

Proposal to introduce a DTS flows for Inventory processing

1. Introduction

1.1. Purpose

This document seeks to explain the approach and use of the proposed two data flows and their associated data items.

The following is provided to explain the logic of the design. Part of this text will need to be included in the DTC or BSC documents to ensure correct interoperation.

2. Data items

2.1. Charge Code

1. Charge Code is a "Code" defined in MDD to ensure it is always INT(13).

2.2. CMS Unit Reference

1. BSCP520 currently restricts the use of H & T as initial characters on the CMS Unit Reference. The DTC file structure does not use H & T to identify Header & Trailer rows so this limitation is no longer required.
2. The CMS Unit Reference can only contain characters allowed in the definition of the Data Transfer User File Design Specification which includes all the numbers and letters, but also includes some special characters (excluding the | which is the delimiter character). Each CMS Unit Reference must be unique except in the case of CMS Controls, see below.
3. For CMS Controls the CMS Unit Reference is defined as "Control <padded with spaces to make a total of 12 characters>". This means there may be valid multiple entries on a single inventory submission which are not unique. This case needs documenting somewhere
4. CMS Unit Reference is a "Code" so is always Char(12).

2.3. Effective From Date {UMS}

1. There is a question about BST/GMT effective from dates and the interaction with the appointment dates. For example, if the Inventory EFD is 1st June, and the MA is EFD 1st June. The DC needs data for the last two time periods of the previous day, so this means the last two time periods of 31st May need calculation. It is not clear how should this be defined.

2.4. Inventory Sequence Number

1. Inventory Sequence Number uniquely identifies the set of data being sent. If a set of data is sent with Inventory Sequence Number = 3, which may be accepted or rejected, then the next set of data sent should be Inventory Sequence Number = 4.
2. In the event the MA is de-appointed for a year, then re-appointed, then in a year's time the Inventory Sequence Number may have increased to 15. So, the UMISO is incrementing the Inventory Sequence Number for that MPAN, but the receiving MA will not necessarily receive a contiguous number, just a higher number than the previous set.
3. In the event that one or more versions are rejected, then to avoid any ambiguity, once they are corrected, then the resent file will have incremented in number. For example, if Inventory Sequence Version 7 is rejected due to an invalid Charge Code, then the corrected version would be Inventory Sequence Version 8.

2.5. Number of Items

No comment.

2.6. Response Reason Code

No comment.

2.7. Sub-meter

1. Current requirement in the BSCP is to allocate upper case to non-CMS and lower case to CMS. There is no requirement to continue this convention as the group GP# or GP# will differentiate between the different types.
2. The sub-meter used for CMS must equal the sub-meter used by the CMS provider.

2.8. Switch Regime

1. Switch Regime is a "Code" defined in MDD to ensure it is always CHAR(3).

3. UMS Inventory Data Flow

1. The UMS Inventory flow design combines the BSCP520 summary and control file into one DTC flow.
2. Multiple MPANs can be included in a single file.
3. The entry for an MPAN can include multiple entries for different effective from dates.
4. Each submission for an MPAN has an incrementing Inventory Sequence Number
5. The submission of MPAN data must include information for *all* the active submeters for that MPAN, even where some of the inventory data for a Sub-Meter has not changed. This is to avoid any ambiguity and ensure a full set of inventory data for each Sub-Meter is provided each time. Typical example is where the customer updates the inventory for the lighting equipment monthly, but the traffic signals may be updated annually. In this event the effective date for all the Sub-Meters will reflect the date on which they were last all updated. For the purpose of UMSOs managing the age of inventory submissions they will need to retain the age of which part of the inventory was updated at what time. The design approach is that the submission will include information for every Sub-Meter which removes any ambiguity for the MA by ensuring a full record each time.
6. When an MPAN receives historic updates, then the entry should include the earliest EFD{UMS} entry plus entries for all the subsequent effective from dates (via multiple GP2 groups). For example, a retrospective update with EFD{UMS} of 1st Dec 2018, would also include, say, update effective from 1st Jan 2019, 1st Feb 2019, etc. to one that covered today
7. There needs to be rules on the valid range of Effective From Date {UMS}. There may be a constraint in terms of future dates such as no more than one month in the future, or none in the future. Not allowing future dated inventories may impact festive lighting management.
8. There needs to be rules on the valid range of Effective From Date {UMS}. There may be a constraint in terms of historic dates, such as no more than the settlement window, say [14] months.
9. On change of Supplier or change of HHDC, with no change of MA, the UMSO does not need to resend any information.
10. On change of MA, the UMSO should send a UMS Inventory to the new MA once they are aware of the change of MA. The Inventory EFD{UMS} would predate, or be the same as, the MA appointment date. The MA will only send data to an HHDC from the Effective From Date of their appointment, but the MA can validate (accept or reject) the UMS Inventory on its receipt, ideally resolving any problems prior to their appointment commencing.

11. A new UMS Inventory should not be sent, to the same MA, until the UMS Inventory Response has been received and processed for the preceding Inventory Sequence Number.
12. An alternative approach for the UMS Inventory flow was considered and discounted. This included the EFD{UMS} at the same level as GP1 but this would lead to multiple loops and more opportunity for partial success while rejecting later data, resulting in greater risk of erroneous data.
13. It is assumed that managing this flow successfully on a large scale will rely on an IT system, use of spreadsheet processing will become impractical.

4. Comments on UMS Response Data Flow

1. The UMS Response flow design combines a report of successfully processed data and rejected data. It was suggested defining two DTC data flows, but this is not optimum in the DTC design.
2. To make the UMS Response a sensible file size and to not repeat all the data that it was sent, the rejected data items are only identified once.
3. The UMS Response file will not necessarily contain all of the MPANs in a recently submitted UMS Inventory, some MPANs may be responded to immediately, others may be held and processed subsequently. For example, a longer response may be where the validity of an MA appointment is being confirmed prior to processing or rejection. In all cases a response should be submitted within 5 WDs as currently defined in the BSCP.
4. Unless the whole record for an MPAN is processed successfully the whole MPAN record is rejected.
5. It is assumed that managing this flow successfully on a large scale will rely on an IT system, use of spreadsheet processing will become impractical.

4.1. MA validation rules for the UMS Inventory

The following sequence is envisaged for the MA to validate and create the UMS Response:

1. The set of data to be processed, should be sorted by MPAN and by Inventory Sequence Number, and processed in the following order:
2. There are some fundamental checks which negate any further validation, once failure of the check is reached, then the set of data for that MPAN and Inventory Version Number is rejected. So, in order they are:

- a. File received from incorrect UMSO or invalid MPAN

If received from an incorrect UMSO, identified from MPAN initial two digits and MPID. Also if the MPAN core is simply invalid (MPAN wrong length or check digit does not validate) then the Inventory is rejected.

If it fails these tests then it is rejected with **Response Reason Code = B**

- b. Inventory Sequence Number error

If the Inventory Sequence Number is equal to, or lower, than the Inventory Sequence Number currently recorded within the MA system or there is an Inventory Sequence Number already pending in the processing queue, then the Inventory is rejected. The latest Inventory Sequence Number (of the rejected data) processed should be incremented.

Where there is a file with the same MPAN sent in the file more than once with the same or different Inventory Sequence Numbers, then they should all be rejected.

If it fails these tests then it is rejected with **Response Reason Code = C**

c. Invalid EFD{UMS}

If the dates are invalid such as 1st Jan 1700 then should be rejected as unrealistic. In addition the date should be within the valid range, such as not older than [14]months from today, and not more than [30] days in the future.

If it fails these tests then it is rejected with **Response Reason Code = D**

d. No appointment

If the MA is not appointed to the MPAN, then it is rejected.

If it fails this test then it is rejected with **Response Reason Code = E**

e. Invalid Submeter

If the sub-meter is not valid for the MPAN or data for a sub-meter is missing, then it is rejected.

If it fails these tests then it is rejected with **Response Reason Code = F**

3. If all the above checks are passed then validation of the inventory content should commence. When validating the content all the following checks should be performed for all of the inventory data provided. This will ensure that if there is a problem identified than a complete list of rejections can be passed back to the UMSO. This should minimise repeated attempts to correct an inventory. The following highlight a hierarchy of checking and reporting:

a. Invalid Charge Code

A single entry of any invalid Charge Code identified in any of the submeters.

If it fails this test then a list of each failure is reported in **Group RP2**

b. Invalid Switch Regime

A single entry of any invalid Switch Regime identified in any of the submeters.

If it fails this test then a list of each failure is reported in **Group RP3**

c. Invalid combination of a valid Charge Code with a valid Switch Regime

Where the combination of valid Charge Code or Switch Regime are deemed to be invalid as per the published OID/MDD, then an entry of the CC/SR combination is included once in the UMS Response file.

This will include the validation in the context of the combination. For example, a SR=100 with any CC in the CMS group (GP5) is deemed to be an invalid combination. Similarly, a SR=999 with any CC in the non-CMS group (GP4) is deemed to be an invalid combination.

This will include invalid Controller Charge Codes and Switch Regime combinations.

If it fails this test then a list of each failure is reported in **Group RP4**

d. Invalid CMS Unit Reference

CMS Unit Reference which are duplicated or incorrect number of characters is deemed to be invalid.

If it fails this test then a list of each failure is reported in **Group RP5**

If it fails these tests then it is rejected with **Response Reason Code = G**, with information included in one or more of the respective groups (RP2, RP3, RP4, RP5).

4. If all the above checks are passed, then the response reason code for the MPAN & Inventory Version Sequence will be **code A** for accepted.
5. The processing will then proceed to the next set of data in in the UMS Inventory file (GP1), returning to step 1.