence/cent | Encrypted |
| TimeDebtRegisters1 | One of two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery in Prepayment Mode | xs:integer | 1000th pence/cent | Encrypted |
| TimeDebtRegisters2 | One of two registers recording independent debts to be recovered over time when operating Time-based Debt Recovery in Prepayment Mode | xs:integer | 1000th pence/cent | Encrypted |
| Timestamp | The date-time at which the corresponding log entry was taken (UTC). | xs:dateTime | UTC Date-Time | Encrypted |

Table 106 : Read Prepayment Daily Read Log – PrepaymentOperatonalDataTypeSpecific Data Items

## Read Load Limit Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadLoadLimitData |
| **Service Reference** | * 4.15 |
| **Service Reference Variant** | 4.15 |

### MMC Output Format

The xml type within the SMETSData element is ReadLoadLimitDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0042 |
| GBCS Use Case  (for reference - not in header) | ECS27 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where DSP Scheduled |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled |

Table 107 : Read Load Limit Data MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LoadLimitCounterValue | The count of load limit events since last reset | xs:integer | N/A | Unencrypted |
| LoadLimitPowerThreshold | The Active Power threshold above which the measurement of a Load Limit Period is commenced | xs:integer | W | Unencrypted |
| LoadLimitPeriod | The length of time which the Active Power Importneeds to continuously exceed the Load Limit Power Threshold before a load limiting event is deemed to have occurred | xs:nonNegativeInteger | Seconds | Unencrypted |
| LoadLimitRestorationPeriod | The length of time after the Supply has been Armed following a Load Limiting Event before the Supply is Enabled by the Electricity Smart Meter | xs:nonNegativeInteger | Seconds | Unencrypted |
| LoadLimitSupplyState | A setting to control the state of the Supply in the case of a load limiting occurring, with valid values of:   * Disable; or * Unchanged. | Restriction of xs:string  (Enumeration) | N/A | Unencrypted |

Table 108 : Read Load Limit Data MMC Output Format Body data items

## Read Active Power Import

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadActivePowerImport |
| **Service Reference** | * 4.16 |
| **Service Reference Variant** | * 4.16 |

### MMC Output Format

The xml type within the SMETSData element is ReadActivePowerImportRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0028 |
| GBCS Use Case  (for reference - not in header) | ECS17c |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where DSP Scheduled |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled |
| Timestamp | xs:dateTime |

Table 109 : Read Active Power Import MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ActivePowerImport | The total Active Power from all elements on the Meter | ra:ActivePowerImportType | W | Unencrypted |
| PrimaryActivePowerImportValue | The total Active Power from the first element on the Meter | xs:Integer | W | Unencrypted |

Table 110 : Read Active Power Import MMC Output Format Body data items

##### ActivePowerImportType Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | The total Active Power from all elements on the Meter  No scaler applied | xs:Integer | W | Unencrypted |
| Unit | The Unit corresponding to the Value – “W”. | xs:string | N/A | Unencrypted |

Table 111 : ActivePowerImportType MMC Output Format Body data items

## Retrieve Daily Consumption Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveDailyConsumptionLog |
| **Service Reference** | * 4.17 |
| **Service Reference Variant** | * 4.17 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveDailyConsumptionLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0060 | 0x00A0 |
| GBCS Use Case  (for reference - not in header) | ECS66 | GCS61 |
| SupplementaryRemotePartyID | ra:EUI  Where DSP Scheduled or the originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where DSP Scheduled or the originator is an Unknown Remote Party | |
| SupplementaryOriginatorCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party | |

Table 112 : Retrieve Daily Consumption Log MMC Output Format Header data items

#### Specific Body Data Items

The “LogEntry” XML group will appear within either a “Gas” or “Electricity” XML group.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Electricity | XML Block for Electricity | | | |
| LogEntry *(Maximum 731 log entries, where a value of 731 is considered as ‘Unbounded’ by the XSD validation)* | Each of up to 731 date stamped entries of Consumption arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. Only log entries within the date range specified in the Service Request will be returned. | ra:ElecDailyConsumptionLogEntryType, as set out in Section 5.41.2.2.1 of this document  maxOccurs = 731 | N/A | Encrypted |
| Gas | XML Block for Gas | | | |
| LogEntry *(Maximum 731 log entries, where a value of 731 is considered as ‘Unbounded’ by the XSD validation)* | Each of up to 731 date stamped entries of Consumption arranged as a circular buffer such that when full, further writes shall cause the oldest entry to be overwritten. Only log entries within the date range specified in the Service Request will be returned. | ra:GasDailyConsumptionLogEntryType, as set out in Section 5.41.2.2.2 of this document  maxOccurs = 731 | N/A | Encrypted |

Table 113 : Retrieve Daily Consumption Log MMC Output Format Body data items

##### ElecDailyConsumptionLogEntryType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | Consumption for the relevant day | xs:Integer | Wh | Encrypted |
| Timestamp | The date-time at which the corresponding log entry was taken, (UTC) | xs:dateTime | UTC Date-Time | Encrypted |

Table 114 : Retrieve Daily Consumption Log – ElecDailyConsumptionLogEntryType Specific Data Items

##### GasDailyConsumptionLogEntryType Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Value | Consumption for the relevant day  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | xs:Decimal | m3 | Encrypted |
| Timestamp | The date-time at which the corresponding log entry was taken, (UTC) | xs:dateTime | UTC Date-Time | Encrypted |

Table 115 : Retrieve Daily Consumption Log – GasDailyConsumptionLogEntryType Specific Data Items

## Read Meter Balance

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadMeterBalance |
| **Service Reference** | * 4.18 |
| **Service Reference Variant** | * 4.18 |

### MMC Output Format

The xml type within the SMETSData element is ReadMeterBalanceRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0069 | 0x008D |
| GBCS Use Case  (for reference - not in header) | ECS82 | GCS60 |

Table 116 : Read Meter Balance MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| MeterBalance | For Electricity, a positive value represents the amount of credit available and a negative value is the amount of money due.  For Gas, a positive value represents the amount of money due and a negative value is not permitted. | xs:integer | 1000th pence/cent | Unencrypted |
| Gas | XML Group item | | | |
| MeterBalancePrepaymentMode | A positive value represents the amount of credit available and a negative value is the amount of money due.  Gas Only | xs:integer | 1000th pence/cent | Unencrypted |

Table 117 : Read Meter Balance MMC Output Format Body data items

## Read Device Configuration (Voltage)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(Voltage) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.1 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationVoltageRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response (single phase)** | **Electricity Response (3 phase)** |
| GBCSHexadecimalMessageCode | 0x003C | 0x00C6 |
| GBCS Use Case  (for reference - not in header) | ECS26b | ECS26k |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where the originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party | |

Table 118 : Read Device Configuration (Voltage) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Sensitivity** |
| --- | --- | --- | --- |
| SinglePhaseVoltageSettings | Single phase settings | ra:AverageRMSVoltageSettings,  as set out in Section 5.43.2.2.1.2 of this document | Unencrypted |
| PolyPhaseVoltageSettings | 3 occurrences | ra:PolyPhaseVoltageSettings  maxOccurs = 3  as set out in Section 5.43.2.2.1.1 of this document | Unencrypted |
| RMSVoltageSettings | The non-average RMS Voltage settings applicable to a Single Phase (Single or Twin Element) Electricity Smart Meter or to a Polyphase Electricity Smart Meter phase. | ra:RMSVoltageSettings  *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS under Service Request 6.5) | Unencrypted |

Table 119 : Read Device Configuration (Voltage) MMC Output Format Body data items

###### PolyPhaseVoltageSettings Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Phase | The number (1, 2, 3) of the phase to which the Phase Voltage Settings apply. | xs:positiveinteger  minInclusive = 1  maxInclusive = 3 | None | Unencrypted |
| PhaseVoltageSettings | Phase Voltage Settings corresponding to Phase number | ra:AverageRMSVoltageSettings, as set out in Section 5.43.2.2.1.2 of this document | n/a | Unencrypted |

Table 120 : PolyPhaseVoltageSettings MMC Output Format Body data items

###### AverageRMSVoltageSettings Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AverageRMSOverVoltageThreshold | The average RMS voltage above which an over voltage condition is reported. | xs:unsignedint | 10th Volts | Unencrypted |
| AverageRMSUnderVoltageThreshold | The average RMS voltage below which an under voltage condition is reported. | xs:unsignedint | 10th Volts | Unencrypted |

Table 121 : AverageRMSVoltageSettings MMC Output Format Body data items

## Read Device Configuration (Randomisation)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(Randomisation) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationRandomisationRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Electricity Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x003D |
| GBCS Use Case  (for reference - not in header) | ECS26c |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where the originator is an Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party |

Table 122 : Read Device Configuration (Randomisation) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| RandomisedOffset | RandomisedOffsetNumber \* RandomisedOffsetLimit \* (10 to the power -4) rounded to the nearest integer number of seconds.  This value is used to delay the Tariff Switching Table times and the Auxiliary Load Control Switch switching times. | xs:integer | Seconds | Unencrypted |
| RandomisedOffsetNumber | Integer between 1 and 10,000, which is set randomly set at manufacture | xs:integer | N/A | Unencrypted |
| RandomisedOffsetLimit | A value in seconds in the range 0 to 1799. | xs:integer | Seconds | Unencrypted |

Table 123 : Read Device Configuration Randomisation Specific Body Data Items

## Read Device Configuration (Billing Calendar)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(BillingCalendar) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.3 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationDataBillingCalendarRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x003E | 0x009D |
| GBCS Use Case  (for reference - not in header) | ECS26d | GCS21d |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where the originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party | |

Table 124 : Read Device Configuration (Billing Calendar) MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x00D9 | 0x00DA |
| GBCS Use Case  (for reference - not in header) | ECS26l | GCS21k |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where the originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where the originator is an Unknown Remote Party | |

Table 125 : Read Device Configuration (Billing Calendar) MMC Output Format Header data items – GBCS v2.0

#### Specific Body Data Items

The XML response structure within ReadDeviceConfigurationDataBillingCalendarRsp differs between Gas and Electricity, the XML groups named *GasBillingCalendar* and *ElectricityBillingCalendar*. These groups appear within the *BillingCalendar* group item.

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| BillingCalendar | The Gas and/or Electricity Billing Calendars | ra:BillingCalendar  *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.8) | None | Unencrypted |

Table 126 : Read Device Configuration (Billing Calendar) MMC Output Format Specific Body data items

## Read Device Configuration (Identity Exc MPxN)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(IdentityExcMPxN) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.4 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationIdentityExcMPxNRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** | **CHF Response** |
| GBCSHexadecimalMessageCode | 0x003F | 0x009E | 0x0092 |
| GBCS Use Case  (for reference - not in header) | ECS26e | GCS21e | ECS26i |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is an Unknown Remote Party | | ra:EUI |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party | | xs:nonNegativeInteger |

Table 127 : Read Device Configuration (Device Identity Excluding MPxN) MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** | **CHF Response** |
| GBCSHexadecimalMessageCode | 0x00F9 | 0x00FB | 0x00FA |
| GBCS Use Case  (for reference - not in header) | ECS26m | GCS21m | ECS26n |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is an Unknown Remote Party | | ra:EUI |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party | | xs:nonNegativeInteger |

Table 128 : Read Device Configuration (Device Identity Excluding MPxN) MMC Output Format Header data items – GBCS v2.0

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| DeviceIdentifier | A globally unique identifier used to identify the Device based on the EUI-64 Institute of Electrical and Electronic Engineers standard  Relevant to Electricity, Gas and CHF  DeviceIdentifier is only supported (and hence returned within the response) on Devices with a Device Model recorded in the Smart Metering Inventory that pertains to GBCS version 1.0 according to the entry for that Device Model in the Central Products List | ra:EUI | N/A | Unencrypted |
| ModelType | An identifier used to identify the model of the Device.  Relevant to Electricity, Gas and CHF | xs:string  (maxLength = 8) | N/A | Unencrypted |
| ManufacturerIdentifier | An identifier used to identify the manufacturer of the Device.  Relevant to Electricity, Gas and CHF | xs:string  (maxLength = 32) | N/A | Unencrypted |
| Electricity | XML Block for Electricity | | | |
| SupplyTamperState | A setting which determines the action of the ESME to control the state of the Supply in the case of a Tamper Event being detected, being:   * Unchanged * Locked | xs:string  (enumeration) | N/A | Unencrypted |
| MeterVariant | A data item to indicate if ESME is:  ‘Single Element Electricity Metering Equipment’ (value = ‘A’),  ‘Twin Element Electricity Metering Equipment’ (value = ‘B’); or  ‘Polyphase Electricity Metering Equipment’ (value = ‘C’)  As defined in SMETS. | xs:string  (maxLength = 1) | N/A | Unencrypted |
| Gas | XML Block for Gas | | | |
| SupplyTamperState | A setting which determines the action of the GSME to control the state of the Supply in the case of a Tamper Event being detected, being:   * Unchanged * Locked | xs:string  (enumeration) | N/A | Unencrypted |
| SupplyDepletionState | A setting which determines the action of the GSME to control the state of the Supply in the case of loss of power to GSME, being:   * Unchanged * Locked | xs:string  (enumeration) | N/A | Unencrypted |

Table 129 : Read Device Configuration (Device Identity Excluding MPxN) MMC Output Format Specific Body data items

## Read Device Configuration (Instantaneous Power Thresholds)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(InstantaneousPowerThresholds) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.5 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationInstantaneousPowerThresholdsRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0040 |
| GBCS Use Case  (for reference - not in header) | ECS26f |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is an Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party |

Table 130 : Read Device Configuration (Instantaneous Power Thresholds) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LowMediumPowerThreshold | A value in W defining the threshold between an indicative low and medium Active Power Import level. | xs:integer | W | Unencrypted |
| MediumHighPowerThreshold | A value in W defining the threshold between an indicative medium and high Active Power Import level | xs:integer | W | Unencrypted |

Table 131 : Read Device Configuration (Instantaneous Power Thresholds) MMC Output Format Body data items

## Read Device Configuration (MPxN)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(MPxN) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.7 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationMPxNRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x004E | 0x0089 |
| GBCS Use Case  (for reference - not in header) | ECS40 | GCS46 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party | |

Table 132 : Read Device Configuration (MPxN) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ImportMPAN | Primary MPAN  Relevant to Electricity only | xs:string  (maxLength = 13) | N/A | Unencrypted |
| SecondaryImportMPAN | Secondary MPAN  Relevant to Electricity only  Twin Element Only | xs:string  (maxLength = 13) | N/A | Unencrypted |
| ExportMPAN | The MPAN associated with Export Consumption  Relevant to Electricity only | xs:string  (maxLength = 13) | N/A | Unencrypted |
| MPRN | The MPRN associated with Gas Consumption  Relevant to Gas only | xs:string  (maxLength = 10) | N/A | Unencrypted |

Table 133 : Read Device Configuration (MPxN) MMC Output Format Body data items

## Read Device Configuration (Gas)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(Gas) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.8 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationGasRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x007B |
| GBCS Use Case  (for reference - not in header) | GCS21a |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is an Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party |

Table 134 : Read Device Configuration (Gas) Response Header Data Items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| CalorificValue | The value used in conjunction with the conversion factor in the conversion of gas volume to kWh usage, based on the energy stored in one cubic metre of gas released when burnt at a standard temperature and pressure.  Multiplier and divisor applied as defined in GBCS | xs:decimal | MJ/m3 | Unencrypted |
| ConversionFactor | The value used in conjunction with the calorific value in the conversion of gas volume to kWh usage, based on the pressure, temperature and compressibility of the gas.  Multiplier and divisor applied as defined in GBCS | xs:decimal | N/A | Unencrypted |
| UncontrolledGasFlowRate | The flow rate in units of volume per unit time used in the detection of uncontrolled flow of gas on Enablement of Supply   * Multiplier and divisor applied as defined in GBCS | xs:decimal | m3/h | Unencrypted |
| FlowStabilisationPeriod | The time given to allow the flow to stabilize. Defined in units of tenths of a second | xs:integer | 10th second | Unencrypted |
| FlowMeasurementPeriod | The period over which the flow is measured and compared against the Uncontrolled Flow Threshold attribute. Defined in units of seconds. | xs:integer | seconds | Unencrypted |

Table 135 : Read Device Configuration (Gas) Response Body Data Items

## Read Device Configuration (Payment Mode)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(PaymentMode) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.9 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationPaymentModeRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x00BE | 0x00BF |
| GBCS Use Case  (for reference - not in header) | ECS26j | GCS21j |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party | |

Table 136 : Read Device Configuration (Payment Mode) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| PaymentMode | The current mode of operation.  Valid values:   * Prepayment * Credit | xs:string  (maxLength= 10) (Enumeration) | N/A | Unencrypted |
| SuspendDebtEmergency | If Payment Mode is Prepayment, it indicates whether Suspend Debt Emergency is true (if Emergency Credit is in use, then the Meter shall not collect the Standing Charge or Time Debts from the Emergency Credit Balance and will instead increment the Accumulated Debt Register) or false (if Emergency Credit is in use, then the Meter shall collect the Standing Charge and Time Debts from the Emergency Credit Balance). See SMETS for details.  Relevant for Gas only. | xs:boolean | N/A | Unencrypted |
| SuspendDebtDisabled | If Payment Mode is Prepayment, it indicates whether Suspend Debt Disabled is true (if the supply is disabled due to lack of credit, then the Meter shall not collect the Time Debts however the Standing Charge is still collected from the Meter Balance) or false (if the supply is disabled due to lack of credit, then the Meter shall collect the Time Debts and the Standing Charge from the Meter Balance). See SMETS for details.  Relevant for Gas only. | xs:boolean | N/A | Unencrypted |

Table 137 : Read Device Configuration (Payment Mode) MMC Output Format Body data items

## Read Device Configuration (Event And Alert Behaviours)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceConfiguration(EventAndAlertBehaviours) |
| **Service Reference** | * 6.2 |
| **Service Reference Variant** | 6.2.10 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceConfigurationEventAndAlertBehavioursRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response (Supplier)** | **Electricity Response (Network Operator)** | **Gas Response (Supplier)** |
| GBCSHexadecimalMessageCode | 0x00EE | 0x00EF | 0x00F1 |
| GBCS Use Case  (for reference - not in header) | ECS25r1 | ECS25r2 | GCS20r |

Table 138 : Read Device Configuration (Event And Alert Behaviours) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ElectricitySupplierAlertEventSettings | The currently configured, non critical alert and event behaviours that are relevant to Suppliers on the ESME  Includes the WAN Alerts, HAN Alerts, logging of Events recorded in the Event Logs and audible Alarms. | ra:ElectricitySupplierAlertsEvents  (as set out in Section 5.51.2.2.1.1 of this document) | N/A | Unencrypted |
| ElectricityNetworkOperatorAlertEventSettings | The currently configured, non critical alert and event behaviours that are relevant to Network Operators on the ESME  Includes the WAN Alerts and logging of Events recorded in the Power Event Log configured by the ED on the ESME. | ra:ElectricityNetworkOperatorAlertsEvents  (as set out in Section 5.51.2.2.1.2 of this document) | N/A | Unencrypted |
| GasSupplierAlertEventSettings | The currently configured, non critical alert and event behaviours that are relevant to Suppliers on the GSME  Includes the WAN Alerts, HAN Alerts, logging of Events recorded in the Event Log and audible Alarms. | ra: SupplierGSMEAlertsEvents  *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22) | N/A | Unencrypted |

Table 139 : Read Device Configuration (Event And Alert Behaviours) MMC Output Format Body data items

###### ElectricitySupplierAlertsEvents Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ElectricitySupplierWANAlertSettings | The current configuration of the settings for WAN Alerting configured on the ESME. | ra:ElectricitySupplierAlerts *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22) | N/A | Unencrypted |
| ElectricitySupplierHANAlertSettings | The current configuration of the settings for HAN Alerting configured on the ESME. | ra:ElectricitySupplierAlerts *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22) | N/A | Unencrypted |
| ElectricitySupplierAlarmSettings | The current configuration of the audible Alarm settings (associated to WAN Alerts, HAN Alerts and / or events recorded in the Event Log) configured on the ESME. | ra:ElectricitySupplierAlerts *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22) | N/A | Unencrypted |
| ElectricitySupplierLoggingSettings | The current configuration of the settings for logging Events in the Event Logs configured on the ESME. | ra:ElectricitySupplierAlerts *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22) | N/A | Unencrypted |

Table 140 : ElectricitySupplierAlertsEvents MMC Output Format Body data items

###### ElectricityNetworkOperatorAlertsEvents Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ElectricityNetworkOperatorWANAlertSettings | The current configuration of the settings for WAN Alerting configured on the ESME. | ra:ElectricityNetworkOperatorAlerts *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22) | N/A | Unencrypted |
| ElectricityNetworkOperatorLoggingSettings | The current configuration of the settings for logging Events in the Power Event Log configured on the ESME. | ra:ElectricityNetworkOperatorAlerts *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.22 | N/A | Unencrypted |

Table 141 : ElectricityNetworkOperatorAlertsEvents MMC Output Format Body data items

## Update Device Configuration (Load Limiting General Settings)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(LoadLimitingGeneralSettings) |
| **Service Reference** | * 6.4 |
| **Service Reference Variant** | 6.4.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationLoadLimitingGeneralSettingsRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0043 |
| GBCS Use Case  (for reference - not in header) | ECS28a |
| Timestamp | xs:dateTime |

Table 142 : Update Device Configuration (Load Limiting General Settings) MMC Output Format Header data items

## Update Device Configuration (Load Limiting Counter Reset)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(LoadLimitingCounterReset) |
| **Service Reference** | * 6.4 |
| **Service Reference Variant** | 6.4.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationLoadLimitingCounterResetRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0044 |
| GBCS Use Case  (for reference - not in header) | ECS28b |

Table 143 : Update Device Configuration (Load Limiting Counter Reset) MMC Output Format Header data items

## Update Device Configuration (Voltage)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(Voltage) |
| **Service Reference** | * 6.5 |
| **Service Reference Variant** | 6.5 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationVoltageRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response (single phase)** | **Electricity Response (poly phase)** |
| GBCSHexadecimalMessageCode | 0x0045 | 0x00AE |
| GBCS Use Case  (for reference - not in header) | ECS29a | ECS29b |

Table 144 : Update Device Configuration (Voltage) MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Electricity Response (single phase)** | | **Electricity Response (poly phase)** | |
| GBCSHexadecimalMessageCode | 0x0045 | 0x00D1 | 0x00AE | 0x00D2 |
| GBCS Use Case  (for reference - not in header) | ECS29a  (counters reset) | ECS29c  (counters not reset) | ECS29b  (counters reset) | ECS29d  (counters not reset) |

Table 145 : Update Device Configuration (Voltage) MMC Output Format Header data items – GBCS v2.0

## Update Device Configuration (Gas Conversion)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(GasConversion) |
| **Service Reference** | * 6.6 |
| **Service Reference Variant** | 6.6 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationGasConversionRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x007C |
| GBCS Use Case  (for reference - not in header) | GCS23 |

Table 146 : Update Device Configuration (Gas Conversion) MMC Output Format Header data items

## Update Device Configuration (Gas Flow)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(GasFlow) |
| **Service Reference** | * 6.7 |
| **Service Reference Variant** | 6.7 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationGasFlowRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Gas Response** |
| --- | --- |
| GBCSv1.0 and GBCSv2.0  GBCSHexadecimalMessageCode | 0x007D |
| GBCS v1.0 and GBCSv2.0  GBCS Use Case  (for reference - not in header) | GCS24 |
| GBCS v3.2  GBCSHexadecimalMessageCode | 0x00FC |
| GBCS v3.2  GBCS Use Case  (*for reference – not in header)* | GCS24a |

Table 147 : Update Device Configuration (Gas Flow) MMC Output Format Header data items

## Update Device Configuration (Billing Calendar)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(BillingCalendar) |
| **Service Reference** | * 6.8 |
| **Service Reference Variant** | 6.8 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationBillingCalendarRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

| **Data Item** | **Electricity Response** | **Gas Response** |
| --- | --- | --- |
| GBCSHexadecimalMessageCode | 0x0046 | 0x007E |
| GBCS Use Case  (for reference - not in header) | ECS30 | GCS25 |

Table 148 : Update Device Configuration (Billing Calendar) MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

| **Data Item** | **Electricity Response** | **Gas Response** |
| --- | --- | --- |
| GBCSHexadecimalMessageCode | 0x00D7 | 0x00D8 |
| GBCS Use Case  (for reference - not in header) | ECS30a | GCS25a |

Table 149 : Update Device Configuration (Billing Calendar) MMC Output Format Header data items – GBCS v2.0

## Synchronise Clock

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SynchroniseClock |
| **Service Reference** | * 6.11 |
| **Service Reference Variant** | 6.11 |

### MMC Output Format

The xml type within the SMETSData element is SynchroniseClockRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0062 | 0x007F |
| GBCS Use Case  (for reference - not in header) | ECS70 | GCS28 |

Table 150 : Synchronise Clock MMC Output Format Header data items

#### Specific Body Data Items

The XML response structure within SynchroniseClockRsp differs between Gas and Electricity, the XML groups named *Gas* and *Electricity* are as set out in Table 151 and Table 152 immediately below.

##### SynchroniseClockRsp Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| DeviceTime | The resulting time on the metering Device. | xs:dateTime | N/A | Unencrypted |
| ElecClockTimeStatus | The resulting time status, which shall have valid values:   * reliable (TimeStatusCode 0); * invalid (TimeStatusCode 1); or * unreliable (TimeStatusCode 2).   Electricity only | ra:ElecTimeStatusType  (xs:string enumeration with attribute TimeStatusCode xs:integer) | N/A | Unencrypted |
| GasClockTimeStatus | The resulting time status, which shall have valid values:   * reliable; * invalid; or * unreliable.   Gas only | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |

Table 151 : Synchronise Clock MMC Output Format Body data items

##### StatusASN1 Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ResponseCode (attribute of StatusASN1) | The code corresponding to the ASN1Status enumeration value | xs:integer | N/A | Unencrypted |
| ASN1Status | Note that the valid set for each response is shown within the relevant response data table.  The valid enumeration values:   * success * notKnown * badCertificate * noTrustAnchor * insufficientMemory * trustAnchorNotFound * resourcesBusy * other * invalidCertificate * wrongDeviceIdentity * invalidKeyUsage * noCorrespondingKeyPairGenerated * wrongPublicKey * certificateStorageFailed * privateKeyChangeFailed * keyPairGenerationFailed * cRProductionFailed * noCertificateHeld * certificateRetrievalFailure * invalidMessageCodeForJoinMethodAndRole * invalidJoinMethodAndRole * incompatibleWithExistingEntry * deviceLogFull * writeFailure * keyAgreementNoResources * keyAgreementUnknownIssuer * keyAgreementUnsupportedSuite * keyAgreementBadMessage * keyAgreementBadKeyConfirm * invalidOrMissingCertificate * noPartnerLinkKeyReceived * noCBKEResponse * otherDeviceNotInDeviceLog * otherFailure * readFailure * noImageHeld * hashMismatch * activationFailure * reliable * invalid * unreliable | xs:string | N/A | Unencrypted |

Table 152 : StatusASN1 MMC Output Format Body data items

## Update Device Configuration (Instantaneous Power Threshold)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(InstantaneousPowerThreshold) |
| **Service Reference** | * 6.12 |
| **Service Reference Variant** | 6.12 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationInstantaneousPowerThresholdRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0047 |
| GBCS Use Case  (for reference - not in header) | ECS34 |

Table 153 : Update Device Configuration (Instantaneous Power Threshold) MMC Output Format Header data items

## Read Event or Security Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadEventOrSecurityLog |
| **Service Reference** | * 6.13 |
| **Service Reference Variant** | 6.13 |

### MMC Output Format

The xml type within the SMETSData element is ReadEventOrSecurityLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

The header items shall vary depending on the log type being read, as set out immediately below.

##### Device Event Log

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0048 | 0x0014 |
| GBCS Use Case  (for reference - not in header) | ECS35a | CS10a |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is an Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is an Unknown Remote Party | |

Table 154 : Read Event or Security Log (Device Event Log) MMC Output Format Header data items

##### Device Security Log

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** | |
| GBCSHexadecimalMessageCode | 0x0049 | 0x00A1 | |
| GBCS Use Case  (for reference - not in header) | ECS35b | CS10b | |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is previous IS or current RSA | | ra:EUI  Where originator is previous GS or current GT for GSME  or current RSA |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is previous IS or current RSA | | xs:nonNegativeInteger  Where originator is previous GS or current GT for GSME  or current RSA |

Table 155 : Read Event or Security Log (Device Security Log) MMC Output Format Header data items

##### CHF Event Log

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0093 | 0x0093 |
| GBCS Use Case  (for reference - not in header) | ECS35c | ECS35c |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | |

Table 156 : Read Event or Security Log (CHF Event Log) MMC Output Format Header data items

##### CHF Security Log

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0094 | 0x0094 |
| GBCS Use Case  (for reference - not in header) | ECS35d | ECS35d |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | |

Table 157 : Read Event or Security Log (CHF Security Log) MMC Output Format Header data items

##### Power Event Log

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x00B9 |
| GBCS Use Case  (for reference - not in header) | ECS35e |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is previous IS or current RSA |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is previous IS or current RSA |

Table 158 : Read Event or Security Log (Power Event Log) MMC Output Format Header data items

##### ALCS Event Log (Auxiliary Controller Event Log)

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCS1.0 and GBCS2.0GBCSHexadecimalMessageCode | 0x00BA |
| GBCS1.0 and GBCS2.0  GBCS Use Case  (for reference - not in header) | ECS35f |
| GBCS v3.2 or later  GBCSHexadecimalMessageCode | 0x00FD |
| GBCS v3.2 or later  GBCS Use Case  (*for reference – not in header)* | ECS35g |

Table 159 : Read Event or Security Log (ALCS (Auxiliary Controller) Event Log) MMC Output Format Header data items

#### Specific Body Data Items

The log shall accommodate one hundred date and time stamped entries (UTC), of information for diagnosis and auditing arranged as a circular buffer such that, when full, further writes shall cause the oldest entry to be overwritten.

As set out immediately below, a common structure is used for all the log types read under this Service Request, across all Device types, with the exception of Auxiliary Controller (ALCS/HCALCS/APC) Event Log for which there is an alternative format as set out in Table 161. GBCS section 16.2 provides a definition of event codes.

##### Event or Security Logs Specific Data Items

The XML group *Log* contains up to 100 *LogEntry (ra:LogEntryType)* groups with items as set out immediately below.

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Timestamp | The date- time stamp of this entry (UTC) | xs:dateTime | N/A | Unencrypted |
| LogCode | The Event/Alert Code corresponding to this event, as defined in GBCS | xs:hexBinary | N/A | Unencrypted |
| LogMeaning | Descriptive explanation of the event represented by the Event/Alert Code, as defined in GBCS section 16.2, which is an optional element | ra:EventCodeDescription | N/A | Unencrypted |
| OtherInformation | Where required by the Event/Alert Code: other information relating to this alert, as set out in Event/Alert Codes section of the GBCS section 16.4.  In the cases of Event Codes 0x8161 and 0x8162 this data item contains the User Interface Command Code logged by the device.  In the cases of Event Codes 0x8154 and 0x8155 this field will contain a Network Interface Command Code.  Optional element | xs:hexBinary | N/A | Unencrypted |
| OtherInformationLogMeaning | Descriptive explanation of the occurrence represented by the Event/Alert Code in the OtherInformation relating to this alert (as defined in GBCS section 16.4)  In the cases of Event Codes 0x8161 and 0x8162 this data item contains a textual reference to the User Interface Command Code logged by the device (as defined in GBCS section 16.4)  Optional | ra:EventCodeDescription | N/A | Unencrypted |

Table 160 : Read Event or Security Log Body Data Items

##### ALCS Logs Specific Data Items

The XML group *ALCSEvent* contains up to 100 *ALCSEventLogEntry (ra:ALCSEventLogType)* groups with items as set out immediately below.

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Timestamp | The date- time stamp of this entry (UTC) | xs:dateTime | N/A | Unencrypted |
| SwitchNumber | The number between 1 and 5, of the ALCS / HC ALCS / APC | xs:integer  (minInclusive 1 maxInclusive 5) | N/A | Unencrypted |
| SwitchAction | GBCS v4.0 or later: N/A  GBCS version earlier than v4.0:  The type of switch action recorded, which shall be one of the following values:  (1) “On”  (2) “Off”  (3) “Revert to calendar control”  (4) “Entry relates to a Message from an HC ALCS” | xs:string  (Enumeration) | N/A | Unencrypted |
| Outcome | The result of the switch action, being one of:  (1) “Outcome not known”  (2) “Success”  (3) “Failure”  'Outcome not known' shall only be used where this entry relates to a Command being sent to an HCALCS | xs:string  (Enumeration) | N/A | Unencrypted |
| HANCommandID | 0x00000000, if this entry relates to an ALCS or APC.  For entries related to an HCALCS HAN command, an identifier generated by the ESME. | xs:integer | N/A | Unencrypted |
| AuxiliaryControllerLevel | GBCS version earlier than v4.0: N/A  GBCS v4.0 or later:An integer indicating the required state of the Auxiliary Controller.  Where the Auxiliary Controller is an APC, the number reflects the percentage to which its commanded state level is to be set.  Where the Auxiliary Controller is an ALCS or HCALCS, 100 shall be interpreted by the Device as meaning closure of the switch (allowing energy to flow) and any other number shall be interpreted as meaning opening of the switch (not allowing energy to flow). | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| InputFromControlledLoad | GBCS version earlier than v4.0: N/A  GBCS v4.0 or later:  If present, this element specifies that the direction of energy flow in the AuxiliaryControllerLevel of the APC relates to the input of energy from the controlled load.  If not present, then the AuxiliaryControllerLevel relates to the output of energy to the controlled load. | ra: noType  (see clause 2.4.2) | N/A | Unencrypted |

Table 161 : ALCS (Auxiliary Controller) Event Log Body Data Items

## Update Device Configuration (Auxiliary Load Control Description)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(AuxiliaryLoadControlDescription) |
| **Service Reference** | * 6.14 |
| **Service Reference Variant** | 6.14.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationALCDescriptionsRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** |  |
| GBCSHexadecimalMessageCode | 0x0053 |  |
| GBCS Use Case  (for reference - not in header) | ECS46a |  |

Table 162 : Update Device Configuration (Auxiliary Load Control Description) MMC Output Format Header data items

## Update Device Configuration (Auxiliary Load Control Scheduler)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(AuxiliaryLoadControlScheduler) |
| **Service Reference** | * 6.14 |
| **Service Reference Variant** | 6.14.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationALCSchedulerRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0054 |
| GBCS Use Case  (for reference - not in header) | ECS46c |
| Timestamp | xs:dateTime |

Table 163 : Update Device Configuration (Auxiliary Load Control Scheduler) MMC Output Format Header data items

## Update Device Configuration (Auxiliary Controller Scheduler)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(AuxiliaryControllerScheduler) |
| **Service Reference** | * 6.14 |
| **Service Reference Variant** | 6.14.3 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationALCSchedulerRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x011A |
| GBCS Use Case  (for reference - not in header) | ECS46d |
| Timestamp | xs:dateTime |

Table 163.1 : Update Device Configuration (Auxiliary Controller Scheduler) MMC Output Format Header data items

## Update Security Credentials (KRP)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateSecurityCredentials(KRP) |
| **Service Reference** | * 6.15 |
| **Service Reference Variant** | 6.15.1 |

### MMC Output Format

The xml type within the SMETSData element is UpdateSecurityCredentialsKRPRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | Dependent on credentials replacement mode; supplierBySupplier 0x0102  networkOperatorByNetworkOperator 0x0103 | |
| GBCS Use Case  (for reference - not in header) | CS02b | CS02b |
| Timestamp | xs:dateTime | xs:dateTime |

Table 164.1 : Update Security Credentials (KRP) MMC Output Format Header data items - All RemotePartyRoles other than LoadController

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0126 | N/A |
| GBCS Use Case  (for reference - not in header) | CS02g | N/A |
| Timestamp | xs:dateTime | N/A |

Table 164.2 : Update Security Credentials (KRP) MMC Output Format Header data items – LoadController RemotePartyRole

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ExecutionOutcome | The execution outcome is only provided when the command was for immediate execution.  Optional | ra:ExecutionOutcome, as set out in Section 5.63.2.2.1 of this document | N/A | Unencrypted |

Table 165 : Update Security Credentials (KRP) MMC Output Format Body data items

##### ExecutionOutcome Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AuthorisingRemotePartyOriginatorCounter | Originating counter passed in the Service Request, allows Device Alerts to be matched to the Service Request | xs:nonNegativeInteger | N/A | Unencrypted |
| CredentialsReplacementMode | Define the valid combinations as to which Remote Party Roles can replace which kinds of credentials.  Valid values are:  SR 6.15.1  “SupplierBySupplier” “NetworkOperatorByNetworkOperator” “LoadControllerBySupplier” SR 6.21  “SupplierBySupplier”  “NetworkOperatorByNetworkOperator”  SR 6.23  “SupplierByTransCoS”  SR 8.5 “ACBByACB” | Restriction base xs:string  (Enumeration) | N/A | Unencrypted |
| RemotePartySeqNumberChange | The resulting changes to any anti-replay counters held on the Device | ra:RemotePartySeqNumberChange, as set out in Section 5.63.2.2.2 of this document | N/A | Unencrypted |
| ReplacementOutcome | For each replacement in the Service Request, detail the outcome and impacted parties | ra:ReplacementOutcome,  maxOccurs = 3  as set out in Section 5.63.2.2.3 of this document | N/A | Unencrypted |

Table 166 : ExecutionOutcome Specific Body Data Items

##### RemotePartySeqNumberChange Specific Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| RemotePartyRole | Remote Party Role for which the Credentials have been updated  Valid values are:   * Supplier * NetworkOperator * LoadController | ra:RemotePartyRole *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  Restriction base xs:token  (Enumeration)  (as set out in DUIS under Service Reference Variant 6.24.1) | N/A | Unencrypted |
| RemotePartyFloorSeqNumber | The corresponding counter value | xs:nonNegativeInteger | N/A | Unencrypted |
| RemotePartyTopUpFloorSeqNumber | Only present where Remote Party Role is Supplier and a top up Certificate was provided in the Service Request, which is the prepayment top up counter value. | xs:nonNegativeInteger | N/A | Unencrypted |

Table 167 : RemotePartySeqNumberChange Specific Body Data Items

##### ReplacementOutcome Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| StatusCode | Outcome of the Service Request for each replacement.  As set out in section 4.1.3.3 of this document | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |
| CertificateType | To what use can the public key in this replacement be put  Valid values are:   * DigitalSigning; * KeyAgreement * KeyAgreementTopUp; or * KeyCertSign. | Restriction base xs:string  (Enumeration) | N/A | Unencrypted |
| RemotePartyRole | Remote Party Role for which the Credentials are being updated  Valid values are:   * Supplier * NetworkOperator * LoadController | ra:RemotePartyRole *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  Restriction base xs:token  (Enumeration)  (as set out in DUIS under Service Reference Variant 6.24.1) | N/A | Unencrypted |
| ExistingRemotePartyId | Identifies the existing subject unique identifier equating to Entity Identifier (64 bit value) | ra:EUI (see clause 2.4.1) | N/A | Unencrypted |
| NewRemotePartyId | Identifies the replacement subject unique identifier equating to Entity Identifier (64 bit value) | ra:EUI (see clause 2.4.1) | N/A | Unencrypted |
| ExistingCertificateHash | Identifies the existing subject key identifier, a SHA-1 hash, i.e. of the Certificate | ra:SHA1  xs:base64binary | N/A | Unencrypted |
| NewCertificateHash | Identifies the replacement subject key identifier, a SHA-1 hash, i.e. of the Certificate | ra:SHA1  xs:base64binary | N/A | Unencrypted |

Table 168 : ReplacementOutcome Specific Body Data Items

## Update Security Credentials (Device)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateSecurityCredentials(Device) |
| **Service Reference** | * 6.15 |
| **Service Reference Variant** | 6.15.2 |

### MMC Output Format

The xml type within the SMETSData element is UpdateSecurityCredentialsDeviceRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x000B | 0x000B |
| GBCS Use Case  (for reference - not in header) | CS02d | CS02d |

Table 169 : Update Security Credentials (Device) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| UpdateSecurityCredentialsResponseCode | Either a success code is returned, or the reason for the failure.  Valid values are:   * success; * invalidCertificate; * wrongDeviceIdentity; * invalidKeyUsage; * noCorrespondingKeyPairGenerated; * wrongPublicKey; * certificateStorageFailed; or * privateKeyChangeFailed. | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |

Table 170 : Update Security Credentials (Device) Specific Body Data Items

## Issue Security Credentials

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * IssueSecurityCredentials |
| **Service Reference** | * 6.17 |
| **Service Reference Variant** | 6.17 |

### MMC Output Format

The xml type within the SMETSData element is IssueSecurityCredentialsRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x000A | 0x000A |
| GBCS Use Case  (for reference - not in header) | CS02c | CS02c |

Table 171 : Issue Security Credentials MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| IssueCredentialsResponseCode | If the Service Request fails, the reason for the failure is returned  Valid values are:   * success * invalidKeyUsage; * keyPairGenerationFailed; or * cRProductionFailed. | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |
| CertificationRequest | * CertificationRequest is as defined in ASN.1 by IETF RFC 5912. For reference, it is in the section headed ‘ASN.1 Module for RFC 2986’. * This is returned DER (Distinguished Encoding Rules) encoded by the device and presented in the XML as a base 64 encoded string * Note: CertificationRequest is only included in the response if IssueCredentialsResponseCode = success | xs:base64Binary | N/A | Unencrypted |

Table 172 : Issue Security Credentials Specific Body Data Items

## Set Maximum Demand Configurable Time Period

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetMaximumDemandConfigurableTimePeriod |
| **Service Reference** | * 6.18 |
| **Service Reference Variant** | 6.18.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetMaximumDemandConfigurableTimePeriodRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x004A |
| GBCS Use Case  (for reference - not in header) | ECS37 |

Table 173 : Set Maximum Demand Configurable Time Period MMC Output Format Header data items

## Reset Maximum Demand Registers

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ResetMaximumDemandRegisters |
| **Service Reference** | * 6.18 |
| **Service Reference Variant** | 6.18.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ResetMaximumDemandRegistersRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x005A |
| GBCS Use Case  (for reference - not in header) | ECS57 |

Table 174 : Reset Maximum Demand Registers MMC Output Format Header data items

## Set Device Configuration (Import MPxN)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetDeviceConfiguration(ImportMPxN) |
| **Service Reference** | * 6.20 |
| **Service Reference Variant** | 6.20.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetDeviceConfigurationImportMPxNRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x004C | 0x0087 |
| GBCS Use Case  (for reference - not in header) | ECS39a | GCS41 |

Table 175 : Set Device Configuration (Import MPxN) Response Header Data Items

## Set Device Configuration (Export MPAN)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetDeviceConfiguration(ExportMPAN) |
| **Service Reference** | * 6.20 |
| **Service Reference Variant** | 6.20.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetDeviceConfigurationExportMPANRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x004D |
| GBCS Use Case  (for reference - not in header) | ECS39b |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party |

Table 176 : Set Device Configuration (Export MPAN) MMC Output Format Header data items

## Request Handover of DCC Controlled Device

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RequestHandoverOfDCCControlledDevice |
| **Service Reference** | * 6.21 |
| **Service Reference Variant** | 6.21 |

### MMC Output Format

The xml type within the SMETSData element is RequestHandoverOfDCCControlledDeviceRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | Dependent on credentials replacement mode;  supplierBySupplier 0x0102  networkOperatorByNetworkOperator 0x0103 | |
| GBCS Use Case  (for reference - not in header) | CS02b | CS02b |
| Timestamp | xs:dateTime | xs:dateTime |

Table 177 : Request Handover Of DCC Controlled Device MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ExecutionOutcome | The execution outcome is only provided when the command was for immediate execution.  Optional | ra:ExecutionOutcome, as set out in Section 5.63.2.2.1 of this document | N/A | Unencrypted |

Table 178 : Request Handover Of DCC Controlled Device MMC Output Format Body data items

## Configure Alert Behaviour

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ConfigureAlertBehaviour |
| **Service Reference** | * 6.22 |
| **Service Reference Variant** | 6.22 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ConfigureAlertBehaviourRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response (Supplier)** | **Electricity Response (Network Operator)** | **Gas Response (Supplier)** |
| GBCSHexadecimalMessageCode | 0x00AC | 0x00B0 | 0x00AD |
| GBCS Use Case  (for reference - not in header) | ECS25a | ECS25b | GCS20 |

Table 179 : Configure Alert Behaviour MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Electricity Response (Supplier – WAN Alerts)** | **Electricity Response (Supplier – HAN Alerts)** | **Electricity Response (Supplier –Alarms)** | **Electricity Response (Supplier –Event Logging)** |
| GBCSHexadecimalMessageCode | 0x00AC | 0x00EA | 0x00EB | 0x00EC |
| GBCS Use Case  (for reference - not in header) | ECS25a | ECS25a1 | ECS25a2 | ECS25a3 |

Table 180 : Configure Alert Behaviour MMC Output Format Header data items – GBCS v2.0 (Electricity Supplier)

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response (Network Operator – WAN Alerts)** | **Electricity Response (Network Operator –Event Logging)** | **Gas Response (Supplier)** |
| GBCSHexadecimalMessageCode | 0x00B0 | 0x00ED | 0x00AD |
| GBCS Use Case  (for reference - not in header) | ECS25b | ECS25b3 | GCS20 |

Table 181 : Configure Alert Behaviour MMC Output Format Header data items – GBCS v2.0 (Electricity Network Operator and Gas Supplier)

## Update Security Credentials (CoS)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | UpdateSecurityCredentials(CoS) |
| **Service Reference** | * 6.23 |
| **Service Reference Variant** | 6.23 |
| **Timestamp** | xs:dateTime |

### MMC Output Format

The xml type within the SMETSData element is UpdateSecurityCredentialsCoSRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0107 | 0x0107 |
| GBCS Use Case  (for reference - not in header) | CS02b | CS02b |

Table 182 : Update Security Credentials (CoS) MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ExecutionOutcome | The execution outcome is only provided when the command was for immediate execution.  Optional | ra:ExecutionOutcome, as set out in Section 5.63.2.2.1 of this document | N/A | Unencrypted |

Table 183 : Update Security Credentials (CoS) MMC Output Format Body data items

## Retrieve Device Security Credentials (KRP)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveDeviceSecurityCredentials(KRP) |
| **Service Reference** | * 6.24 |
| **Service Reference Variant** | 6.24.1 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveDeviceSecurityCredentialsKRPRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

GBCS version earlier than v4.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0008 | 0x0008 |
| GBCS Use Case  (for reference - not in header) | CS02a | CS02a |

Table 184 : Retrieve Device Security Credentials (KRP) MMC Output Format Header data items- GBCS version earlier than v4.0

GBCS v4.0 or later:

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Electricity Response** | | **Gas Response** |
| Device Type | ESME | Other |  |
| GBCSHexadecimalMessageCode | 0x011B | 0x0008 | 0x0008 |
| GBCS Use Case  (for reference - not in header) | CS02f | CS02a | CS02a |

Table 184.1: Retrieve Device Security Credentials (KRP) MMC Output Format Header data items– GBCS v4.0 or later

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| RemotePartyDetails | Response structure recurs for each role for which the credentials were requested | ra:remotepartydetails  maxOccurs = unbounded | N/A | Unencrypted |

Table 185 : Retrieve Device Security Credentials (KRP) MMC Output Format Body data items

###### RemotePartyDetails Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| RemotePartyRole | The Remote Party Role for which the Credentials are being retrieved from the Device. | ra:RemotePartyRole *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  Restriction base xs:token  (Enumeration)  (as set out in DUIS under Service Reference Variant 6.24.1) | N/A | Unencrypted |
| StatusCode | The outcome of the Service Request for the relevant Certificate, with valid values of:   * success; * trustAnchorNotFound; or * other. | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |
| RemotePartyFloorSeqNumber | The corresponding counter value | xs: nonNegativeInteger | N/A | Unencrypted |
| CertificateUsage | Indicating the applicable use relating to the Public Key, with valid values of:   * DigitalSigning; * KeyAgreement * KeyAgreementTopUp; or * KeyCertSign. | Restriction base xs:string  (Enumeration) | N/A | Unencrypted |
| ExistingRemotePartyId | Identifies the existing subject unique identifier equating to Entity Identifier (64 bit value) | ra:EUI (see clause 2.4.1) | N/A | Unencrypted |
| ExistingCertificateHash | Identifies the existing subject key identifier, a SHA-1 hash, i.e. of the corresponding Certificate | ra:SHA1  xs:base64binary | N/A | Unencrypted |

Table 186 : RemotePartyDetails MMC Output Format Body data items

## Retrieve Device Security Credentials (Device)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RetrieveDeviceSecurityCredentials(Device) |
| **Service Reference** | * 6.24 |
| **Service Reference Variant** | 6.24.2 |

### MMC Output Format

The xml type within the SMETSData element is RetrieveDeviceSecurityCredentialsDeviceRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x000C | 0x000C |
| GBCS Use Case  (for reference - not in header) | CS02e | CS02e |

Table 187 : Retrieve Device Security Credentials (Device) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| RetrieveDeviceSecurityCredentialsStatusCode | Included when the Service Request is unsuccessful, with valid values of:   * invalidKeyUsage; * noCertificateHeld; or * certificateRetrievalFailure.   Either the Status Code or the Certificate will be present. | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |
| Certificate | The Certificate requested from the Device, if successful  Either the Status Code or the Certificate will be present. | ra:Certificate  (xs:base64Binary) | N/A | Unencrypted |

Table 188 : Retrieve Device Security Credentials (Device) MMC Output Format Body data items

## Set Electricity Supply Tamper State

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetElectricitySupplyTamperState |
| **Service Reference** | * 6.25 |
| **Service Reference Variant** | 6.25 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetElectricitySupplyTamperStateRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x0068 |
| GBCS Use Case  (for reference - not in header) | ECS81 |

Table 189 : Set Electricity Supply Tamper State MMC Output Format Header data items

## Update Device Configuration (daily resetting of Tariff Block Counter Matrix)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(daily resetting of Tariff Block Counter Matrix) |
| **Service Reference** | * 6.26 |
| **Service Reference Variant** | 6.26 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationDailyResettingOfTariffBlockCounterMatrixRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v2.0:

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x00DB |
| GBCS Use Case  (for reference - not in header) | ECS48 |

Table 190 : Update Device Configuration (daily resetting of Tariff Block Counter Matrix) MMC Output Format Header data items – GBCS v2.0

## Update Device Configuration (RMS Voltage Counter Reset)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateDeviceConfiguration(RMS Voltage Counter Reset) |
| **Service Reference** | * 6.27 |
| **Service Reference Variant** | 6.27 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateDeviceConfigurationRMSVoltageCounterResetRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v2.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response**  **(Single Phase)** | **Electricity Response**  **(Poly Phase)** |
| GBCSHexadecimalMessageCode | 0x00D3 | 0x00D4 |
| GBCS Use Case  (for reference - not in header) | ECS29e | ECS29f |

Table 191 : Update Device Configuration (RMS Voltage Counter Reset) MMC Output Format Header data items – GBCS v2.0

## Set CHF Sub GHz Configuration

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetCHFSubGHzConfiguration |
| **Service Reference** | * 6.28 |
| **Service Reference Variant** | 6.28 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetCHFSubGHzConfigurationRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Dual Band CHF Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x010D |
| GBCS Use Case  (for reference - not in header) | DBCH04 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 192 : Set CHF Sub GHz Configuration MMC Output Format Header data items

## Request CHF Sub GHz Channel Scan

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RequestCHFSubGHzChannelScan |
| **Service Reference** | * 6.29 |
| **Service Reference Variant** | 6.29 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is RequestCHFSubGHzChannelScanRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Dual Band CHF Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x010E |
| GBCS Use Case  (for reference - not in header) | DBCH05 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 193 : Request CHF Sub GHz Channel Scan MMC Output Format Header data items

## Read CHF Sub GHz Configuration

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadCHFSubGHzConfiguration |
| **Service Reference** | * 6.30 |
| **Service Reference Variant** | 6.30 |

### MMC Output Format

The xml type within the SMETSData element is ReadCHFSubGHzConfigurationRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Dual Band CHF Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x010C |
| GBCS Use Case  (for reference - not in header) | DBCH03 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 194 : Read CHF Sub GHz Configuration MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| LowerBandSubGHzChannels0To26 | As set out in DUIS for Service Reference Variant 6.28 | ra:Channels0To26 *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.28) | N/A | Unencrypted |
| LowerBandSubGHzChannels27To34 | As set out in DUIS for Service Reference Variant 6.28 | ra:Channels27To34 *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.28) | N/A | Unencrypted |
| LowerBandSubGHzChannels35To61 | As set out in DUIS for Service Reference Variant 6.28 | ra:Channels35To61 *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.28) | N/A | Unencrypted |
| UpperBandSubGHzChannels0To26 | As set out in DUIS for Service Reference Variant 6.28 | ra:Channels0To26 *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS for Service Reference Variant 6.28) | N/A | Unencrypted |
| NormalLimitedDutyCycleThreshold | As set out in DUIS for Service Reference Variant 6.28 | xs:decimal | % | Unencrypted |
| LimitedCriticalDutyCycleThreshold | As set out in DUIS for Service Reference Variant 6.28 | xs:decimal | % | Unencrypted |
| MaximumSubGHzChannelChangesPerWeek | As set out in DUIS for Service Reference Variant 6.28 | xs:unsignedShort | N/A | Unencrypted |
| GSMECurfew | As set out in DUIS for Service Reference Variant 6.28 | xs:unsignedShort | Hours | Unencrypted |
| ChannelQuieterThreshold | As set out in DUIS for Service Reference Variant 6.28 | xs:unsignedShort | dB | Unencrypted |
| ChannelNoisierThreshold | As set out in DUIS for Service Reference Variant 6.28 | xs:unsignedShort | dB | Unencrypted |
| NonGSMEPoorCommsPercentageThreshold | As set out in DUIS for Service Reference Variant 6.28 | xs:decimal | % | Unencrypted |
| NonGSMEPoorCommsMeasurementPeriods | As set out in DUIS for Service Reference Variant 6.28 | xs:unsignedShort | N/A | Unencrypted |
| LocalCHNoiseMeasurementPeriod | As set out in DUIS for Service Reference Variant 6.28 | xs:unsignedShort | Minutes | Unencrypted |
| LocalCHFailurePercentage | As set out in DUIS for Service Reference Variant 6.28 | xs:decimal | % | Unencrypted |
| LocalCHRetryPercentage | As set out in DUIS for Service Reference Variant 6.28 | xs:decimal | % | Unencrypted |

Table 195 : Read CHF Sub GHz Configuration MMC Output Format Specific Body data items

## Read CHF Sub GHz Channel

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadCHFSubGHzChannel |
| **Service Reference** | * 6.31 |
| **Service Reference Variant** | 6.31 |

### MMC Output Format

The xml type within the SMETSData element is ReadCHFSubGHzChannelRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Dual Band CHF Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x010A |
| GBCS Use Case  (for reference - not in header) | DBCH01 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 196 : Read CHF Sub GHz Channel MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| OperatingSubGHzChannel | As set out in DUIS Section 3.9 DCC Alert Messages | ra: OperatingSubGHzChannel *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS Section 3.9 DCC Alert Messages) | N/A | Unencrypted |

Table 197 : Read CHF Sub GHz Channel MMC Output Format Specific Body data items

## Read CHF Sub GHz Channel Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadCHFSubGHzChannelLog |
| **Service Reference** | * 6.32 |
| **Service Reference Variant** | 6.32 |

### MMC Output Format

The xml type within the SMETSData element is ReadCHFSubGHzChannelLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

| **Data Item** | **Dual Band CHF Response** |
| --- | --- |
| GBCSHexadecimalMessageCode | 0x010B |
| GBCS Use Case  (for reference - not in header) | DBCH02 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 198 : Read CHF Sub GHz Channel Log MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| LogEntry | The ‘Sub GHz Channel Log’ is a circular log containing date-time stamped entries of the last 100 Operating Sub GHz Channel values used, where each entry in the Log specifies a timestamp indicating when operation began on the channel, the Event Code and Description, the Operating Channel and the trigger for the channel change | ra:CHFSubGHzChannelLogEntry  (as set out in Section 5.82.2.2.1.1 of this document) | N/A | Unencrypted |

Table 199 : Read CHF Sub GHz Channel Log MMC Output Format Specific Body data items

###### CHFSubGHzChannelLogEntry Specific Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Timestamp | Date and time indicating when operation began on the Sub GHz Channel | xs:dateTime | N/A | Unencrypted |
| EventCode | * Code indicating the channel changed * Valid Set: * 8F26 | xs:hexBinary | N/A | Unencrypted |
| EventDescription | * Description indicating the channel changed * Valid Set: * Sub GHz Channel Changed | xs:string  (maxLength=200) | N/A | Unencrypted |
| OperatingSubGHzChannel | As set out in DUIS Section 3.9 DCC Alert Messages | ra:OperatingSubGHzChannel *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS Section 3.9 DCC Alert Messages) | N/A | Unencrypted |
| ScanTrigger | As set out in DUIS Section 3.9 DCC Alert Messages | ra:ScanTrigger *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS Section 3.9 DCC Alert Messages) | N/A | Unencrypted |

Table 200 : CHFSubGHzChannelLogEntry MMC Output Format Body data items

## Enable Supply

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * EnableSupply |
| **Service Reference** | * 7.1 |
| **Service Reference Variant** | * 7.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is EnableSupplyRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x004F |
| GBCS Use Case  (for reference - not in header) | ECS42 |

Table 201 : Enable Supply MMC Output Format Header data items

## Disable Supply

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * DisableSupply |
| **Service Reference** | * 7.2 |
| **Service Reference Variant** | * 7.2 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is DisableSupplyRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0050 | 0x0081 |
| GBCS Use Case  (for reference - not in header) | ECS43 | GCS32 |

Table 202 : Disable Supply MMC Output Format Header data items

## Arm Supply

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ArmSupply |
| **Service Reference** | * 7.3 |
| **Service Reference Variant** | * 7.3 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ArmSupplyRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0051 | 0x0085 |
| GBCS Use Case  (for reference - not in header) | ECS44 | GCS39 |

Table 203 : Arm Supply MMC Output Format Header data items

## Read Supply Status

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadSupplyStatus |
| **Service Reference** | * 7.4 |
| **Service Reference Variant** | * 7.4 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ReadSupplyStatusRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0052 | 0x0082 |
| GBCS Use Case  (for reference - not in header) | ECS45 | GCS33 |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 204 : Read Supply MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| SupplyState | The state of the Supply, with valid values:   * Enabled; * Disabled; or * Armed. | ra:SupplyStateType  (xs:string enumeration) | N/A | Unencrypted |
| Gas | XML Block for Gas | | | |
| RemainingBatteryCapacity | Remaining battery life.  Optional - Gas only. | xs:unsignedint | Days | Unencrypted |

Table 205 : Read Supply MMC Output Format Body data items

## Activate Auxiliary Load

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ActivateAuxiliaryLoad |
| **Service Reference** | * 7.5 |
| **Service Reference Variant** | * 7.5 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ActivateAuxiliaryLoadRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response (HCALCS or ALCS)** |  |
| GBCSHexadecimalMessageCode | 0x0055 |  |
| GBCS Use Case  (for reference - not in header) | ECS47 |  |

Table 206 : Activate Auxiliary Load MMC Output Format Header data items

## Deactivate Auxiliary Load

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * DeactivateAuxiliaryLoad |
| **Service Reference** | * 7.6 |
| **Service Reference Variant** | * 7.6 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is DeactivateAuxiliaryLoadRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response (HCALCS or ALCS)** |
| GBCSHexadecimalMessageCode | 0x0055 |
| GBCS Use Case  (for reference - not in header) | ECS47 |

Table 207 : Deactivate Auxiliary Load MMC Output Format Header data items

## Read Auxiliary Load Switch Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | ReadAuxiliaryLoadSwitchData |
| **Service Reference** | * 7.7 |
| **Service Reference Variant** | * 7.7 |

### MMC Output Format

The xml type within the SMETSData element is ReadALCSDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items Definition

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response (HCALCS or ALCS)** |
| GBCSHexadecimalMessageCode | 0x00BB |
| GBCS Use Case  (for reference - not in header) | ECS61a |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party or Electricity Distributors (EDs) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party or Electricity Distributors (EDs) |

Table 208 : Read ALCS Data MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AuxiliaryLoadControlSwitch | Details for each ALCS  Max 5 | ra:ALCSType  As set out in 5.89.2.2.1 of this document  maxOccurs = 5 | N/A | Unencrypted |
| ALCSHCALCSSpecialDays | A calendar defining special days for the activation or deactivation of ALC / HCALC Switches | ra:ALCSHCALCSSpecialDays *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS under Service Reference Variant 6.14.2) | N/A | Unencrypted |
| ALCSScheduler | Structure that defines the schedule when individual switches are to be open or closed.  Max 48 | ra:ALCSHCALCSConnectionSchedule *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (as set out in DUIS under Service Reference Variant 6.14.2)  maxOccurs = 48 | N/A | Unencrypted |

Table 209 : Read ALCS Data MMC Output Format Body data items

##### ALCSType MMC Output Format

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Description | For each Auxiliary Load Control Switch or HAN Connected Auxiliary Load Control Switch, a description of the type of controlled load connected and the switch type. | xs:string  (maxLength=22) | N/A | Unencrypted |
| TypeAndIdentifier | The Switch Type (ALCS or HC ALCS) and, for HCALCS, the Device ID | ra:SwitchTypeAndID  as set out in Section 5.89.2.2.2 of this document | N/A | Unencrypted |
| State | The current status, which is either false (denoting “open”) or true (denoting “closed”) of Auxiliary Load Control Switch [n] as commanded by ESME. | xs:boolean | N/A | Unencrypted |

Table 210 : ALCSType MMC Output Format Body data items

##### SwitchTypeAndID MMC Output Format

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ALCS | Identifies Switch Type as ALCS  ALCS only. | ra: noType  (see clause 2.4.2) | N/A | Unencrypted |
| HCALCS | The Device ID of the HCALCS.  HCALCS only. | ra:EUI  (see clause 2.4.1) | N/A | Unencrypted |

Table 211 : SwitchTypeAndID MMC Output Format Body data items

## Reset Auxiliary Load

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ResetAuxiliaryLoad |
| **Service Reference** | * 7.8 |
| **Service Reference Variant** | * 7.8 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is ResetAuxiliaryLoadRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response (HCALCS or ALCS)** |
| GBCSHexadecimalMessageCode | 0x0055 |
| GBCS Use Case  (for reference - not in header) | ECS47 |

Table 212 : Reset Auxiliary Load Configuration MMC Output Format Header data items

## Add Auxiliary Load to Boost Button

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * AddAuxiliaryLoadToBoostButton |
| **Service Reference** | * 7.9 |
| **Service Reference Variant** | * 7.9 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is AddAuxiliaryLoadToBoostButtonRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x005F |
| GBCS Use Case  (for reference - not in header) | ECS62 |

Table 213 : Add Auxiliary Load To Boost Button MMC Output Format Header data items

## Remove Auxiliary Load from Boost Button

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RemoveAuxiliaryLoadFromBoostButton |
| **Service Reference** | * 7.10 |
| **Service Reference Variant** | * 7.10 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is RemoveAuxiliaryLoadFromBoostButtonRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x005F |
| GBCS Use Case  (for reference - not in header) | ECS62 |

Table 214 : Remove Auxiliary Load From Boost Button MMC Output Format Header data items

## Read Boost Button Details

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadBoostButtonDetails |
| **Service Reference** | * 7.11 |
| **Service Reference Variant** | * 7.11 |

### MMC Output Format

The xml type within the SMETSData element is ReadBoostButtonDetailsRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x005E |
| GBCS Use Case  (for reference - not in header) | ECS61c |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party |

Table 215 : Read Boost Button Details MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| EventLogEntry | Between 0 and 25 occurrences | ra:ReadBoostButtonEventLogType  maxOccurs = 25  As set out in section 5.93.2.2.1 of this document |  |  |
| BoostFunctionAvailability | Identifies if ESME has a configured boost function.  Is fixed at manufacture to represent presence (true) or absence (false) of the Boost Function. | xs:boolean | N/A | Unencrypted |
| BoostFunctionControl1Value | * true if the Auxiliary Load Control Switch [1] is to be controlled by the Boost Function and shall be false otherwise | xs:boolean | N/A | Unencrypted |
| BoostFunctionControl2Value | true if the Auxiliary Load Control Switch [2] is to be controlled by the Boost Function and shall be false otherwise. | xs:boolean | N/A | Unencrypted |
| BoostFunctionControl3Value | true if the Auxiliary Load Control Switch [3] is to be controlled by the Boost Function and shall be false otherwise. | xs:boolean | N/A | Unencrypted |
| BoostFunctionControl4Value | true if the Auxiliary Load Control Switch [4] is to be controlled by the Boost Function and shall be false otherwise. | xs:boolean | N/A | Unencrypted |
| BoostFunctionControl5Value | true if the Auxiliary Load Control Switch [5] is to be controlled by the Boost Function and shall be false otherwise. | xs:boolean | N/A | Unencrypted |

Table 216 : Read Boost Button Details MMC Output Format Body data items

##### ReadBoostButtonEventLogType

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| BoostEnd | Time of end of boost period. | xs:dateTime | N/A | Unencrypted |
| BoostStart | Time of start of boost period. | xs:dateTime | N/A | Unencrypted |

Table 217 : ReadBoostButtonEventLogType MMC Output Format Body data items

## Set Randomised Offset Limit

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetRandomisedOffsetLimit |
| **Service Reference** | * 7.12 |
| **Service Reference Variant** | * 7.12 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetRandomisedOffsetLimitRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x004B |
| GBCS Use Case  (for reference - not in header) | ECS38 |

Table 218 : Set Randomised Offset Limit MMC Output Format Header data items

## Set Auxiliary Controller State

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * SetAuxiliaryControllerState |
| **Service Reference** | * 7.13 |
| **Service Reference Variant** | * 7.13 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is SetAuxiliaryControllerStateRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** |  |
| GBCSHexadecimalMessageCode | 0x011E |  |
| GBCS Use Case  (for reference - not in header) | ECS47a |  |

Table 218.1: Set Auxiliary Controller State MMC Output Format Header data items

## Read Auxiliary Controller Configuration Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | ReadAuxiliaryControllerConfigurationData |
| **Service Reference** | * 7.14 |
| **Service Reference Variant** | * 7.14 |

### MMC Output Format

The xml type within the SMETSData element is ReadAuxiliaryControllerConfigurationDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items Definition

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x011C |
| GBCS Use Case  (for reference - not in header) | ECS61d |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party |

Table 218.2: Read Auxiliary Controller Configuration Data MMC Output Format Header data items

#### Specific Body Data Items

ReadAuxiliaryControllerConfigurationDataRsp

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AuxiliaryControllerDescription | The description for Auxiliary Controller. | Restriction of xs:string  (maxLength=22)  maxOccurs = 5 | N/A | Unencrypted |
| auxiliaryControllerN  (an attribute of AuxiliaryControllerDescription) | The value [n] for the Auxiliary Controller[n] with its SMETS meaning.  The identifier associated with the Auxiliary Controller. | ra:range\_1\_5  (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5) | N/A | Unencrypted |
| AuxiliaryControllerSpecialDayDefinitions | as set out in DUIS under Service Reference Variant 6.14.3, table 183.4 | ra:AuxiliaryControllerSpecialDayDefinitions *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)* | N/A | Unencrypted |
| AuxiliaryControllerSchedule | as set out in DUIS under Service Reference Variant 6.14.3, table 183.2 | ra:AuxiliaryControllerSchedule *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  maxOccurs = 120 | N/A | Unencrypted |

Table 218.3: Read ALCS Data MMC Output Format Body data items

## Read Auxiliary Controller Operational Data

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | ReadAuxiliaryControllerOperationalData |
| **Service Reference** | * 7.15 |
| **Service Reference Variant** | * 7.15 |

### MMC Output Format

The xml type within the SMETSData element is ReadAuxiliaryControllerOperationalDataRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items Definition

|  |  |
| --- | --- |
| **Data Item** | **Electricity Response** |
| GBCSHexadecimalMessageCode | 0x011D |
| GBCS Use Case  (for reference - not in header) | ECS61e |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party |

Table 218.4: Read Auxiliary Controller Operational Data MMC Output Format Header data items

#### Specific Body Data Items

ReadAuxiliaryControllerOperationalDataRsp

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AuxiliaryControllerOperationalData | The operational data of the Auxiliary Controller connected. | ra:AuxiliaryControllerOperationalData  minOccurs = 0  maxOccurs = 5 | N/A | Unencrypted |

Table 218.5: Read Auxiliary Controller Operational Data MMC Output Format Body data items

##### AuxiliaryControllerOperationalData

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| auxiliaryControllerN  (an attribute of AuxiliaryControllerOperationalData) | The value [n] for the Auxiliary Controller[n] with its SMETS meaning.  The identifier associated with the Auxiliary Controller. | ra:range\_1\_5  (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5) | N/A | Unencrypted |
| TypeAndIdentifier | The type of an Auxiliary Controller, and device ID if associated with an HCALCS | ra: TypeAndIdentifier (see section 5.98.2.2.2) | N/A | Unencrypted |
| Auxiliary ControllerStateAndAssociatedInformation | The state of an Auxiliary Controller and associated information | ra: AuxiliaryControllerStateAndAssociatedInformation (see section 5.98.2.2.3) | N/A | Unencrypted |

Table 218.6: AuxiliaryControllerTypeIDAndState MMC Output Format Body data items

##### TypeAndIdentifier

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| AuxiliaryControllerType | The type of Auxiliary Controller.  Valid set:   * APC * ALCS * HCALCS * None | restriction of xs:string (Enumeration) | N/A | Unencrypted |
| HCALCSID | Where this Auxiliary Controller is a HCALCS, this is the Device ID. | ra:EUI | N/A | Unencrypted |

Table 218.7: AuxiliaryControllerTypeID MMC Output Format Body data items

##### AuxiliaryControllerStateAndAssociatedInformation

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| OutputState | An integer value between 0 and 100 inclusive specifying the Auxiliary Controller [n]’s output state. | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| InputState | An integer value between 0 and 100 inclusive specifying the Auxiliary Controller [n]’s input state. | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| StateAndAssociatedInformation | Information from the Auxiliary Controller which is in JavaScript Object Notation (JSON) as defined by IETF RFC8259. | Restriction of xs:string  (maxLength = 72000) | N/A | Unencrypted |

Table 218.8: AuxiliaryControllerStateAndAssociatedInformation MMC Output Format Body data items

## Limit APC Level

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * LimitAPCLevel |
| **Service Reference** | * 7.16 |
| **Service Reference Variant** | * 7.16 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is LimitAPCLevelRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** |  |
| GBCSHexadecimalMessageCode | 0x011F |  |
| GBCS Use Case (for reference - not in header) | ECS47e |  |

Table 218.9: Limit APC Level MMC Output Format Header data items

## Commission Device

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * CommissionDeviceSynchroniseClock |
| **Service Reference** | * 8.1 |
| **Service Reference Variant** | * 8.1.1 |

### MMC Output Format

The xml type within the SMETSData element is CommissionDeviceSynchroniseClockRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0062 | 0x007F |
| GBCS Use Case  (for reference - not in header) | ECS70 | GCS28 |

Table 219 : Commission Device Synchronise Clock MMC Output Format Header data items

#### Specific Body Data Items

As set out in 5.58.2.2.1

## Service Opt Out

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ServiceOptOut |
| **Service Reference** | * 8.5 |
| **Service Reference Variant** | * 8.5 |

### MMC Output Format

The xml type within the SMETSData element is ServiceOptOutRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Response** |
| GBCSHexadecimalMessageCode | 0x0104 |
| GBCS Use Case  (for reference - not in header) | CS02b |
| Timestamp | xs:dateTime |

Table 220 : Service Opt Out MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ExecutionOutcome | The execution outcome details | ra:ExecutionOutcome, as set out in Section 5.63.2.2.1 of this document | N/A | Unencrypted |

Table 221 : Service Opt Out MMC Output Format Body data items

## Join Service (Critical)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * JoinService(Critical) |
| **Service Reference** | * 8.7 |
| **Service Reference Variant** | * 8.7.1 |

### MMC Output Format

The xml type within the SMETSData element is JoinServiceCriticalRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **ESME join to HCALCS or PPMID Response** | **HCALCS join to ESME Response** | **GSME join to PPMID Response** |
| GBCSHexadecimalMessageCode | 0x000D | 0x00AB | 0x00AF |
| GBCS Use Case  (for reference - not in header) | CS03A1 | CS03A2 | CS03C |

Table 222 : Join Service (Critical) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| JoinResponseCode | Outcome of the request, with valid values:   * success * invalidMessageCodeForJoinMethodAndRole * invalidJoinMethodAndRole * incompatibleWithExistingEntry * deviceLogFull * writeFailure * keyAgreementNoResources * keyAgreementUnknownIssuer * keyAgreementUnsupportedSuite * keyAgreementBadMessage * keyAgreementBadKeyConfirm * invalidOrMissingCertificate * noPartnerLinkKeyReceived * noCBKEResponse | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |

Table 223 : Join Service (Critical) MMC Output Format Body data items

## Join Service (Non-Critical)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * JoinService (Non Critical) |
| **Service Reference** | * 8.7 |
| **Service Reference Variant** | * 8.7.2 |

### MMC Output Format

The xml type within the SMETSData element is JoinServiceNonCriticalRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **ESME join to Type 2 Device Response** | **GSME join to GPF Response** | **PPMID join to ESME Response** |
| GBCSHexadecimalMessageCode | 0x000E | 0x000E | 0x00AB |
| GBCS Use Case  (for reference - not in header) | CS03B | CS03B | CS03A2 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is Unknown Remote Party | | ra:EUI |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | | xs:nonNegativeInteger |

Table 224 : Join Service (Non-Critical) MMC Output Format Header data items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **PPMID join to GSME Response** | **GPF join to PPMID or Type 2 Device Response** |
| GBCSHexadecimalMessageCode | 0x00AF | 0x000E |
| GBCS Use Case  (for reference - not in header) | CS03C | CS03B |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | ra:EUI  Where originator is Unknown Remote Party |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | xs:nonNegativeInteger  Where originator is Unknown Remote Party |

Table 225 : Join Service (Non-Critical) MMC Output Format Header data items (continued)

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| JoinResponseCode | Outcome of the request, with valid values:   * success; * invalidMessageCodeForJoinMethodAndRole; * invalidJoinMethodAndRole; * incompatibleWithExistingEntry; * deviceLogFull; * writeFailure; * keyAgreementNoResources; * keyAgreementUnknownIssuer; * keyAgreementUnsupportedSuite; * keyAgreementBadMessage; * keyAgreementBadKeyConfirm; * invalidOrMissingCertificate; * noPartnerLinkKeyReceived; or * noCBKEResponse. | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |

Table 226 : Join Service (Non-Critical) MMC Output Format Body data items

## Unjoin Service (Critical)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UnjoinService(Critical) |
| **Service Reference** | * 8.8 |
| **Service Reference Variant** | * 8.8.1 |

### MMC Output Format

The xml type within the SMETSData element is UnjoinServiceCriticalRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **ESME unjoin from HCALCS or PPMID** | **HCALCS unjoin from ESME** | **GSME unjoin from PPMID** |
| GBCSHexadecimalMessageCode | 0x000F | 0x000F | 0x000F |
| GBCS Use Case  (for reference - not in header) | CS04AC | CS04AC | CS04AC |

Table 227 : Unjoin Service (Critical) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| UnjoinResponseCode | Outcome of the request, with valid values:   * success; * otherDeviceNotInDeviceLog; or * otherFailure. | Restriction base xs:string  (Enumeration) | N/A | Unencrypted |

Table 228 : Unjoin Service (Critical) MMC Output Format Body data items

## Unjoin Service (Non-Critical)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UnjoinService (Non Critical) |
| **Service Reference** | * 8.8 |
| **Service Reference Variant** | * 8.8.2 |

### MMC Output Format

The xml type within the SMETSData element is UnjoinServiceNonCriticalRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Data Item** | **ESME Unjoin from Type 2 Device** | **GSME Unjoin from GPF** | **GPF Unjoin from PPMID or Type 2 Device** | **PPMID Unjoin from GSME** | **PPMID Unjoin from ESME** |
| GBCSHexadecimalMessageCode | 0x0010 | 0x0010 | 0x0010 | 0x000F | 0x000F |
| GBCS Use Case  (for reference - not in header) | CS04B | CS04B | CS04B | CS04AC | CS04AC |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is Unknown Remote Party | | | ra:EUI | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | | | xs:nonNegativeInteger | |

Table 229 : Unjoin Service (Non-Critical) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| UnjoinResponseCode | Outcome of the request, with valid values:   * success; * otherDeviceNotInDeviceLog; or * otherFailure. | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |

Table 230 : Unjoin Service (Non-Critical) MMC Output Format Body data items

## Read Device Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadDeviceLog |
| **Service Reference** | * 8.9 |
| **Service Reference Variant** | * 8.9 |

### MMC Output Format

The xml type within the SMETSData element is ReadDeviceLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

GBCS v1.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **CHF Response** | **Non-CHF Response** |
| GBCSHexadecimalMessageCode | 0x0004 | 0x0013 |
| GBCS Use Case  (for reference - not in header) | CCS05/CCS04 | CS07 |
| SupplementaryRemotePartyID | ra:EUI  (see clause 2.4.1) | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party or the target Device Type is HCALCS |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | xs:nonNegativeInteger  Where originator is Unknown Remote or the target Device Type is HCALCS Party |

Table 231 : Read Device Log MMC Output Format Header data items – GBCS v1.0

GBCS v2.0:

|  |  |  |
| --- | --- | --- |
| **Data Item** | **CHF Response** | **Non-CHF Response** |
| GBCSHexadecimalMessageCode | 0x010F | 0x0013 |
| GBCS Use Case  (for reference - not in header) | CCS06 | CS07 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | ra:EUI (see clause 2.4.1)  Where originator is Unknown Remote Party or the target Device Type is HCALCS |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | xs:nonNegativeInteger  Where originator is Unknown Remote Party or the target Device Type is HCALCS |

Table 232 : Read Device Log MMC Output Format Header data items – GBCS v2.0

GBCS v3.2 or later:

| Data Item | CHF Response | Non-CHF Response |
| --- | --- | --- |
| GBCSHexadecimalMessageCode | 0x010F, 0x00FE | 0x0013 |
| GBCS Use Case  (for reference – not in header) | CCS06, CCS07 | CS07 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | ra:EUI  (see clause 2.4.1)  Where originator is Unknown Remote Party or the target Device Type is HCALCS |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | xs:nonNegativeInteger  Where originator is Unknown Remote or the target Device Type is HCALCS Party |

Table 232-1 – Read Device Log MMC Output Format Header Data Items – GBCS v3.2

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| DeviceLogEntries | This is only present if the response code indicates a successful response.  The element returns a list of DeviceLogEntry items from the Device, which may be empty | ra:DeviceLog  List of DeviceLogEntry (maxOccurs = unbounded), as set out in Section 5.101.2.2.1 of this document | N/A | Unencrypted |
| CHFDeviceLog | If reading the comms hub Device log, this group is returned rather than DeviceLogEntries, which shall include all currently authorised Devices on the ZIGBEE PAN. | ra:CHFDeviceLogType  List of CHFDeviceLogEntry (maxOccurs = 16), as set out in Section 5.101.2.2.2 of this document | N/A | Unencrypted |
| CHFConnectedDeviceLog | If reading the CHF Device Log and CHF Historic Device Log, this group is returned. These Logs hold details for Devices that can establish Communications Links, or were previously able to (where all terms have their CHTS meaning). | ra:CHFConnectedDeviceLogType | N/A | Non-Sensitive |

Table 233 : Read Device Log MMC Output Format Body data items

##### DeviceLogEntry Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| DeviceID | Device identifier of a Device | ra:EUI (see clause 2.4.1) | N/A | Unencrypted |
| DeviceType | The Type of Device  Valid values are:   * ESME; * GSME; * GPF; * CHF; * HCALCS; * PPMID; or * Type2 | ra:DeviceType  Restriction of xs:string | N/A | Unencrypted |

Table 234 : DeviceLogEntry Specific Body Data Items

##### CHFDeviceLogEntry Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| DeviceID | The Device identifier. | ra:EUI (see clause 2.4.1) | N/A | Unencrypted |
| LastCommunicationsDateTime | Date-time when a ZigBee packet was sent/received | xs:dateTime | N/A | Unencrypted |
| SubGHzLinkQuality | For each Device in the *CHF Device Log,* an indication of its quality of communication for Communication Links in Sub GHz Bands  As set out in GBCS section 10.6.2 | Restriction of xs:short  (minInclusive = -128 maxInclusive = 127) | dBm | Unencrypted |

Table 235 : CHFDeviceLogEntry Specific Body Data Items

##### CHFConnectedDeviceLogType Data Items

GBCS3.2 or later

| Data Item | Description / Valid Set | Type | Units | Sensitivity |
| --- | --- | --- | --- | --- |
| CHFCurrentConnectedDeviceLogEntry | List of Devices and their Security Details that are currently in the CHF Device Log. | List of CHFConnectedDeviceLogEntry (maxOccurs = 16), as set out in Section 5.101.2.2.4 of this document | N/A | Non-Sensitive |
| CHFHistoricConnectedDeviceLogEntry | List of Devices and their Security Details that are in the CHF Historic Device Log. | List of CHFConnectedDeviceLogEntry (maxOccurs = 16), as set out in Section 5.101.2.2.4 of this document | N/A | Non-Sensitive |

Table 235-1 - CHFConnectedDeviceLogType Data Items

##### CHFConnectedDeviceLogEntry Data Items

| GBCS3.2 or laterData Item | Description / Valid Set | Type | Units | Sensitivity |
| --- | --- | --- | --- | --- |
| DeviceID | The device identifier. | ra:EUI | N/A | Non-Sensitive |
| DeviceSecurityDetails | Where a TC Link Key between the CHF and the Device with this Device ID had been established previously, this field shall contain a Hash of that TC Link Key. Otherwise this field shall contain an empty string. | Restriction of xs:string  (maxLength = 16) | N/A | Non-Sensitive |

Table 235-2 - CHFConnectedDeviceLogEntry Data Items

## Update HAN Device Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * UpdateHANDeviceLog |
| **Service Reference** | * 8.11 |
| **Service Reference Variant** | * 8.11 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is UpdateHANDeviceLogRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Add Device Response** | **Remove Device Response** |
| GBCSHexadecimalMessageCode | 0x0001 | 0x0002 |
| GBCS Use Case | CCS01 | CCS02 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | |

Table 236 : Update HAN Device Log MMC Output Format Header data items

## Restore HAN Device Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RestoreHANDeviceLog |
| **Service Reference** | * 8.12 |
| **Service Reference Variant** | * 8.12.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is RestoreHANDeviceLogRsp. The header data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Response** |
| GBCSHexadecimalMessageCode | 0x0003 |
| GBCS Use Case | CCS03 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 237 : Restore HAN Device Log MMC Output Format Header data items

## Restore Gas Proxy Function Device Log

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RestoreGPFDeviceLog |
| **Service Reference** | * 8.12 |
| **Service Reference Variant** | * 8.12.2 |

### MMC Output Format

The xml type within the SMETSData element is RestoreGPFDeviceLogRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x008C |
| GBCS Use Case | GCS59 |

Table 238 : Restore GPF Device Log MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| RestoreDeviceLogOutcome | There will be one present corresponding to each Device. | ra:RestoreDeviceLogOutcome  see 5.104.2.2.1  maxOccurs = unbounded | N/A | Unencrypted |

Table 239 : Restore GPF Device Log MMC Output Format Body data items

##### RestoreDeviceLogOutcome Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| DeviceLogEntry | A Device ID and Type for which there is a join response code. | ra:DeviceLogEntry  See 5.101.2.2.1 | N/A | Unencrypted |
| joinResponseCode | Outcome of the request, with valid values:   * success; * incompatibleWithExistingEntry; * deviceLogFull; and * writeFailure | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |

Table 240 : RestoreDeviceLogOutcome MMC Output Format Body data items

## Request Customer Identification Number

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * RequestCustomerIdentificationNumber |
| **Service Reference** | * 9.1 |
| **Service Reference Variant** | * 9.1 |

### MMC Output Format

The Service Response contains only status information, as set out in Section 4.1.1 of this document. The xml type within the SMETSData element is RequestCustomerIdentificationNumberRsp. The header data items appear as set out immediately below.

Note that the Customer Identification Number is returned within the CINMessage response format as defined in DUIS.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0058 | 0x0083 |
| GBCS Use Case | ECS50 | GCS36 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger | |

Table 241 : Request Customer Identification Number MMC Output Format Header data items

## Read Firmware Version

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ReadFirmwareVersion |
| **Service Reference** | * 11.2 |
| **Service Reference Variant** | * 11.2 |

### MMC Output Format

The xml type within the SMETSData element is ReadFirmwareVersionRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0059 | 0x0084 |
| GBCS Use Case | ECS52 | GCS38 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where originator is Unknown Remote Party | |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger  Where originator is Unknown Remote Party | |

Table 242 : Read Firmware Version MMC Output Format Header data items

#### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| FirmwareVersion | Current version number in manufacturer format.  The Firmware version as held in the Central Products List and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.  This data item matches the value on the Central Products List (excluding the colon separator between octet values) | xs:string | N/A | Unencrypted |

Table 243 : Read Firmware Version MMC Output Format Body data items

## Activate Firmware

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | * ActivateFirmware |
| **Service Reference** | * 11.3 |
| **Service Reference Variant** | * 11.3 |

### MMC Output Format

The xml type within the SMETSData element is ActivateFirmwareRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Response** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0012 | 0x0012 |
| GBCS Use Case | CS06 | CS06 |
| Timestamp | xs:dateTime | |

Table 244 : Activate Firmware Version MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ActivateImageResponseCode | Outcome of the request for each replacement, with valid values:   * success; * noImageHeld; * hashMismatch; or * activationFailure   Optional – will not be present in responses to future dated Service Requests | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |
| FirmwareVersion | A unique identifier representing a firmware image that has been approved by the User for release.  The Firmware version as held in the Central Products List and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.  This data item matches the value on the Central Products List (excluding the colon separator between octet values). Optional – will not be present in responses to future dated Service Requests | ra:FirmwareVersion *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (xs:string,where maxLength = 8) | N/A | Unencrypted |

Table 245 : Activate Firmware MMC Output Format Body data items

## Record Network Data (GAS)

### Service Description

|  |  |
| --- | --- |
| **Service Request Name** | RecordNetworkData (GAS) |
| **Service Reference** | * 14.1 |
| **Service Reference Variant** | * 14.1 |

### MMC Output Format

The xml type within the SMETSData element is RecordNetworkDataGASRsp. The header and body data items appear as set out immediately below.

#### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Gas Response** |
| GBCSHexadecimalMessageCode | 0x0080 |
| GBCS Use Case | GCS31 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1) |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 246 : Record Network Data (GAS) MMC Output Format Header data items

#### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| SampleID | The ID of the sampling session requested on the device. Defined by GBCS to be either,   * a value of 2 if a Network Data Log is returned as expected in the normal response * a value of 65535 (0xFFFF) if a sampling session could not be started | xs:integer | N/A | Unencrypted |

Table 247 : Record Network Data (GAS) MMC Output Format Body data items

# Device Alert MMC Output Format definitions

## Firmware Verification Status (Alert Codes 0x8F1C and 0x8F72)

Upon completion of a Firmware verification performed as part of the distribution of Firmware upgrades, the associated Device Alert shall be one of the following:

1. Device Alert with Alert Code 0x8F1C, indicating that the image verification failed; or
2. Device Alert with Alert Code 0x8F72, indicating that the image verification was successful.

The same Payload element is included in the case of Firmware image verification success or failure.

The xml type within the DeviceAlertMessagePayload element is FirmwareVerificationDeviceAlertType. The header and body data items appear as set out immediately below.

### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Alert** | **Gas Alert** |
| GBCSHexadecimalMessageCode | 0x00CE | 0x00CF |
| GBCS Use Case | CS05b | CS05b |

Table 248 : Firmware Verification Device Alerts MMC Output Format Header data items

### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values are 8F1C or 8F72. | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid value are:   * Firmware verification failed; or * Firmware verification succeeded | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| Payload | As set out in Section 6.1.2.1 of this document | ra:DeviceAlertMessagePayload | N/A | Unencrypted |

Table 249 : Device Alert Firmware Verification Failure and Success MMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| FirmwareVerificationDeviceAlert | Payload group item for this Device Alert | ra:FirmwareVerificationDeviceAlertType | N/A | Unencrypted |

Table 250 : Alert Payload MMC Output Format Body data items

#### FirmwareVerificationDeviceAlert Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ManufacturerImageHash | Information associated with the firmware update.  The Firmware hash as held in the Central Products List and presented in the format XX...XX (64 characters) where each X is one of the characters 0 to 9 or A to F.  This data item matches the value on the Central Products List (excluding the colon separator between octet values)  Note that a hexBinary value of length 32 is defined as 32 octets, an octet is represented by 2 characters. | xs:hexBinary | N/A | Unencrypted |

Table 251 : Firmware Verification Device Alerts MMC Output Format Body data items

## Billing Data Log Updated (Alert Code 0x8F0A)

The Device Alert shall include the billing data log from a meter for one billing period only, which shall be triggered at the end of each billing period. Alert Code 0x8F0A shall be utilised in respect of two different GBCS Use Cases, but shall be distinguished by having different Message Codes, as set out in Table 252 immediately below.

|  |  |  |
| --- | --- | --- |
| **GBCS Use Case** | **Message Code** | **Alert Code** |
| ECS68 ESME Critical Sensitive Alert (Billing Data Log) | 0x0061 | 0x8F0A |
| GCS53, GSME Push Billing Data Log as an Alert | 0x008B | 0x8F0A |

Table 252 : Device Alert 0x8F0A Message Codes

As billing data log is sensitive, the data will be encrypted by the Device.

The xml type within the DeviceAlertMessagePayload element is BillingDataLogDeviceAlertType. The header and body data items appear as set out immediately below.

### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Alert** | **Gas Alert** |
| GBCSHexadecimalMessageCode | 0x0061 | 0x008B |
| GBCS Use Case  (for reference - not in header) | ECS68 | GCS53 |
| Timestamp | xs:dateTime | |

Table 253 : Device Alert 0x8F0A Billing Data Log Updated MMC Output Format Header data items

### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid value is 8F0A | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values:   * ESME Push Billing Data Log as a Device Alert; or * GSME Push Billing Data Log as a Device Alert. | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC) | xs:dateTime | UTC Date-Time | Unencrypted |
| Payload | As set out in Section 6.2.2.1 of this document | ra:DeviceAlertMessagePayload | N/A | Unencrypted |

Table 254 : Device Alert 0x8F0A Billing Data Log Device Alert MMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| BillingDataLogDeviceAlert | Payload group item for this Alert | ra:BillingDataLogDeviceAlert Type | N/A | Unencrypted |

Table 255 : Alert Payload MMC Output Format Body data items

#### BillingDataLogDeviceAlert Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ESMEBillingDataLogEntry | Electricity Smart Meter Billing Data Log Entry | ra:ESMEBillingDataLogType, as set out in Section 6.2.2.3 of this document | N/A | Encrypted |
| GSMEBillingDataLogEntry | Gas Smart Meter Billing Data Log Entry | ra:GSMEBillingDataLogType, as set out in Section 6.2.2.4 of this document | N/A | Encrypted |

Table 256 : Device Alert 0x8F0A Billing Data Log Updated MMC Output Format Body data items

#### ESMEBillingDataLogType Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| Timestamp | Date and time when the end of billing period snapshot was taken | xs:dateTime | UTC Date-Time | Encrypted |
| ActiveImportRegisterValueConsumption | Value taken from the register that records the Primary Element cumulative Active Energy Imported at the time (timestamp) in the Alert | xs:Integer | Wh | Encrypted |
| SecondaryActiveImportRegisterValueConsumption | Value taken from the register that records the Secondary Element cumulative Active Energy Imported at the time (timestamp) in the Alert.  Optional, as only applicable to Electricity Smart Meters with a Secondary Element | xs:Integer | Wh | Encrypted |
| TariffTOURegisterMatrixValue *(minimum 0 and maximum 48 entries)* | Each of the values in the 1 by 48 matrix for storing Primary Element Tariff Registers for Time-of-use Pricing | ra:IntegerWithIndex  (value type is xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| SecondaryTariffTOURegisterMatrixValue *(minimum 0 and maximum 4 entries)* | Each of the values in the 1 by 4 matrix for storing Secondary Element Tariff Registers for Time-of-use Pricing.  Optional, as only applicable to Electricity Smart Meters with a Secondary Element. | ra:IntegerWithIndex  (value type is xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock1RegisterMatrixValue *(minimum 0 and maximum 8 entries)* | Each of the values in the first row of the 4 by 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing | ra:IntegerWithIndex  (value type is xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock2RegisterMatrixValue *(minimum 0 and maximum 8 entries)* | Each of the values in the second row of the 4 by 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing | ra:IntegerWithIndex  (value type is xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock3RegisterMatrixValue *(minimum 0 and maximum 8 entries)* | Each of the values in the third row of the 4 by 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing | ra:IntegerWithIndex  (value type is xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |
| TariffTOUBlock4RegisterMatrixValue *(minimum 0 and maximum 8 entries)* | Each of the values in the fourth row of the 4 by 8 matrix for storing Tariff Registers for Time-of-use with Block Pricing | ra:IntegerWithIndex  (value type is xs:Integer with attribute Index xs:positiveInteger) | Wh | Encrypted |

Table 257 : Device Alert 0x8F0A Billing Data Log Updated - ESMEBillingDataLogEntry Specific Body Data Items

#### GSMEBillingDataLogType Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| ActiveImportRegisterValueConsumption | Value taken from the register that records the cumulative consumption at the time (timestamp) in the Alert  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | xs:decimal | m3 | Encrypted |
| BlockRegisterMatrixValue*(minimum 0 and maximum 4 entries)* | Each of the values in the 1 by 4 matrix for storing Tariff Registers for Time-of-use with Block Pricing  Index value maps to register matrix  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | ra:DecimalWithIndex  (value type is xs:decimal with attribute Index also xs:decimal) | m3 | Encrypted |
| TariffTOURegisterMatrixValue *(minimum 0 and maximum 4 entries)* | Each of the values in the 1 by 4 matrix for storing Tariff Registers for Time-of-use Pricing  Index value maps to register matrix  Multiplier (value of 1) and divisor (value of 1000) applied as defined in GBCS | ra:DecimalWithIndex  (value type is xs:decimal with attribute Index also xs:decimal) | m3 | Encrypted |
| Timestamp | Date and time when the end of billing period snapshot was taken | xs:dateTime | UTC Date-Time | Encrypted |

Table 258 : Device Alert 0x8F0A Billing Data Log Updated - GSMEBillingDataLogEntry Specific Body Data Items

## Supply Outage Restored Device Alerts

The Device Alerts, as set out in Table 259 immediately below, are issued by Devices after the restoration of supply to an Electricity Smart Meter, depending on the nature of the supply outage.

|  |  |
| --- | --- |
| **Alert Code** | **Purpose** |
| 0x8F35 | Supply Outage Restored |
| 0x8F36 | Supply Outage Restored - Outage >= 3 minutes |
| 0x8F37 | Supply Outage Restored on Phase 1 |
| 0x8F38 | Supply Outage Restored on Phase 1 Restored - Outage >= 3 minutes |
| 0x8F39 | Supply Outage Restored on Phase 2 |
| 0x8F3A | Supply Outage Restored on Phase 2 Restored - Outage >= 3 minutes |
| 0x8F3B | Supply Outage Restored on Phase 3 |
| 0x8F3C | Supply Outage Restored on Phase 3 Restored - Outage >= 3 minutes |

Table 259 : Supply Outage Restored Alert Purposes

The xml type within the DeviceAlertMessagePayload element is SupplyOutageRestoreAlertType. The header and body data items appear as set out immediately below.

### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Alert** |
| GBCSHexadecimalMessageCode | 0x0067 |
| GBCS Use Case  (for reference - not in header) | ECS80 |

Table 260 : Supply Outage Restored Alert MMC Output Format Header data items

### Specific Body Data Items

Each of the Device Alerts as set out in Table 259 shall contain the same type of Payload data, as shown in Table 263 immediately below.

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values shall be: 8F35 to 8F3C | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values:   * Supply Outage Restored; * Supply Outage Restored >=3 minutes; * Supply Outage Restored on Phase 1; * Supply Outage Restored Phase 1 >=3 minutes; * Supply Outage Restored on Phase 2; * Supply Outage Restored Phase 2 >=3 minutes; * Supply Outage Restored on Phase 3; or * Supply Outage Restored Phase 3 >=3 minutes. | xs:string, maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| Payload | As set out in Section 6.3.2.1 of this document | ra:DeviceAlertMessagePayload | N/A | Unencrypted |

Table 261 : Supply Outage Restored Alert MMC Output Format Body data items

#### DeviceAlertMessagePayload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| SupplyOutageRestoreAlert | Payload group item for this Device Alert | ra:SupplyOutageRestoreAlertType | N/A | Unencrypted |

Table 262 : Alert Payload (DeviceAlertMessagePayload) MMC Output Format Body data items

#### SupplyOutageRestoreAlertType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| interruptionValue | The date-time at which power was interrupted (UTC) | xs:dateTime | UTC Date-Time | Unencrypted |
| restorationValue | The date-time at which power was restored (UTC) | xs:dateTime | UTC Date-Time | Unencrypted |

Table 263 : Supply Outage Restored Alert MMC Output Format Body data items

## Future-Dated Command Outcome (Device Alerts 0x8F66 and 0x8F67)

The Service Requests that can be scheduled to run at a future date or that can be set to generate future dated Commands are specified within DUIS Service Request Matrix.

A single GBCS command can contain multiple individual DLMS/COSEM or ZigBee protocol instructions, and for each instruction there will be a separate Device Alert generated. There will therefore be multiple Device Alerts generated following the execution of Future Dated Commands that result in multiple instructions. Each Device Alert will be sent to the Service User separately. The Device Alert shall be one of the following:

1. Device Alert 0x8F66, indicating that the Command was successful; or
2. Device Alert 0x8F67, indicating that the Command failed.

The Payload XML element for both Device Alerts 0x8F66 and 0x8F67 will have the same underlying XML element FutureDatedCommandOutcomeDeviceAlert, further defined below.

For ASN.1 Device Alerts there will be only one per Command.

As described in DUIS, the DCC shall, when receiving a Future-Dated Command Outcome Device Alert, return a FutureDatedDeviceAlertMessage format response to the User. This will include the Request ID, Service Reference and Service Reference Variant of the original request (which generated the Device Alert) in the XML Response. The DCC shall add the following data items to the XML Response:

* The FutureDatedAlertCode (see DUIS 3.5.9) of the Device Alert.
* An InstructionNumber (see DUIS 3.5.9) to indicate which sequential instruction number the FutureDatedDeviceAlertMessage relates to.
* TotalCommandInstructions (see DUIS 3.5.9) to indicate how many Device Alerts are expected to be received by the DCC Systems relating to the future dated Command.

It is possible for an instruction to fail after earlier instructions have completed successfully, so there may be a mixture of 0x8F66 Device Alerts (success) and 0x8F67 Device Alerts (failure) corresponding to different instructions.

Where a Device instruction fails no more instructions will be processed. Following a failed instruction the Device will send a 0x8F67 Device Alert (failure) for each non-executed instruction within the Command.

For each command a Device will generate one or more 0x8F66 Device Alerts (success) followed optionally by one or more 0x8F67 Device Alerts (failure), however it is possible that the Service User will receive Device Alerts in a non-chronological order dependent on individual Device Alert communication network transport times.

### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Alert** | **Gas Alert** |
| GBCSHexadecimalMessageCode | 0x00CA (Future Dated Firmware Activation Alert),  0x00CB (Future Dated Updated Security Credentials Alert),  0x00CC (Future Dated Execution Of Instruction Alert (DLMS COSEM))  GBCS v4.0 or later:  0x0124 (Future Dated Update Load Controller Security Credentials Alert) | 0x00CA (Future Dated Firmware Activation Alert),  0x00CB (Future Dated Updated Security Credentials Alert),  0x00CD (Future Dated Execution Of Instruction Alert (GBZ)) |
| GBCS Use Case  (for reference - not in header) | N/A | N/A |

Table 264 : Device Alert Future-Dated Command Outcome MMC Output Format Header data items

### Specific Body Data Items

| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| --- | --- | --- | --- | --- |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Set to 8F66 or 8F67 | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values are:   * Future-Dated Command Action Successful; or * Future-Dated Command Action Failed. | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC) | xs:dateTime | UTC Date-Time | Unencrypted |
| Payload | As set out in Section 6.4.2.1 of this document | ra:DeviceAlertMessagePayload | N/A | Unencrypted |

Table 265 : Device Alert Future-Dated Command Outcome MMC Output Format Body data items

#### DeviceAlertMessagePayload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| FutureDatedCommandOutcomeDeviceAlert | Payload group item for this Alert | ra:FutureDatedCommandOutcomeDeviceAlertType | N/A | Unencrypted |

Table 266 : Alert Payload (DeviceAlertMessagePayload) MMC Output Format Body data items

#### FutureDatedCommandOutcomeDeviceAlert Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| COSEMFutureDatedAlert | The payload for a Device Alert where underlying GBCS protocol is DLMS/COSEM. | ra:COSEMFutureDatedAlertType | N/A | Unencrypted |
| GBZFutureDatedAlert | The payload for a Device Alert where underlying GBCS protocol is GBZ. | ra:GBZFutureDatedAlertType | N/A | Unencrypted |
| UpdateSecurityCredentialsDeviceAlert | Device Alert payload for the outcome of a Future Dated Update Security Credentials request. | ra:UpdateSecurityCredentialsDeviceAlertType | N/A | Unencrypted |
| FirmwareActivationDeviceAlert | Device Alert payload for the outcome of a Future Dated Firmware Activation request | ra:FirmwareActivationDeviceAlertType | N/A | Unencrypted |

Table 267 : Device Alert Future-Dated Command Outcome MMC Output Format Body data items

#### COSEMFutureDatedAlertType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| FutureDatedCommandMessageCode | The message code of the future-dated command for which this is the Device Alert conveying the outcome. | xs:hexBinary | N/A | Unencrypted |
| FutureDatedCommandOriginatorCounter | The originator counter from the future-dated command for which this is the Device Alert conveying the outcome. | xs:nonNegativeInteger | N/A | Unencrypted |
| ClassId | DLMS/COSEM class ID | xs:hexBinary | N/A | Unencrypted |
| InstanceId | DLMS/COSEM instance ID (OBIS code) | xs:hexBinary | N/A | Unencrypted |
| AttributeId | DLMS/COSEM attribute ID | xs:hexBinary | N/A | Unencrypted |

Table 268 : COSEMFutureDatedAlertType MMC Output Format Body data items

#### GBZFutureDatedAlertType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| FutureDatedCommandMessageCode | The message code of the future-dated command for which this is the Device Alert conveying the outcome. | xs:hexBinary | N/A | Unencrypted |
| FutureDatedCommandOriginatorCounter | The originator counter from the future-dated command for which this is the Device Alert conveying the outcome. | xs:nonNegativeInteger | N/A | Unencrypted |
| ExtendedHeaderClusterID | ZigBee Smart Energy Cluster ID | xs:hexBinary | N/A | Unencrypted |
| FrameControl | ZigBee Smart Energy Frame Control identifier | xs:hexBinary | N/A | Unencrypted |
| CommandIdentifier | ZigBee Smart Energy Command ID | xs:hexBinary | N/A | Unencrypted |

Table 269 : GBZFutureDatedAlertType MMC Output Format Body data items

#### UpdateSecurityCredentialsDeviceAlertType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| UpdateSecurityCredentialsExecutionOutcome | Type defined for response to update security credentials use case. | ra:ExecutionOutcome as set out in Section 5.63.2.2.1 of this document | N/A | Unencrypted |

Table 270 : UpdateSecurityCredentialsDeviceAlertType MMC Output Format Body data items

#### FirmwareActivationDeviceAlertType Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| ExecutionDateTime | The date & time of the execution of the command to activate firmware on the Device, in UTC time. | xs:dateTime | UTC | Unencrypted |
| OriginatorCounterFromCommand | Originator counter in the command which requested activation of firmware. | xs:nonNegativeInteger | N/A | Unencrypted |
| ActivateImageResponseCode | Outcome of the request for each replacement.  Valid Set:   * success * noImageHeld * hashMismatch * activationFailure | ra:StatusASN1  As set out in section 5.58.2.2.2 of this document | N/A | Unencrypted |
| FirmwareVersion | A unique identifier representing a firmware image that has been approved for release by the User concerned.  The Firmware version as held in the Central Products List and presented in the format XXXXXXXX where each X is one of the characters 0 to 9 or A to F.  This data item matchesshould match the value on the Central Products List (excluding the colon separator between octet values) | ra:FirmwareVersion *(ra: data type is identical to the corresponding sr: data type, except that in ra: all the components are optional within the schema, although items may be mandatory within the business process)*  (restriction of xs:string,  maxLength = 8) | N/A | Unencrypted |

Table 271 : FirmwareActivationDeviceAlertType MMC Output Format Body data items

## Smart Meter Integrity Issue - Warning (Alert Code 0x81A0)

This Alert (new in GBCS v2.0) returns a warning indicating potential integrity issue reason.

See GBCS section 16.4 for more details.

The xml type within the DeviceAlertMessagePayload element is SmartMeterIntegrityIssueWarningDeviceAlertType. The header and body data items appear as set out immediately below.

### Specific Header Data Items

|  |  |  |
| --- | --- | --- |
| **Data Item** | **Electricity Alert** | **Gas Alert** |
| GBCSHexadecimalMessageCode | 0x00F0 | 0x00F2 |
| GBCS Use Case | N/A | N/A |

Table 272 : Smart Meter Integrity Issue - Warning Device Alerts MMC Output Format Header data items

### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values are 81A0. | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values are:   * Smart Meter Integrity Issue - Warning | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| Payload | As set out in Section 6.5.2.1 of this document | ra:DeviceAlertMessagePayload | N/A | Unencrypted |

Table 273 : Device Alert Smart Meter Integrity Issue - Warning MMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| SmartMeterIntegrityIssueWarningDeviceAlert | Payload group item for this Device Alert | ra: SmartMeterIntegrityIssueWarningDeviceAlertType | N/A | Unencrypted |

Table 274 : Alert Payload MMC Output Format Body data items

#### SmartMeterIntegrityIssueWarningDeviceAlert Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| Warning | Information associated with the reason for the warning.  Valid Set:   * Other * Error Non Volatile Memory * Error Program Execution * Error Program Storage * Error RAM * Error Unexpected Hardware Reset * Error Watchdog * Error Metrology Firmware Verification Failure * Error Measurement Fault * Unspecified Smart Meter Operational Integrity Error | Restriction of  xs:string  (enumeration) | N/A | Unencrypted |

Table 275 : Smart Meter Integrity Issue - Warning Device Alerts MMC Output Format Body data items

## ECS100 Command not supported by Device (Alert Code 0x8F85)

This Device Alert (new in GBCS v4.0) is sent to indicate that it has received a Command which it cannot support.

See GBCS section 7.2.9.1 for more details.

The xml type within the DeviceAlertMessagePayload element is CommandNotSupportedbyDevice. The header and body data items appear as set out immediately below.

### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Alert** |
| GBCSHexadecimalMessageCode | 0x0120 |
| GBCS Use Case | ECS100 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  Where Supplementary Remote Party ID is present in the corresponding Command |
| SupplementaryRemotePartyCounter | xs:nonNegativeInteger |

Table 276: CommandNotSupportedbyDevice MMC Output Format Header data items

### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values are 8F85. | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values are:   * Command not supported by Device | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| MessageCodeofCommandReceived | The Message Code of the Command which the Device cannot support. | xs:hexBinary | N/A | Unencrypted |
| OriginatorCounterfromCommandReceived | The originator counter from the Command which the Device cannot support. | xs:nonNegativeInteger | N/A | Unencrypted |

Table 277: CommandNotSupportedbyDevice MMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| CommandNotSupportedbyDevice | Payload group item for this Alert | ra:CommandNotSupportedbyDevice | N/A | Unencrypted |

Table 266 : Alert Payload (CommandNotSupportedbyDevice) MMC Output Format Body data items

## ECS101 Limit APC Level Command Processed (Alert Code 0x8F86)

This Device Alert is sent by a Device as defined in SMETS section 5.29.1.1 point iii, and section 9.5.2.16.

This Device Alert is introduced in GBCS v4.0. See GBCS section 7.2.9.1 for more details.

### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Alert** |
| GBCSHexadecimalMessageCode | 0x0121 |
| GBCS Use Case | ECS101 |

Table 278: LimitAPCLevelCommandProcessedDeviceAlert MMC Output Format Header data items

### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values are 8F86. | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values are:   * Limit APC Level Command Processed | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| APCLimitPeriodStart | The start of the APC Limit Period | xs:dateTime | UTC Date-Time | Unencrypted |
| APCLimitPeriodEnd | The end of the APC Limit Period. | xs:dateTime | UTC Date-Time | Unencrypted |
| AuxiliaryControllerN | The value [n] for the Auxiliary Controller[n] with its SMETS meaning.  The identifier associated with the Auxiliary Controller. | ra:range\_1\_5  (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5) | N/A | Unencrypted |
| ResultingLevel | An integer indicating the resulting input or output level immediately the limit APC Command has been executed as specified as 5.29.1.1 point iii. | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| InputFromControlledLoad | If present, this element specifies that the direction of energy flow in the ResultingLevel of the APC shall relate to the input of energy from the controlled load.  If not present, then the ResultingLevel shall relate to the output of energy to the controlled load. | ra: noType  (see clause 2.4.2) | N/A | Unencrypted |

Table 279: LimitAPCLevelCommandProcessedDeviceAlert MMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LimitAPCLevelCommandProcessedDeviceAlert | Payload group item for this Alert | ra:LimitAPCLevelCommandProcessedDeviceAlert | N/A | Unencrypted |

Table 266 : Alert Payload (LimitAPCLevelCommandProcessedDeviceAlert) MMC Output Format Body data items

## ECS102 Limit APC Level Ended or Cancelled (Alert Code 0x8F87)

This Device Alert is sent by a Device as defined in SMETS section 5.29.1.1 point x.b, and section 9.5.2.16.

This Device Alert is introduced in GBCS v4.0. See GBCS section 7.2.9.1 for more details.

### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Alert** |
| GBCSHexadecimalMessageCode | 0x0122 |
| GBCS Use Case | ECS102 |

Table 280: LimitAPCLevelEndedDeviceAlert MMC Output Format Header data items

### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values are 8F87. | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values are:   * Limit APC Level Ended or Cancelled | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| AuxiliaryControllerN | The value [n] for the Auxiliary Controller[n] with its SMETS meaning.  The identifier associated with the Auxiliary Controller. | ra:range\_1\_5  (Restriction of xs:positiveInteger minInclusive = 1, maxInclusive = 5) | N/A | Unencrypted |
| ResultingLevel | An integer indicating the resulting input or output level as specified as 5.29.1.1 point x.b. | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| InputFromControlledLoad | If present, this element specifies that the direction of energy flow in the ResultingLevel of the APC shall relate to the input of energy from the controlled load.  If not present, then the ResultingLevel shall relate to the output of energy to the controlled load. | ra: noType  (see clause 2.4.2) | N/A | Unencrypted |

Table 281: LimitAPCLevelEndedDeviceAlert MMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| LimitAPCLevelEndedDeviceAlert | Payload group item for this Alert | ra:LimitAPCLevelEndedDeviceAlert | N/A | Unencrypted |

Table 266 : Alert Payload (LimitAPCLevelEndedDeviceAlert) MMC Output Format Body data items

## ECS200 Operational Update (Alert Code 0x8F88)

The Device (GBCS v4.0 or later) may create and send this Alert when it wishes to notify either the Supplier, Network Operator or Load Controller (or any two of them) of some change in operational status.

See GBCS section 7.2.9.1 for more details.

### Specific Header Data Items

|  |  |
| --- | --- |
| **Data Item** | **Electricity Alert** |
| GBCSHexadecimalMessageCode | 0x0123 |
| GBCS Use Case | ECS200 |
| SupplementaryRemotePartyID | ra:EUI (see clause 2.4.1)  If included, the Entity Identifier of either the Supplier, Network Operator or Load Controller |

Table 282: ECS200 Operational Update MMC Output Format Header data items

### Specific Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| GBCSHexAlertCode | Code indicating the Alert or reason for the Alert to be generated. Valid values are 8F88. | xs:hexBinary | N/A | Unencrypted |
| AlertDescription | Valid values are:   * ECS200 Operational Update | xs:string, where maxLength = 250 | N/A | Unencrypted |
| Timestamp | The Device Alert timestamp as sent by the Device (UTC). | xs:dateTime | UTC Date-Time | Unencrypted |
| OutputState | An integer value between 0 and 100 inclusive specifying the Auxiliary Controller [n]’s output state | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| InputState | An integer value between 0 and 100 inclusive specifying the Auxiliary Controller [n]’s input state. | ra:AuxiliaryControllerLevel  (Restriction of xs:unsignedShort minInclusive = 0, maxInclusive = 100) | N/A | Unencrypted |
| StateAndAssociatedInformation | Information from the Auxiliary Controller which is in JavaScript Object Notation (JSON) as defined by IETF RFC8259. | xs:string  (maxLength = 1200) | N/A | Unencrypted |

Table 281: OperationalUpdateDeviceAlertMMC Output Format Body data items

#### Payload Body Data Items

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Item** | **Description / Valid Set** | **Type** | **Units** | **Sensitivity** |
| OperationalUpdateDeviceAlert | Payload group item for this Alert | ra:OperationalUpdateDeviceAlert | N/A | Unencrypted |

Table 266 : Alert Payload (OperationalUpdateDeviceAlert) MMC Output Format Body data items

# Annex A – MMC XML SCHEMA

The MMC XML Schema is enclosed in the embedded document below.

