

# **SEC Modification Proposal, SECMP0093, DCC CR1118**

**Implementing IRP511 and CRP535 to Support  
GBCS v3.2 Devices**

**Preliminary Impact Assessment (PIA)**

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# 1 Document History

## 1.1 Revision History

Revision Date	Revision	Summary of Changes
03/01/2020	0.1	Initial version
21/01/2020	0.3	Updated after review with Service Providers

## 1.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	MP093 Business-Requirements	SECAS	29/11/2019
2	DP093-Problem-Statement-v0.1.pdf	SECAS	29/11/2019

References are shown in this format, [1].

## 1.3 Document Information

The Proposer for this Modification is Chun Chen of SmartDCC. The original proposal was submitted on the 28<sup>th</sup> October 2019.

The Preliminary Impact Assessment was requested of DCC on 21<sup>st</sup> November 2019.

## 2 Context and Requirements

In this section, the context of the Modification, and the requirements are stated. These have been provided by SECAS and the Proposer.

### 2.1 Problem Statement

In May 2019 BEIS issued a consultation “SMIP\_CR\_085 – Uplift of GBCS and SMETS2 to support Emergency Credit changes”. The consultation set out a number of amendments that were due to be designated for implementation in November 2019.

Part of the changes consulted upon was an uplift of the GB Companion Specification (GBCS) to version 3.2 and subsequent changes to the Technical Specification Applicability Tables (TSAT) to mandate an Applicability Period Start Date for GBCS v3.2 of the November 2019 SEC Release.

The DCC’s response to the consultation set out that two Resolution Proposals (RPs) would not be fully delivered in November 2019. The following RPs were excluded from the earlier release:

- Issue Resolution Proposal (IRP) 511 ‘Set Clock Alerts Refs in Alert Tables Incorrect’ which introduces the Set Clock Alert 0x81C6 to the Event log to allow Users to identify the need for Home Area Network (HAN) Device fault correction.
- Change Resolution Proposal (CRP) 535 ‘Restoring Removed Devices from the HAN’ which allows Users to use Service Request SR8.9 ‘Read Device Log’ to read the Communications Hub Function (CHF) device log. The log contains the active and historical Device which allows Users to know which historical Device has been removed from the HAN so that it could be restored if required.

Both RPs required amendments to the schemas for Appendix AD ‘DCC User Interface Specification’ (DUIS) and Appendix AF ‘Message Mapping Catalogue’ (MMC). It had been previously agreed between the DCC and BEIS (in December 2018) that changes to these schemas would not happen in November 2019 in order to avoid any complexities with the SMETS1 Initial Operating Capacity (IOC). Therefore, the full functionality of the two resolution proposals would be delivered in November 2020.

Note that DCC Change Request (CR) 1047 covers the non-DUIS/transform elements of the GBCS v3.2 changes, including the Central Product List (CPL) with updates necessary to support the new version of GBCS v3.2. The work for CR1047 is being carried out by the Communications Service Providers (CSPs). As such the scope of the two RPs in the release is as follows:

- IRP511: DCC Systems will be amended to support the new Alert code in the response. However, capability for Users to configure the Alert and Parse & Correlate to translate this Alert into meaningful English is not in the scope for delivery in November 2019.
- CRP535: Communications Hub implementing the removal log is in the scope. However, capability for Customers and Users to retrieve the removal log is not in scope for delivery.

On 4 July 2019 BEIS and SECAS designated GBCS v3.2 for implementation in the November 2019 SEC Release. Therefore, to enable the planned changes a new Modification Proposal needs to be raised to introduce the remaining functionality into DUIS and MMC.

## 2.2 Issue

Without the required changes to DSP and the Parse and Correlate application defined in IRP511, Users will be unable to configure the Alert, and the response returned by Parse and Correlate will not be meaningfully translated in English.

In addition, the changes relating to the Historic Device Log on the CHF defined in CRP535 cannot be read for diagnostic purposes during Installation and Configuration (I&C).

Implementing IRP511 and CRP535 will allow the full use of functionality in the GBCS 3.2 and subsequent GBCS versions, and SMETS2 v4.2 and subsequent compliant versions .

## 2.3 Business Requirements

This section contains the considerations and assumptions for each business requirement. These are excerpts from each of the IRPs and it is expected that the DCC will develop solution(s) to the consequential changes these IRPs will have on the DCC Systems. The document text changes are contained within each of the IRPs.

Req.	Requirement
1	DCC system changes for IRP 511 'Set Clock Alerts Refs in Alert Tables Incorrect'
2	DCC system changes for CRP 535 'Restoring Removed Devices from the HAN'

*Table 1: Business Requirements for SECMP0093, CR1118*

### 2.3.1 Requirement 1: IRP511 'Set Clock Alerts Refs in Alert Tables Incorrect'

IRP 511 introduces the Set Clock Alert 0x81C6 to the Event log to allow Users to identify the need for HAN Device fault correction.

The DCC systems are required to

- support the new alert code in the response (Parse and Correlate)
- Support the configuration required for 0x81C6 (DSP)

### 2.3.2 Requirement 2: CRP 535 'Restoring Removed Devices from the HAN'

CRP 535 allows Users to use Service Request SR8.9 'Read Device Log' to read the CHF device log. The log contains the active and historical Device which allows Users to know which historical Device has been removed from the HAN so that it could be restored if required.

## 3 Description of Solution

In order to implement the functionality for IRP511 and CRP535 changes are required to the Data Service Provider (DSP) and Parse and Correlate application to provide capability for Users to configure this Alert and use their full functionality. To achieve this, the DUIS and MMC Schemas must be amended.

### 3.1 DSP Solution

#### 3.1.1 IRP511, Set Clock alert references in alerts table incorrect

This IRP involves introduction of the Set Clock Alert 0x81C6 to the Event log and allows users to identify the need for HAN device fault correction.

DUIS changes are required to add support for 0x81C6 in the following Service Request Variants (SRVs):

- 6.22 Configure Alert Behaviour
- 6.2.10 Read Device Configuration (Event and Alert Behaviours)

If an attempt is made to configure 0x81C6 using SRV 6.22 on a Device running on a version of GBCS prior to v3.2, the Service Request will be rejected using the existing error code E062203.

No changes are required to SRVs 6.11 Synchronise Clock, 6.13 Read Event Or Security Log.

#### 3.1.2 CRP535, Restoring removed devices from the HAN

This CRP is primarily an internal change to CHF processing for adding and removing devices to/from the CHF device log. However, the CHF processing change involves creation of a history of previous device log entries and a new GBCS Use Case CCS07 is introduced to allow the current and historic device log entries to be read by the user.

DUIS changes will be modified to add support for the new Use Case CCS07 in the following SRV:

- 8.9 Read Device Log

If the SR contains the optional input parameter 'ReadHistoric' and is targeted at a Comms Hub running on a version of GBCS v3.2 or later then the new GBCS Use Case CCS07 will be used. If the SR does not include the optional input parameter 'ReadHistoric', then the existing GBCS Use Case CCS06 will be used.

If the SR contains the input parameter 'ReadHistoric' and the target device does not support CCS07 yet (i.e. the device runs on an earlier GBCS version than v3.2), then the Service Request will be rejected using a new error code.

The SRVs 8.11 (Add) and 8.11 (Remove) are not expected to undergo any changes due to CRP535.

### 3.2 Critical Software Solution

Changes will be required to implement this Modification by Critical Software. The assumption is that the change is to be applied to Parse and Correlate D3-G3-x branches.

### 3.2.1 Parse and Correlate

Changes to the Parse and Correlate application will include:

- Add new GBCS Use Case 'CCS07 Read CHF Device Logs
- Update the existing GBCS Use Cases related with SR6.22 and SR6.2.10
- New DUIS / MMC schema deployment
- Add test cases to exercise the changes
- Documentation updates and release tasks

### 3.2.2 GFI Core

To meet the requirements specified above, the GBCS Integration Testing For Industry (GFI) tool will need to implement as follows:

- Implement support for the use case CCS07 on the Reference Test Data Set (RTDS)
- Update the use cases referent to Service Requests 6.22 and 6.2.10 on RTDS
- Update the use cases referent to Service Requests 6.22 and 6.2.10 on GFI Testing Tool
- • Enhance Triage Tool to support CCS07
- • Update Business Scenarios

### 3.2.3 SMITEn Lite

The changes required to implement this Modification will affect the SMITEn parse service and require the following changes.

- Create a new mapper for CCS07
- Create new Unit tests
- Update the integration test

## 3.3 Communication Service Provider (CSP) Changes

Design, build and test activities to support the following will be required for CSP South and Central (Telefonica):

- Uplifts to the existing Access Control Broker (ACB) emulator in the Telefónica PIT Testing environment and update configuration in Access Gateway based on GBCS changes
- One full cycle of automated regression test on one firmware variant in the PIT testing environment to ensure that ACB emulator version is in line with the uplifts in this Modification



- Additional PIT test cases to be created related to “IRP511 – Set Clock alert reference in alerts table incorrect” and “IRP535 – Restoring removed devices from HAN” to be included as part of this Modification

Note that if this SEC modification was grouped into a release including other changes to the Telefonica ACB, it is likely the work mentioned above would be covered in the Release CR rather than as a cost for this Modification. At this time, these costs are included in this Modification.

## **4 Impact on DCC Systems, Processes and People**

This section describes the impact of SECMP0093 on DCC Services and Interfaces that impact Users and/or Parties.

### **4.1 Security Impact**

The implementation will be security assured during the implementation phase. This includes reviewing designs, test artefacts and providing consultancy to the implementation and test teams.

No impact on the Protective Monitoring Solution is forecast as a result of this change; nor is any specific penetration testing expected. A more detailed Security impact will be carried out as part of the Full Impact Assessment.

### **4.2 Request Management**

Introduction of the new GBCS Use Case as part of CRP535 will require changes to the implementation of SRV 8.9 to determine the correct GBCS Use Case based on the SRV contents and the GBCS version of the target device. The Response to CCS07 will need to be delivered via a new Response structure.

Request Management will need to implement the two new validation checks introduced within SRV 8.9 Read Device Log.

Request Management will need to perform configuration updates to support the DUIS version increment.

### **4.3 Data Management**

Data Management will require configuration updates to support the new version of DUIS and GBCS.

### **4.4 Transform**

The Transform component will require updating to create the new GBCS Use Case CCS07 when this variant is requested for SRV 8.9 Read Device Log.

### **4.5 DUGIDS, DUIS, MMC**

DUGIDS will be updated to incorporate the changes to Service Request definitions, Response definitions, MMC schema and the DUIS XML schema.

The existing SRV 8.9 Read Device Logs shall be updated to support the GBCS 3.2 Use Case CCS07 for the Comms Hubs. The general attributes of 8.9 Read Device Logs will remain unchanged.

The general attributes of 8.9 Read Device Logs will remain unchanged as shown below.

Service Reference	Service Reference Variant	Name	Critical	Sensitive Response	Protection Against Replay	On Demand	Future Dated	DSP Scheduled	DCC Only	Eligible User Role
6.2	6.2.10	Read Device Configuration (Event and Alert Behaviours)	No	No	No	Yes	No	No	No	EIS GIS ENO
6.22	6.22	Configure Alert Behaviour	No	No	No	Yes	No	No	No	EIS GIS ENO
8.9	8.9	Read Device Log	No	No	No	Yes	DSP	No	No	EIS GIS OU

**Table 2: Service Request Matrix extract for the impacted SRVs**

The parse response and the MMC XML schema will also be updated for SRV 8.9.

A new error code (E080902) will be introduced to notify the Service Users if the Service Request contains the input parameter 'ReadHistoric' but the targeted device is running on an earlier version of GBCS than v3.2.

As noted above, the CPL is being updated as part of separate work on DCC CR1047.

## 4.6 Service User Simulator

The new version of MMC schema will introduce a version uplift of Parse and Correlate (P&C) software. The Service User Simulator will be updated to incorporate the latest P&C software.

## 4.7 Service Impact

This change increases the functionality of the DSP solution through the modification of SRV 8.9. The DSP service team will be required to undergo knowledge transfer from the development, build and test teams to support the functionality and update support documentation.

## 4.8 Contract Schedules

No impact to any DSP contracts are expected.

## 5 Implementation Timescales and Approach

Notwithstanding in which release this change is implemented, based on the currently stated requirements, the elapsed time for DSP implementation will be between 6 and 8 months following the provision of full commercial cover.

The release lifecycle duration will be confirmed as part of the Full Impact Assessment (FIA). This work would be part of the next major release to include a DUIS upgrade. As currently planned, the standard ongoing major release model will provide drops to the production environment in November 2020.

### 5.1 Implementation Approach

Implementation of this change is assumed to follow a waterfall methodology. The release lifecycle duration will be confirmed as part of the FIA.

### 5.2 Testing and Acceptance

It is assumed that the change will be implemented and tested as part of a major release, and will include release based regression testing in SIT and UIT.

#### 5.2.1 System Integration Testing

The System Integration Testing (SIT) to be performed for this Modification will be based on the following high-level scenario descriptions:

IRP511	Update existing SRV6.22 scenario Comments section with a Set Clock Alert 0x81C6 added to the Event Log.	New negative scenario where the Set Clock Alert is configured on a device running and earlier version of GBGSv3.2 error E062203 is displayed.
CRP535	Existing SRV8.9 scenario to be updated to add in new Use Case CCS07 applicable to CHF only.	New negative scenario where the SR contains "ReadHistoric" and is sent to a CHF that does not support GBGSv3.2 an error message is displayed.

It is expected that SIT testing will take place in the SIT-B environment only.

Note: A full regression test covering different versions of GBGS and DUIS is not included; testing within SIT-B covers the functional change only.

Testing will be carried out across all three SMETS2 Comms Hubs – EDML, Toshiba and WNC. The testing will require two sets of each CH.

In addition to creating and/or updating test scenarios and scripts, the DSP SIT team preparation will include setting up on each Comms Hub the create history of the device logs; each will need a history of previous device entries of removing and adding devices from the CHF.

The following tests will be executed:

1. Execute SRV8.9 against CHF, which is configured to GBGSv3.2 or higher and includes input parameter "ReadHistoric". This will exercise new use case CCS07 and verify the response has additional information in it.
2. Execute SRV8.9 against CHF configured lower than GBGSv3.2 and do not include input parameter "ReadHistoric". This will exercise the CCS06 use case.

3. Execute negative scenario SRV8.9 against CHF configured lower than GBCEv3.2 where the SR contains "ReadHistoric" input parameter; error message E080902 is displayed.
4. Execute SRV6.22 to configure Set Clock Alert on device that is configured to GBCEv3.2 and higher.
5. Execute negative scenario SRV6.22 where the Set Clock Alert is configured on a device running on an earlier version of GBCEv3.2; error message E062203 is displayed.
6. Execute SRV 6.2.10 to read the Device Configurations

The uplifted Service User Simulator (SUS) will be employed during SIT testing.

### **5.2.2 User Integration Testing (UIT)**

The User Integration Test (UIT) projects team will plan, prepare and develop a series of tests against two types of Comms Hubs from three different meter manufacturers (EDMI, WNC and Toshiba) with real meters and devices.

The test scope will be defined in the associated UIT Test Plan for this Modification. The agreed tests will utilise meter sets located in the DCC Manchester Test Lab with Comms Hubs at R2.0 and for single band Comms Hubs.

The Install and Commission business process will be run with each Comms Hub / meter combination (as required and confirmed by the DCC) to test CRP535.

Tests will be executed only on the UIT-B environment.

## 6 Costs and Charges

The table below details the cost of delivering the changes and Services required to implement this Modification Proposal.

The scope of supply under this PIA includes design, development (build), system testing, and performance testing within the PIT environments.

The Rough Order of Magnitude cost (ROM) shown below describes indicative costs to implement the functional requirements as assumed now. The price is not an offer open to acceptance. It should be noted that the change has not been subject to the same level of analysis that would be performed as part of a Full Impact Assessment and as such there may be elements missing from the solution or the solution may be subject to a material change during discussions with the DCC. As a result the final offer price may result in a variation.

### 6.1 Design, Build, and Testing Cost Impact

The table below details the cost of delivering the changes and Services required to implement this Modification. For a PIA, only the Design, Build and PIT indicative costs are supplied.

£	Design, Build and PIT	SIT	UIT	TTO	App. Support	Total
Phase ROM	£245,000	n/a	n/a	n/a	n/a	£245,000

Design	The production of detailed System and Service designs to deliver all new requirements.
Build	The development of the designed Systems and Services to create a solution (e.g., code, systems, or products) that can be tested and implemented. It includes Unit Testing (also referred to as System Testing), Performance Testing and Factory Acceptance Testing by the Service Provider or supplier.
Pre-Integration Testing (PIT)	Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC. The phase also includes regression testing across Comms Hubs.
Systems Integration Testing (SIT)	All the Service Providers' PIT-complete solutions are brought together and tested as an integrated solution, ensuring all SP solutions align and operate as an end-to-end solution. The System Integrator is responsible for leading this phase with the Service Providers offering testing support services.
User Integration Testing (UIT)	Users are provided with an opportunity to run a range of pre-specified tests in relation to the relevant change. The DCC is responsible for leading this phase with the Service Providers offering testing support services.

Implementation to  
Live (TTO)

The solution is implemented into production environments and ready for use by Users as part of a live service. The Transition to Operations (TTO) service is subject to implementation costs.

Application Support

Any costs associated with supporting the new functionality.

Based on the existing requirements, the fixed price cost for a Full Impact Assessment is **£22,681** and would be expected to be completed in 30 days.

## Appendix A: Glossary

The table below provides definitions of the terms used in this document.

<b>.Acronym</b>	<b>Definition</b>
ACB	Access Control Broker
BEIS	Department for Business, Energy & Industrial Strategy
CH, Comms Hub	Communications Hub
CHF	Communications Hub Function
CPL	Central Product List
CR	(DCC) Change Request
CRP	Change Request Proposal
CSP	Communication Service Provider
DCC	Data Communications Company
DSP	Data Service Provider
DUIS	DCC User Interface Specification
FIA	Full Impact Assessment
GBCS	Great Britain Companion Specification
GFI	GBCS Integration Testing For Industry
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
I&C	Installation and Configuration
IRP	Issue Resolution Proposal
MMC	Message Mapping Catalogue
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
ROM	Rough Order of Magnitude (cost)
RP	Resolution Proposal
RTDS	Reference Test Data Set
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SMETS	Smart Metering Equipment Technical Specification
SMITEn Lite	Smart Metering Integrated Test Environment Lite
SP	Service Provider
SR	Service Request
SRV	Service Request Variant
TSAT	Technical Specification Applicability Tables
TTO	Transition to Operations
UIT	User Integration Testing