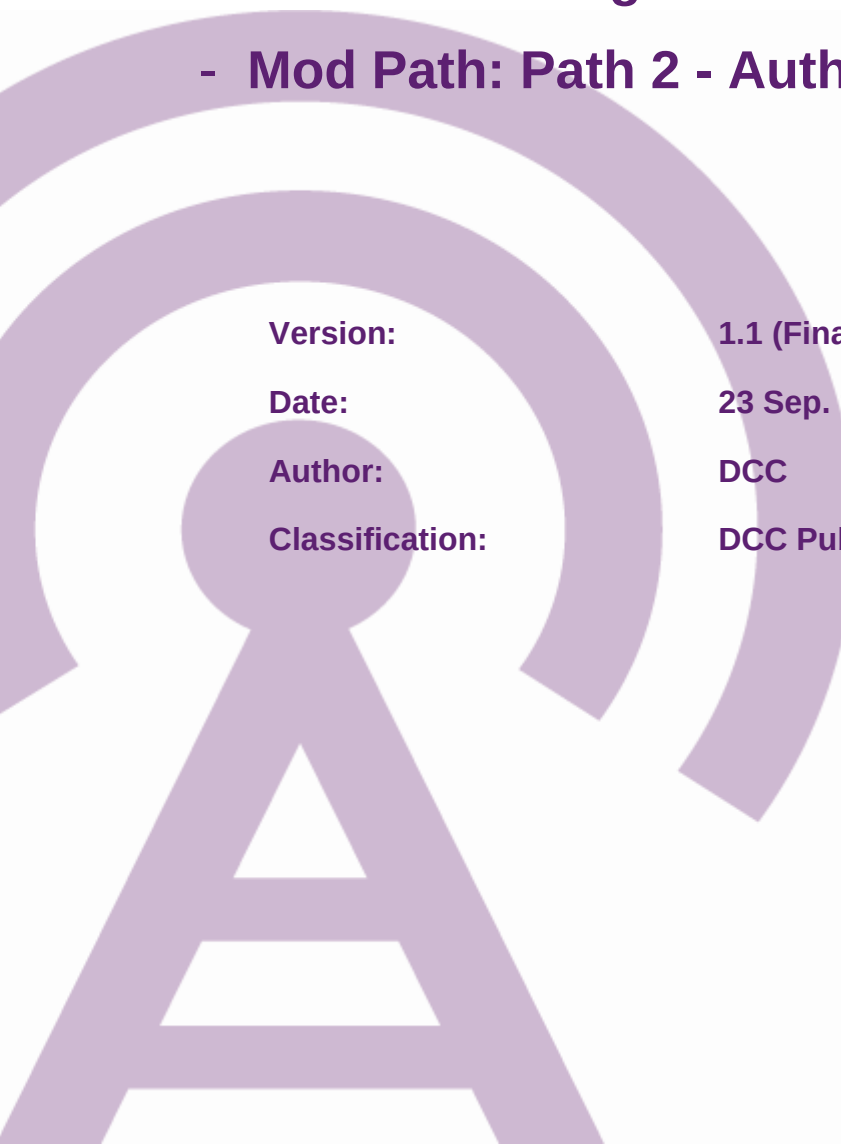


SEC Modification Proposal

- **DCC Preliminary Assessment (PA)**
- **Mod Proposal Ref: SECMP 0002**
- **Mod Proposal Title: Add New Command to Reset Debt Registers**
- **Mod Path: Path 2 - Authority determination**



Version:	1.1 (Final)
Date:	23 Sep. 16
Author:	DCC
Classification:	DCC Public

1 Document purpose

The purpose of this DCC Preliminary Assessment is to provide an outline design and provisional pricing for the development of the necessary system changes and any ongoing changes to support or service management costs expected to result from the proposed modification.

Please note, this Preliminary Assessment v1.1 is being provided to the Working Group as a 'final' PA. The following assessment provides an updated "final" version to the "interim" PA previously provided to the Working Group and represents an overview of DCC's integrated solution, projected costs and delivery timescales for this Modification Proposal. Any text in RED indicates changes made between the Interim and Final PA versions.

2 Revision History

Revision Date	Version Number	Summary of Changes
12/09/16	0.1	Initial version – template created
14/09/16	0.2	Updated with details received from Service Provider PA Responses
16/09/16	1.0 Interim	Post review – submitted to WG
23/09/16	1.1 Final	Updated with additional details received from Service Provider PA Responses – submitted to WG

3 Overview

3.1 Modification description

This proposal seeks to add a new command to allow users to reset any of the debt registers on a meter.

4 Timescales to implement change

The current proposed implementation date of June 2017 is not achievable for this SEC modification.

From the DCC preliminary impact assessments received, DCC considers that an **approximate lead time of 12 months is required** from any Authority Decision being made to implement the changes proposed by this SEC modification.

DCC recommends that this change is included within a Release with other “GBCS changes” to gain Release efficiencies as part of the implementation approach for this modification.

5 Preliminary ROM cost range

The table below details the interim Rough Order of Magnitude costs associated with the changes required to facilitate this change.

	Lower	Upper
Base Option Cost	Circa £625,000	Circa £950,000
Ongoing annual service costs	n/a	n/a
Fixed price for Full Impact Assessment	Circa £40,000	

Please note, all ROM information provided above may change, subject to detailed Impact Assessments (IA) being carried out, ongoing refinement of the SEC modification’s requirements, the allocation of a SEC modification into a Release and DCC’s commercial negotiation process with its Service Providers.

<i>Estimated costs are exclusive of VAT.</i>

6 Proposed High Level Service/Solution Impacts

The following provides a high level description of the Services and Systems that would be impacted as a result of the solution proposed from this modification. The impacts are focused on the changes to industry parties' interfaces to DCC Systems and their interactions with DCC.

DCC confirm that the changes requested are technically feasible and the changes are expected to have an impact to Users of the following Services:

- **DCC User Interface:** 3 new Service Request Variants;
- **Message Mapping Catalogue :** 6 new Service Responses;
- **Parse and Correlate Software:** new version required;
- **Anomaly Detection:** 3 new Thresholds required; and
- **Service Management:** updates to Service Management artefacts and processes (e.g. User guides, Service forecasting, Service Desk processes and training).

The subsections below describe, in greater detail, this Modification Proposal's impact on DCC's Services and Systems.

6.1 DCC User Interface Specification (DUIS)

- Three (3) new Service Request Variants (SRVs) will be added to a new updated version of DUIS and a new associated DUIS XML Schema will be created and made available to Users;
- The new SRVs will have three SRVs (one for each Debt Register) as listed below and are common to both Electricity and Gas meters:
 - SRV 2.4.1 - Reset Time Debt Register 1;
 - SRV 2.4.2 - Reset Time Debt Register 2;
 - SRV 2.4.3 - Reset Payment Debt Register;
- The new Service Request Variants will have the same access control and security classification of SRV 2.3 "Update Debt" and shall affect the following registers in a Device:
 - TimeDebtRegister1;
 - TimeDebtRegister2;
 - PaymentDebtRegister;

- The supported mode of operation for the new 'Reset Debt Registers' SRVs are CRITICAL and On Demand, with an expected 30 second Target Response Time, in line with the existing SRV 2.3 Update Debt;
- This Service Request is not to be capable of being future dated (Device or DSP) or capable of being DCC Scheduled;
- The general attributes of the SRVs are summarised in the table below:

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role
2.4	2.4.1	Reset Time Debt Register 1	Yes	Yes*	Yes	Yes	No	No	No	EIS GIS
2.4	2.4.2	Reset Time Debt Register 2	Yes	Yes*	Yes	Yes	No	No	No	EIS GIS
2.4	2.4.3	Reset Payment Debt Register	Yes	Yes*	Yes	Yes	No	No	No	EIS GIS

* Sensitive Response is applicable only to the DLMS (ESME) messages.

- The new SRVs will be included in a new version of the DUIS XML schema which will support the new SRVs and also the existing SRV 2.3 Update Debt. Suppliers may continue to use SRV 2.3 alongside the new SRVs 2.4.1 – 2.4.3.

6.2 Message Mapping Catalogue (MMC)

- **Six (6)** new Service Response definitions are required to be added to a new updated MMC and associated MMC XML Schema to include the new GBCS Command response definitions and made available to Users to match to the **Six (6)** new DUIS Service Request Variants (SRVs); and
- The MMC schema is expected to return only the status (success or fail) for each SRV issued to the DCC. The DLMS/COSEM objects may contain other data but DCC is not expected to inspect or process that data.

6.3 Anomaly Detection Service

- As the 3 new SRVs are all defined as Critical, they will need to be included and supported in the list of SRVs requiring mandatory volume-based threshold anomaly detection values as defined in TADP (Threshold Anomaly Detection Procedures);
- Additional User Threshold Anomaly Detection values will need to be submitted to the DCC by each Supplier for each of the 3 new SRVs created by this modification. These new thresholds values will need to be managed by each Supplier as an extension to the existing Anomaly Detection service; and

- Additional DCC Threshold Anomaly Detection values will need to be submitted by the DCC for each of the 3 new SRVs created by this modification. These new thresholds values will need to be managed by the DCC as an extension to the existing Anomaly Detection service.

6.4 Managing Demand for DCC User Interface Services - User Forecasting

- Updates will need to be made by both User and the DCC to the existing processes associated with “Managing Demand for DCC User Interface Services” as defined by SEC in section H3.22 to H3.24 inclusive;

7 Impacted Systems

The summary list below provides a summary of the main components of the DCC Total System that will be impacted by this modification.

7.1 DSP Systems

- **DCC User Interface** – Changes to support the introduction of the additional 3 new SRVs definitions; and
- **Multiple additional DCC Systems Components** – Changes to support the introduction of the additional 3 new SRVs definitions and associated validation and transformation into new GBCS Commands.

7.2 Parse and Correlate Software

- **Parse component** – As 3 new SRVs have been introduced in to the DCC Service (User Gateway Service Schedule and DUIS), additional response definitions are required to decode the GBCS payload included in the response into XML format as defined by MMC. **6 additional new Parses. Support for new GBCS use cases (ECS07a / ECS07b/ ECS07c/ GCS04a/ GCS04b /GCS04c);** and
- **Correlate component** – As the 3 new SRVs are defined as critical Service Requests updates are required to support the correlation of DUIS service Requests to Pre-Commands containing GBCS payloads to ensure that the contents are semantically the same. **6 additional new Correlates. Support for new GBCS use cases (ECS07a / ECS07b/ ECS07c/ GCS04a/ GCS04b /GCS04c).**
- **New test case and use case classes and documentation updates.**

7.3 CSP Systems

- **SMWAN** - The addition of the new Service Requests is not anticipated to have any direct impact on the SMWAN. However for transaction billing purposes, CSPs are required to map Service Requests to Capability Transactions and to report on the same. This mapping must be updated as part of the implementation of this modification;
- **Comms Hub** – No Impact; and
- **Business Support Systems (BSS)** - BSS provides the billing on the message volume and charge bands. BSS extracts SMWAN logs. The log is used for billing by grouping the successful messages by Date and Hour, CommandType, Priority

and StatusCode. As part of this CR, BSS will ensure that the new Command, its type and priority are extracted and then it is used for billing.

7.1 **Service Management:**

- **Anomaly Detection Service** - Additions required to support the additional SRVs within Threshold Anomaly Detection Procedures (TADP);
- **Internal DCC systems** and processes for Managing Demand for DCC User Interface Services - User Forecasting will need to be updated to reflect the additional 3 SRVs; and
- **Service Management artefacts and process** – Products such as User guides and work instructions must be updated.

8 Options

- **Potential alternative solution option** - As an alternative DUIS solution, a User could use be a single SRV with a choice of register to reset, rather than 3 separate SRVs. This alternative can be considered during further Working Group discussion relating to the modification's requirements, should the change proceed to Impact Assessment.

Note that as each register is set by a different GBCS message code it would still require the User to send 3 separate messages in order to reset all 3 registers, where that is required, since it is not feasible to generate more than one GBCS command from a single SRV.

DCC requests feedback on whether or not this alternative solution is preferred to the primary solution (proposed above).

9 Clarifications, Issues and Risks

The detail below provides a summary of the clarifications necessary prior to the production of a DCC Impact Assessment and any material issues and risks that have been identified during this Preliminary Assessment phase.

9.1 Clarifications Required

- 1. Requirement clarification required.** Changes may be required to attribute limit Anomaly Detection but have not been included as a requirement. In the requirements there is an outstanding question regarding whether attribute limit Anomaly Detection checks are required for messages to GSMs. The reset will be achieved by including a value of 0 in the ZSE command for the new value of the debt register, however the same value is present (even though not actively used) in the ZigBee template corresponding to SRV 2.3 (update debt) and the value of the attribute is not checked in there. There is however an attribute limit check which is carried out on SRV 2.3 which is for the attribute concerned with debt recovery rates, presumably on the grounds that the absolute level of debt is less significant than the variables which determine how much credit goes towards repaying debt and how much to paying for supply of fuel, since this could be an attack vector to restrict supply of fuel to a house. It may be reasonable to propose that the same attribute is checked in the new SRVs. DCC require clarification from the Modification Working Group or SSC to determine if any or all of these SRVs have a direct requirement for attribute limit Anomaly Detection checks and if so which attributes must be checked for which rules as this is currently not defined (Current Upper and Lower value checks may not be appropriate as a Absolute value of 0 may be the appropriate value check that could be performed.

Due to the uncertainty regarding attribute limits as discussed above this preliminary assessment has not included and the assumption has been made that no attribute limit Anomaly Detection checks are required and there is no impact assessed for any changes to attribute limit anomaly detection. This can be revisited in a future impact assessment if required.

- 2. Requirement clarification required.** As part of this modification is the DCC requested to update the GFI test tool and RDTs (Reference Test Data Set) to support enduring Industry testing? The Business Requirements for this SEC modification do not explicitly state this so this has not currently been included within the scope of this preliminary impact assessment. Although this is not part of the core DCC Service, industry has generally instructed DCC to update these test tool sets for all previous GBCS changes to ensure that these reflect the latest GBCS version. This can be added into the scope of this modification if required for inclusion as part of the full impact assessment subject to confirmation from the SECAS working group.

3. **Requirement clarification required.** As part of this modification is the DCC requested to update the DCCs Meter Emulators that have been used as part of the current SIT and UIT test phases due to the absence of meters for these testing phases? The assumption in this PA is that these are not required to be maintained in line with technical specification changes as there will be new meters available to the DCC to test against in time to support testing. This assumption needs testing both internally within DCC and with wider industry. Costs and time for updating meter emulator functionality to reflect these changes is not currently within scope of this PA and these costs would need to be added if this assumption changes.
4. **Requirement clarification required.** Which party is responsible for managing and tracking HAN interoperability for these proposed changes? An understanding of how this will be managed is required prior to full IA to support further iterations of GBCS within a Communications Hub and take into account the likelihood (or not) that already deployed HAN devices and Communication Hubs will be operating with differing levels of support for new messages (as firmware is not necessarily instantly deployed to all devices on a HAN or coordinated between organisations);
5. **Requirement clarification required.** Confirmation of whether the updated CH will be required to support old and new behaviour for GBCS commands in order to account for differing levels of support for any attached HAN devices; What are the HAN interoperability requirements and where are these documented for all parties to refer to for clarity and consistency of approach?

9.2 Issues

1. **Testing scope post PIT.** The Timescales to implement change and Preliminary ROM cost range detailed in sections 4 and 5 above respectively only considers the design, build and testing of this modification implementation up to and including the Pre-Integration Testing phase (PIT).

It is assumed that further additional System Integration Testing and User Interface Testing as a minimum will be required for the changes proposed as part of this modification, but the expected timelines and costs associated with these additional testing phases cannot be estimated at this preliminary stage as these will be directly effect by the release that this modification is included within. Details of what release this modification might be included within are not known at this point in time hence why no assessment has been carried out for these activities. These time and costs will be added to the time and costs estimates provided as part of this PA in order to obtain the “true” full costs of this modification.

9.3 Dependencies

1. **GBCS.** There is a dependency on the provision of new GBCS Use Cases and SMETS commands for resetting debt registers, however, as stated in the CR, it is assumed that no change is required to the underlying ZSE and DLMS/COSEM implementation in order to implement the new SRVs. Assuming this is the case, the DLMS/COSEM implementation will return the previous balance or zero in the response, which means that the GBCS payload may contain sensitive data. However it is assumed that this value is not included in the MMC schema response.
2. **GBCS version.** There is a dependency on the changes proposed as part of this SEC modification on the DCC implementation of GBCS v2.0 (implemented via BEIS RFC-052) as there are a set of wider changes required to the DCC Systems to support multiple versions of GBCS. It is therefore assumed that the GBCS changes referenced as part of this change will be included on top of the existing GBCS v2.0 baseline currently published via the BEIS TBDG transitional governance group.

9.4 Assumptions

Prior to progressing to an Impact Assessment for this modification, DCC requests that the Working Group confirm the validity of the assumptions listed below. Any changes to the assumptions will be reflected in the full impact assessment.

1. **SRV usage / demand volumes** - There are no explicit business requirements stated for usage / demand of these new additional Service Requests and/or the expected usage patterns with respect to the existing similar SRV (SRV2.3). Therefore making any assessment on volumes of SRs to be sent by User to the DCC as part of this Preliminary Assessment is not possible. An assumption has therefore been made that there has been no direct additional costs added for any extra capacity within the DCC solutions to support this set of changes and that all usage will fall within the existing capacity profile model.
2. **GPF functionality** - All the new GBCS use cases proposed are not required to be TOM commands.
3. **DUIS SRV definitions** - This PIA assumes that there is no impact on the related read operation (4.3 Read Instantaneous Prepay Values) of the registers affected by this change.
4. **DUIS SRV definitions** – All new GBCS commands are sent only to the ESME/GSME and not to GPF.
5. **Attribute Anomaly Detection** - Due to the uncertainty regarding attribute limits as discussed above this preliminary assessment has not included and the assumption has been made that no attribute limit Anomaly Detection checks are required.

6. **Dual Band Comms Hub** - This preliminary assessment response excludes any potential impact on DCC CR184 (Dual Band Comms Hub). DCC would like to confirm prior to Full Impact Assessment the relationship between the changes specified to GBCS as part of this modification and the changes specified to GBCS as part of the DBCH changes currently out for impact assessment form BEIS. The two are currently not linked so assumptions need to be made regarding the relationship and how these two separate impact assessments will eventually be aligned and when. DCC would like to actively confirm assumptions to be made.
7. **Dual Band Comms Hub – Point to note** - The current DCC response to BEIS for CR184 (Dual Band Comms Hub) submitted in early September 2016 excludes any impact of this modification proposal so currently DBCH will not support the changes proposed within this modification.
8. **Testing** - DCC have assumed that this change will be included as part of a larger package of changes (Release) which will be tested together for implementation in later releases, and analysis of those later phases of implementation and testing should be performed as and when the contents of Releases is finalised. Furthermore, DCC would expect the changes associated with this modification included within a Release to share the cost of that release testing.
9. **Testing phases** – The changes included as part of this modification will in the opinion of the DCC require a full integration test cycle with multiple Service Provider solutions within the DCC Systems and a subsequent User integration test phase.
10. **Device Impacts** - The devices that run on firmware built against an older version of the GBCS are not expected to support the new SRVs and associated GBCS commands
11. **Testing Environments** - The DCC release approach to implement this Modification will use the existing DCC test environments to deliver these changes
12. **HAN Interoperability** – All Devices installed must be compliant with a single version of a technical specification as no HAN interoperability requirements have been documented.