

# **SEC Modification Proposal, SECMP0013, DCC CR 256**

**Smart Meter Device Diagnostics and Triage**

## **Review of Preliminary Impact Assessment (PIA)**



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# 1 Document History

## 1.1 Revision History

Revision Date	Revision	Summary of Changes
29/06/2018	0.2	Initial compilation from Service Providers
	0.25	Internal DCC Review
09/07/2018	0.3	Included all DCC internal review comments, and responses to requests for clarifications
14/03/2019	1.2	Added clarifications, reissued to Service providers for PIA2
31/05/2019	1.61	Included revised PAs from Service Providers

## 1.2 Associated Documents

This document is associated with the following documents:

Title and Originator's Reference	Source	Issue Date
SECMP0013 - Solution Design Document v4.1	<a href="https://smartenergycodecompany.co.uk/download/1222">https://smartenergycodecompany.co.uk/download/1222</a>	19/05/2017
SECMP0013 - Modification-Proposal-Form	<a href="https://smartenergycodecompany.co.uk/download/1194">https://smartenergycodecompany.co.uk/download/1194</a>	6/05/2016

## 2 Introduction

This modification seeks to amend the Smart Energy Code (SEC) and DCC's systems to provide Suppliers with a means of performing quality assurance and fault diagnostics on SMETS2 devices returned by meter operatives.

### 2.1 Document Purpose

The purpose of this DCC Preliminary Impact Assessment (PIA) is to provide the relevant Working Group with the information requested in accordance with SEC Section D6.9 and D6.10.

### 2.2 Previous Document Information

The original Proposer for this Modification was Tim Newton, E.ON.

This original DCC Preliminary Assessment was requested of DCC on 14/08/2017. However a full review of the PIA is now being carried out based on the expiry of the original PIA. This version of the PIA includes a full listing of the requirements and an outline for a solution approach, some clarifications, and added information on the changed GBCS Use Cases. The document was used by the Service Providers as the basis for a high-level solution decision with associated, revised costings.

### 2.3 Context

The following text was provided by the Modification Proposer.

*SECMP0013 seeks to provide suppliers with both a means of performing quality assurance (QA) ahead of installation on Smart Meters intended for live use, and fault diagnostics on Smart Meters returned by meter installers. This is not currently possible as:*

- *Smart Meters joined to a Communications Hub cannot be then subsequently joined to another one*
- *Communications to a Smart Meter cannot be re-established after it has been removed from a Smart Metering Home Area Network (SMHAN) to which it was joined*

*This means that if suppliers joined a Smart Meter to a Communications Hub (CH) in Quality Assurance (QA) facilities, they would not be able to join the same Smart Meter to another Communications Hub in a live environment, and vice versa. Further, suppliers would not be able to re-establish communications in a QA facility with a Smart Meter returned by an installer, where that Smart Meter had previously joined an SMHAN.*

### 2.4 Requirements

The core functional requirements are to have mechanisms whereby:

1. **A Smart Meter can be instructed to leave an SMHAN, and return to a state where it can join a new SMHAN.** It is assumed that the supplier has the Smart Meter's ZigBee Install(ation) Code and so the Install Code is not set to a new value as part of this instruction. Note that:

- A Smart Meter previously installed in Consumer premises (prior to QA) will have a specific Network Operator's (NO) certificate installed and so can only be re-installed in that NO's area, if the Smart Meter is re-deployed for Consumer use.
  - A Supplier is unlikely to have access to the Install Code for Smart Meters that have churned from another Supplier, and so this mechanism would not allow re-use in such scenarios, without the Smart Meter's return to the installing Supplier.
2. **Communications with a Smart Meter, that had joined an SMHAN and then been removed from those Premises, can be re-established via a different Communications Hub, including one in a supplier QA facility.** A pre-requisite is that the supplier can identify the CH to which the Smart Meter was previously connected (e.g. from records in their internal systems as to the SMHAN it was previously connected to) and that that CH is still powered on and in operation.
  3. **Where a Smart Meter is joined to a CH for QA purposes, the supplier should be able to instruct it using the full range of Service Requests.** This allows the fullest range of checks to be carried out, and any configuration changes to be made prior to re-deploying the Meter. However, it is assumed that the supplier would not generally wish to use either Commission or Decommission Service Requests in the QA facility, given the wider implications of such actions (although Decommissioning would be required for Devices found to be faulty and which have previously been recorded in the Smart Metering Inventory).

The core **non-functional business requirements** are to:

- Provide interoperable mechanisms, not requiring physical changes on Smart Meters or Manufacturer specific elements.
- Be able to use these mechanisms on a Smart Meter that is intended for live deployment in Consumer Premises / has been deployed in Consumer Premises.

Based on the discussions at the Working Group and the Business Requirements as set out in the Solution Design Document, DCC consider the requirements for SECMP0013 to be **STABLE**. Where the requirements or SEC obligations set out in the Solution Design Document change, DCC will be required to carry out further impact assessment.

### 2.4.1 Requirements Clarifications

Clarifications were requested by the Service Providers and DCC from the Working Group. Those which have been completed and closed are included below, but those requiring further input for the Full Impact Assessment (FIA) are shown in section 8.1, Clarifications.

**Clarification 2:** Where DCC are being requested to be mandated to develop a solution which allows suppliers to perform quality assurance and returns diagnostics testing of the ability of devices be installed and commissioned against a communications hub, and to perform communications via the HAN is a **LIVE** Service only.

The Use Cases are:

- Perform quality checks on delivered devices. *Suppliers have access to all of the required DUIS services*

- Recycle and Reset discarded devices from meter operatives Suppliers have all of the required capability to perform these tasks using DUIS
- Fault diagnosis and isolation using existing DUIS calls.
- Ensure that resetting of a devices using a DUIS request covers the initialisation of back end DCC systems to ensure that the devices are able to be reinstalled.

**Clarification 3:** which SEC Roles are eligible Users for this Service? *All SEC roles who have the capability to manipulate devices.*

**Clarification 4:** What is the nature of the reset requirement for different types of devices, e.g. Electrical Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), and Pre-Payment Meters (PPMID)? *It was agreed that all devices that a Service User can obtain access to are in scope.*

Should there be a visual indication for operatives to use to understand whether devices are ready for deployment? *Not within the capability of the DCC*

*Agreed that there would be no need to change GBCS as all services are in place to carry out the required functions*

**Clarification 5:** Availability of a Test Environment to ensure that newly delivered devices is able to pair and communicate via the HAN effectively. NB- Following a successful test, Devices are unpaired and returned to the supply chain to be shipped to meter operatives – *Does not require a test environment, will work on live*

**Clarification 6:** As part of the returns triage process, energy suppliers wish to connect to devices in a test environment in order to execute commands to remove any data from devices which will prevent their reinstallation, for instance security keys. Once this has been done, devices are returned to the supply chain to be shipped to meter operatives.

- Is this the equivalent to the DCC internal “CH Unlock Command” that DCC has developed for Communication Hubs? *Assumption is that the devices will only be reset using the existing DUIS services. This is the equivalent of a maintenance removal from site.*
- What are the security implications for returning Devices to the supply chain to be shipped to meter operatives once Commands have been applied to remove any data from devices? *The data reset is the same as is carried out following a CoT (Change of Tariff).*
- The additional requirement is to ensure that the Data Service Provider (DSP) is reset fully at the end of the triage process

**Clarification 7:** As part of the returns triage process, energy suppliers can connect to devices in a test environment in order to un-pair any devices which have been returned in a paired state. Unpairing should work correctly although DSP may be required to change the status of some of their data in the event of a failed installation.

- Where are these Commands defined and are they standard for all devices or are they manufacturer specific? Are there potential Interoperability concerns arising from this and how will these be managed? *Requires more investigation but GBCS is believed to be adequate to carry out all required operations*

**Clarification 8:** Are these messages included as part of Service User forecasts? *Will be a LIVE environment operation using existing DUIS requests.*

**Clarification 9:** The installation and testing of equipment will require test MPxNs that are not real. Who will support the provision of these (e.g. Users) and the potential commercial and security risks that they will entail? How will the use of these MPxNs be controlled? *Worst case, suppliers will purchase access points from DNOs*

**Clarification 11:** How will disposal of other devices be notified to DCC? *CH disposal does not always need to be carried out at CSP. 8.14.14 covers this use case*

## 2.5 Constraints

### 2.5.1 Live Systems

If a Smart Meter is intended for live use / has been in live use, then it must have been configured to use Public Key Certificates within the SMKI live structure, and the corresponding private keys are those used by live DCC and Supplier systems. These keys must not, from a security perspective, be replicated anywhere else (e.g., in QA specific solutions, separate from live systems). Thus, any solution to this Modification's requirements would need to be implemented by live Supplier and DCC systems as there is no mechanism to migrate a Smart Meter from the live SMKI to a 'non-live' SMKI or vice-versa.

### 2.5.2 Meter Reference Numbers (MPxN)

When instructing the DCC to add a Smart Meter to an SMHAN, the supplier currently has to provide an associated MPxN. This association is used to check initially that the supplier making the request is that associated with the MPxN in registration data. It is subsequently used extensively as part of DCC's access control, as required by the SEC. If MPxN were not provided, there would need to be significant change to DCC access control (and associated SEC requirements) bringing greater cost / longer time scales. Further, such changes may give rise to broader security concerns. Therefore, it is assumed that suppliers installing meters in their QA facilities will provide valid MPxNs which DCC's copy of Registration Data shows them to be the supplier for.

### 2.5.3 Implementation

This change would be complied with by all CH and Smart Meters conforming to versions of the Technical Specifications which incorporate the Modification, and so to newly installed Devices.

This modification relies upon facilities that will be introduced by a BEIS CRP<sup>1</sup> and so cannot be implemented prior to the release which implements that CRP. If this Modification were to be implemented in the same release as CRP535, it would be implemented on all already installed CHs. This is because CRP535 is to be implemented on all installed CHs by way of firmware upgrade. Alternatively, the changes in this modification would be rolled out to all installed CHs, where there is a subsequent Release requiring such upgrades to implement other changes.

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<sup>1</sup> BEIS is the Department for Business, Energy & Industrial Strategy, a CRP is their Change Request)



Currently, there is no planned Release which would require firmware upgrade to all installed Smart Meters. Thus, this change would not be rolled out to all installed Smart Meters. However, that does not stop Suppliers electing to undertake such upgrades.

There is no specific requirement for this Modification in isolation to mandate firmware upgrades on any installed Devices.

#### **2.5.4 Interoperability**

For Smart Meters which comply with this change, the new Command instructing them to leave the SMHAN (see Annex A on page 37 below) would be routed to them and actioned by them, regardless of CH version. Related, the resulting Response would be routed back through the CH, again regardless of CH version. This is because of the GBCS CH requirement in BEIS IRP521, which CH have complied with since go-live.

If (1) the CH does not support this change and (2) the Smart Meter is removed from the SMHAN without having first processed the new Command instructing it to leave, it would not be possible to use the mechanisms covered by this Modification. This is true regardless of the Technical Specification the Smart Meter supports.

#### **2.5.5 In Scope**

Suppliers have all tools available to carry out this function using DUIS functions except for those below. All GBCS calls are believed to be in place to carry out the required procedures.

The scope of this Modification is therefore as follows:

- Uplift to the Communications Hub SBCH and DBCH software to store records in a historic state within the CHF device log following the processing of a HAN removal command such that the data is available for later retrieval
- Corresponding changes to GBCS and Service Requests
  - Receive, process and forward to a device on the HAN and to return a response to the DSP, a GBCS command to instruct a HAN device to disconnect from the HAN
  - Receive, process, and return a response to the DSP, a GBCS command to retrieve the CHF historic and current device log
  - Respond to a Service Request (SR) from a Service User to restore a specified CHF device log
- Resetting of the device in the event that a device is removed without first uninstalling on DCC systems
- Resetting of the devices in the event that an installation fails during an install and the installation is not recoverable
- Including the capability to recover from installations failing in a state that cannot be recovered from
- Use of the resetting arrangements for the CHs as required to clear them out between device QA tests
- Deployment and test in the PIT environment

### 2.5.6 Out of Scope

The following specific points are out of scope:

- Communications Hub Manager is considered to be out of scope for this CR as the technical solution is for meter triage and not Communications Hub triage
- Provision of any test equipment to support the use of Communications Hubs for meter triage and in-bound quality checks (IQC)
- Any changes to reverse logistics process
- Any feature to facilitate the concept of introduction of pre-pairing in the solution (i.e. linking CH and a meter before an installation occurs). The purpose of this Modification is to purely create a temporary HAN connection to meters for triage or IQC within a Service User's warehouse
- Any change on the emulator functionality to support PIT testing

Note that uplift to the Comms Hub firmware to support the introduction of a new GBCS command to allow the communications hub to receive, process, and to return a response to the DSP, a GBCS command to retrieve the CHF historic and current device log is not included in this Modification. This functionality is part of CRP535 and is expected to be introduced as part of DCC Internal CR1047.

## 2.6 Proposed Solutions

For the requirements identified above. SECAS has recommended solutions as follows.

### 2.6.1 Req. 1 –Supplier tells a Smart Meter to "Divorce" from Current SMHAN

There is no existing mechanism for a supplier or a Smart Meter to do this, and so a new Service Request from suppliers, and a corresponding new GBCS Command to Smart Meters is required. Given that this Command would require a Smart Meter to change the security credentials it uses, the new Command is Critical, as is the new SR.

This Command has to be supported by both GSME and ESME, and as there is no existing, related DLMS/COSEM<sup>2</sup> or ZigBee functionality, the new Command would be ASN.1-based (cf: the GBCS 'join' Commands, which are ASN.1 (Advanced Shipping Notification) Commands for the same reason).

Where successfully executed, the Command would require, in ZigBee terms, that the Smart Meter *'discard its network settings and link key, and revert to its install code, and automatically return to auto-join'*.

A successful Response to this Command would require that the DCC updates the Smart Metering Inventory so as to:

- set the SMI status for the Smart Meter to 'pending', to reflect the fact that it is now in a state where it can be whitelisted on other SMHAN
- ensure the Device is no longer Associated with any other Devices or any MPxN

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<sup>2</sup> Device Language Message Specification / Companion Specification for Energy Metering; these specifications are the protocol used for energy metering.

Annex A on page 37 lays out the Use Case and associated SEC changes to implement this new Service Request and GBCS Use Case.

Prior to sending this 'divorce' Command, suppliers may wish to make configuration changes to the Smart Meter so that it can be re-used (e.g. clearing Devices from the Smart Meter's Device Log). This can be done using existing Service Requests.

After sending this Command, suppliers are likely to want to remove the Smart Meter details from the CHF Device Log e.g., so that replacement Smart Meters can be installed. This can be done using the existing Service Request.

### **2.6.2 Req. 2 – Re-establishing Communications with a Previously Installed Smart Meter**

If an installer returns a Smart Meter for Quality Assurance (QA) after an attempted install, that meter will be in one of three states:

1. It is working, had not joined an SMHAN or had been 'divorced' from it. In this case, the Smart Meter will be able to join an SMHAN in the supplier's QA facility using existing mechanisms. The supplier can identify this state by attempting such a join;
2. It is working, had joined the SMHAN and had not subsequently been 'divorced' from it. If an attempt is made to join such a Device to an SMHAN in the supplier's QA facility using existing mechanisms, that attempt will fail. The new mechanism described in this section would allow communications to be re-established (and so the meter functions could subsequently be checked, and the smart meter 'divorced' from the SMHAN so that it could be re-used);
3. It is not working sufficiently for communications to be established. In this case, the attempted actions at steps 1 and 2 will fail, informing the supplier that the meter cannot be used.

The mechanism at step 2 does not exist in current technical specifications. The information required to re-establish Smart Meter communications would be known to the CH to which the Smart Meter was connected<sup>3</sup> might:

- Still be in that Comms Hub's CHF Device Log
- Have been removed from that Comms Hub's CHF Device Log. In this case, it is assumed in this drafting that the separate BEIS CRP535 will have added a requirement for CH to support a CHF Historic Device Log. This historic log would hold details of the Devices most recently removed from the CHF Device Log.

To re-establish communication with the Smart Meter in the supplier QA facility, this information would need to be:

- read from the relevant CH in Consumer Premises
- written to the CHF Device Log of the CH in the supplier QA facility

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<sup>3</sup> Specifically, the PANID of the SMHAN, the Smart Meter's MAC address and the Hash of the Trust Center Link Key.

The Trust Centre Swap Out mechanism (which all Devices are already required to support), would then allow the Smart Meter to join the SMHAN in the supplier QA facility, and so it could be communicated with.

To achieve this, two new Service Requests and one corresponding GBCS Command / Response would be required:

1. Supplier read of CHF Historic and Current Device Log (new SR and associated GBCS Use Case). This would require CH to provide access to these two DLMS/COSEM objects (one of which already exists on CH; the other would be added by the BEIS change);
2. Supplier specified CHF Device Log Restore. CH already support such a GBCS Command / Response, although the corresponding Service Request does not allow the supplier to specify the CHF Device Log. The new Service Request would be to allow the Supplier to specify the Device Log along with the ID of the Smart Meter they wish to connect (so one of the IDs in the Device Log), and to require the DCC (on receipt of a successful Response) to Associate the Smart Meter in question with the target CH in the QA facility.

Given that the corresponding, existing GBCS Use Cases:

- are non-critical, it is assumed that the additional facilities are also non-critical
- use DLMS/COSEM structures, it is assumed the additional facilities will do the same

Annex B on page 39 following lays out the Use Case and associated SEC changes to implement the new Service Requests and GBCS Use Case.

### **2.6.3 Req. 3 – Support all Service Requests on a Meter in QA Facilities**

No additional changes are required to support this requirement.

## **2.7 High Level DCC Assessment**

This Modification seeks to amend the SEC and DCC's systems to provide Suppliers with a means of performing quality assurance and fault diagnostics on SMETS2 devices returned by meter operatives. A new Service Request from suppliers, and a corresponding new GBCS Command to Smart Meters, would be required to deliver the message to Smart Meters that they must leave the SMHAN and return to a state where they can join a new SMHAN.

In the cases when the Smart Meter had joined the SMHAN and had not subsequently been "divorced" from it, if an attempt is made to join such a Device to an SMHAN in the supplier's warehouse using existing mechanisms, that attempt will fail.

The Modification Proposal is technically feasible. The Modification predominately impacts the Communications Hub although the introduction of Smart Meter device diagnostics and triage but also impacts Platform Build and Transition, Service Management, PMO & Planning, and Programme Test.

### 3 Impact on DCC's Systems, Processes and People

This section describes the impact of SECMP0013 on the DCC Total System services and interfaces that impact Users and/or Parties.

This is a wide-ranging SEC Modification and the impact across the DCC Total System is as follows:

ARQ	H	BIMI	N	CHTS	N	HCALCS	N
TEF	H	GBCS	Y	CH	Y	PPMID	N
CGI	H	DUIS	Y	CH2DS	Y	IHD	N
P & C	L	SMETS	Y	ESME	N		
BT	N	SEC	Y	GSME	N		

#### 3.1 Communications Hub

The first change when the Communications Hub is required to "divorce" from the Smart Meter HAN, is for the Comms Hub to be able to handle the new Service Request. The command will make the Smart Meter discard its network settings and link key, and revert to its install code, and automatically return to auto-join.

Therefore, given that this is a change to the security credentials it uses, it is required that the new command is Critical (and so the new Service Request is Critical) in line with SMETS and GBCS.

In the second case, the information required to re-establish Smart Meter communications to the Communications Hub it was attached to, then the steps that must be followed to connect a Smart Meter that had not successfully divorced from its SMHAN are:

1. Read the information from the CH to which the Smart Meter was attached
2. Write the information to the CHF Device Log of the CH in the supplier warehouse
3. Perform a Trust Centre Swap Out

Items 1 and 2 require two new Service Requests, one corresponding GBCS Command and one Response:

1. Supplier read of CHF Historic and Current Device Log (new SR and associated GBCS Use Case)
2. Supplier specified CHF Device Log Restore. Comms Hubs already support such a GBCS Command and Response, although the corresponding Service Request does not allow the supplier to specify the CHF Device Log.
  - Requires: Supplier to read historic device logs from CH
    - Use Case CS02f Disconnect Smart Meter from HAN (ESME/GSME)
    - Use Case CCS07 Read CHF Device Logs
  - ZSE command for GSME to disconnect from HAN
  - ZSE command for ESME to disconnect from HAN

All the additional steps that are required to complete the “divorce”, such as removing the Smart Meter details from the CHF Device Log, do not require any further change in the Communications Hub.

### 3.2 DUGIDS, DUIS, MMC and GBCS

The impact on DUIS is to add two new Service Requests and modify an existing one. Note the Service Request Variant (SRV) numbers are indicative and to be confirmed as part of the Full Impact Assessment. The new SRVs will be:

- 8.15 Disconnect Smart Meter From HAN (expected to be Critical)
- 8.16 Restore Specified HAN Device Log for Specified Smart Meter (non-Critical)

A change to the existing SR 8.9 Read Device Log required to support CRP535, is expected to be implemented as part of DCC Internal CR1118 and so is not included in this impact assessment.

The changes involve new Service Request definitions and Response definitions to be created in a new version of DUGIDS, along with updated DUIS and XML schemas. DCC will also need to update the DUIS and MMC SEC Subsidiary documents as a result.

The processing around the newly introduced SRVs introduces more triggers for state changes within the SMI; however they are not expected to have an impact on the SMI data model in terms of the supported inventory status values.

An updated MMC schema will need to be deployed.

New libraries for each unique GBCS use case need to be implemented. Three new GBCS Use Cases are required corresponding to new SRVs, which will in turn require three additional test cases.

- The modified **SRV 8.9** enables the Users to read current and historic HAN Device Logs from a Comms Hub installed at the consumer premises. CRP535 introduces a new GBCS Use Case CCS07 that allows the Service Users to read the list of current and historic Devices connected to a Comms Hub and the TC Link Hash Keys of these Devices specifically for this purpose. It is assumed that this Use Case will be a simple request which returns all Device Logs held by the CHF. The Service Request 8.9 Read Device Log will be enhanced to support CCS07 by way of an optional parameter. This change is expected to be implemented under CR1118 which is to be included in the November 2020 release.
- **SRV 8.15** will enable Service Users to disconnect a Meter from its current HAN. This will be a new Service Request that maps to a new GBCS Use Case, CS02f, defined specifically for this purpose. The GBCS Command associated with this SR is expected to return the device to its original network settings and Install Code. It is the Service User's responsibility to make any configuration changes to the device prior to sending this command.
- **SRV 8.16** will enable Service Users to restore the entry related to a single Smart Meter from a specified HAN Device Log to a Comms Hub. This will map to a new GBCS Use Case defined specifically for this purpose. It is assumed that the Service User will provide the specific Device Log that they wish to be restored to the CHF. It

is also assumed that only the details related to the Smart Meter being restored shall be extracted from that Device Log.

SR 8.16 will have three parameters:

- Smart Meter EUI-64 ID;
- the base64 encoded version of the CHF Device Log to be restored; and
- the MPxN(s) to be linked to the Smart Meter.

It is expected that the CHF Device Log received in SR8.16 will not need any amendments and the existing GBCS use case CCS03 Restore CHF Device Log will be used in this scenario.

Following the successful execution of SRV8.16 request, DCC Data Systems will need to do the following.

- Update the Smart Metering Inventory to Associate the Device with the applicable Communications Hub Function.
- If the target Device is ESME or GSME, record the MPAN(s) or MPRN (as applicable) provided within the Service Request against that Device and notify the Electricity Distributor or Gas Transporter (as applicable) of the MPAN(s) and/or MPRN and of the Smart Meter's Device ID and Device Type.
- For all Devices other than a Type 2 Device, set the SMI Status to 'whitelisted'.

It shall also be noted that the processing outcome of Service Request “8.16 Restore Specified HAN Device Log for Specified Smart Meter” will be similar in many ways to SR “8.11 Update HAN Device Log (Add)”.

### **3.3 Data Service Provider**

To comply with the recommended solution the Data Service Provider is required to support new Service Request Variants as described in section 3.2 above.

Before a device is disconnected from the HAN, all the required device configuration changes (e.g., unpair another device) shall be carried out separately by the Users, since the disconnect operation effectively decommissions a device.

#### **3.3.1 Infrastructure Impact**

The new Service Requests will result in an increase in DCC Total System processing at the User Gateway endpoint. However, the new Service Requests are for exception processing only and therefore we would not expect a material increase in volumes. This PA assumes there will be no additional hardware specifically related to this change. Note this will need further assessment as part of developing the Full Impact Assessment (FIA).

### **3.4 CSP Impacts**

Changing the CHM requires two new GBCS Commands (Reset Hub and Diagnostics) to support triage, with requests expected to use the CSP Management (CSPM) Gateway.

#### **3.4.1 Business Support and Sub-Systems**

The following impacts have been identified and will require changes:

- Exclude the Comms Hubs installed in Live Test Lab from all Performance Measures (PM)



- Make the PM exclusion automated (considering the volume and duration, manual override might not be an option), with the user having the capability to choose which PMs the Communications Hubs should be excluded from
- Updates with respect to the new SRs 8.15, 8.10, 8.16 (Financial Reference Data to be modified)
- Assessing the impact of Data and Structure changes to Ordering and Logistics, Billing and Financials

### **3.5 Service Management**

This Modification will introduce a number of new scenarios for the Service Management teams to consider in terms of service support, operation and maintenance. There will be updates required to the following processes and underpinning work instructions as a minimum:

- Communications Hub Triage Process
- Coverage Database usage and Performance Measure 11 reporting
- Communications Hub Returns Process
- Event Management and Power Outage / Restoration Alerts
- Service Reporting for Performance Measures 2, 3, 4 and 5

There may be a need for a site survey process similar to the RTL Ordering process to ensure that production Communications Hubs used in a commercial property have adequate signal strength to operate the meter diagnosis and testing.

### **3.6 Request Management**

Request Management needs to implement the necessary validation checks needed for the new SRVs, along with any business logic and transformation to the new GBCS Use Cases.

Based on the response to these SRVs from the devices, Request Management shall also initiate inventory updates in the northbound processing flow. The management of device status within the inventory is expected to be impacted by this new process, with changes required in a number of places to allow these “variant” steps to be followed.

### **3.7 Documentation**

Both the Communications Hub Technical Specification (CHTS) and Communications Hub Detailed Specification (CH2 CHDS) will require updating to reflect the changes in section 3.1 above.

### **3.8 Contract Schedules and Measures**

DCC believes that this Modification will have an impact on at least eight Contract Schedules, including but not limited to design documents, Communications Hubs specifications and pricing. Each change will require CSP, DSP, and DCC resource to implement, with commensurate Compensation for the changes.



The costs associated with Contract Schedules changes have not been included in the PA. The contract schedules that will require modification will be provided in the FIA, but are likely to include the following:

- Schedule 1 - Definitions
- Schedule 2.1 - DCC Requirements
- Schedule 2.2 - Performance Measures
- Schedule 4.1 - Contractor Solution
- Schedule 6.1 - Implementation Planning
- Schedule 7.1 - Charges and Payment
- Schedule 11 - Communications Hub
- Schedule 12 – to reflect the uplifted technical specification versions (such as GBCS and CHTS)
- Communications Hub Design Specification (DPD, CH2)
- Communications Hub Installation Process Support Materials (CH4)

While CSP South and Central expects that the SEC will be modified to instruct Service Users to treat the Communication Hubs which will be used to support meter triage and diagnostics in the same way as production devices (which includes leaving them permanently powered on), there is a risk that Service Users will not comply with SEC. As such, CSP South and Central expect the introduction of a process by the DCC which will notify CSPs of which devices are being used to support this activity and for those devices to be excluded from connectivity-related measures:

- Contractual updates to reflect the new Service Request and associated target response times;
- Provide a limited amount of support to review modifications to the following specifications:
  - SEC appendix L CHIMSM
  - DCC service designs

None of the above have been factored into the costs for this Modification at this stage.

## 4 Impact on Security

The proposed Modification will require a security review, particularly in relation to the Disconnect from HAN command. However the estimated costs assume that the functionality does not require a material change to the security solution such as physical or logical separation from other parts of DCC Total System (in the same way as SMKI Recovery and Change of Supplier is separated). We also assume that this will not require any separation of duty for the purposes of operational support. Further discussion is required in respect of the security solution prior to progressing to an FIA.

Given there are no interface changes and no additional infrastructure included in the solution, there will be no requirement for penetration testing or additional protective monitoring as part of the implementation.

The DUIS update will require the revised schema to be loaded onto DataPower devices on each DSP environment.

The implementation of the change will be subject to security assurance oversight to ensure contractual compliance.

## 5 Testing Considerations

This section describes the testing phases required to support the implementation of SECMP0013. Note that only Testing Tools and Pre-Integration Testing costs are included in the cost estimates following.

### 5.1 Summary

Following initial assessment and responses from impacted workstreams, this will require PIT regression testing and PIT System testing of the new functionality brought in by this Modification, including:

- 2 cycles of PIT regression testing of Communications Hub
- 1 cycle of PIT regression testing of BSS solution
- PIT testing of Communications Hub new functionality: new GBCS messages expected (awaiting outcome of CRP) and new SRVs

### 5.2 Framework and Testing Tools

#### 5.2.1 GFI Testing Tool

The GFI Testing Tool will be enhanced to support the new use cases CS02f and CCS07 with new tests, encoding and decoding of the new GBCS messages, and execution of these use cases in an emulated scenario. This includes:

- Create new classes to encode and decode new GBCS messages
- Create new test case classes
- Create new test case specifications
- Extend the functionality of the ESMEEmulator, GSMEEmulator and CHFEmulator components to support the execution of the new use cases in an emulated scenario

#### 5.2.2 GFI CommsHub

The GFI CommsHub will be enhanced to support the new use case CCS07. Additionally the ZigBee meter emulators used to test the GFI CommsHub will be enhanced to support testing the disconnection of a Smart Meter from the HAN (use case CS02f). This includes:

- Support CCS07 in the CommsHub
- Support CS02f in ZigBee meter emulators

#### 5.2.3 Reference Test Data Set (RTDS)

The RTDS data set will be enhanced with examples of GBCS payloads, DUIS requests and MMC responses for all 3 new Service Requests. Both success and error scenarios (when applicable) will be included.

#### 5.2.4 Device Emulators

HAN Device Emulators (HDEs) are used in the Systems Integration Testing (SIT) and User Integration Testing (UIT) test phases to enable parties to efficiently exercise the HAN and end to end environments without using real HAN devices. This testing checks the various components of the system, and most importantly, performs a Quality Assurance function upon the Communications Hubs.

The new expected behaviours of the PPMID would require the ability to simulate the delivery of GBCS messages from an emulated PPMID device to a Communication Hub and thus test the CH's ability to properly receive and respond to GBCS commands. This would require a change to the PPMID HDE Device Type and a means to control the GBCS message in the Emulator control software, requiring changes to both the Emulator firmware and the Emulator PC control software. Note that if at the time of the implementation of this Modification any Virtual HDEs, based on a ZigBee dongle, were available then the change would also need to be applied to this solution.

### **5.3 Pre-Integration Testing**

Pre-Integration Testing comprises the tests that each Service Provider performs on its respective System changes, prior to the integration of all Service Provider systems. DCC has factored the cost of PIT, including DCC assurance, into this Impact Assessment. Suggested PIT scope would include:

- Production, review and agreement of a design to enable development
- Low level design production, development, unit test and any rework to achieve PIT complete status
- Data generation and loading into the Test environment
- Execution of System Tests through sufficient iterations to enable PIT complete
- Design, implementation and execution of scripts in accordance with assurance procedures used for Release 1.2
- Achieving PIT complete status and subsequent reporting

For the CSPs, PIT regression testing and PIT System testing of the new functionality including;

- regression testing of Communications Hub
- regression testing of CHM and BSS solution
- testing of Communications Hub new functionality: new GBCS messages expected
- testing of CHM, BSS new functionality: new message Service Variant and Priority information in Message Transaction Reference Data
- repeat of a subset of PIT test cases for DCC Test Assurance

Testing new functionality may be limited to non-critical commands, and the FIA will identify the viability of testing any relevant critical commands.

### **5.4 Systems Integration Testing**

Systems Integration Testing (SIT) is the testing of the DCC Total System, which brings together the components, e.g., DSP and CSP Systems, to allow testing of the end-to-end solution by DCC. SIT is carried out for every DCC System release and incorporates the test and integration of multiple changes. As such the costs of SIT are not included in this assessment.

Additional SIT is recommended by DCC for a modification of this type. It should however be noted that the scope of SIT is likely to be more focused on regression testing to confirm that the changes applied as part of this modification have not had an impact on the wider DCC Total Systems.

Suggested SIT scope would at a high level typically include:

- System Test script and data design

- Data generation and loading into a co-ordinated System Test environment
- Execution of System Tests through sufficient iterations to enable SIT complete

## **5.5 User Integration Testing**

User Integration Testing enables Users to run specific tests to support their implementation of a change. DCC expects that UIT will be required to support user implementation of this modification.

Individual changes are collected into a DCC release. In order to achieve more efficient User Integration Testing for all parties, the DCC will coordinate specific testing requirements for all changes that comprise a release and issue a testing release approach document. As such the costs of UIT are not included in this assessment.

## **6 Implementation Timescales and Releases**

Implementation of this change is assumed to follow a waterfall methodology. It is assumed that this change will be implemented as part of the November 2020 release alongside other Modifications. This change will take of the order of six months to achieve PIT Complete status, and suggests that the release will take 9 - 12 months to implement. However this duration will be confirmed as part of the FIA.

It might be possible to carry out a phased delivery of functionality in testing phases, but this has not been factored in calculations of timescales at this time.

As this change introduces a new DUIS schema it should be implemented as part of a wider DCC Release.

## 7 DCC Costs and Charges

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

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

Implementation costs							
Implementati on Phase	Design	Build	Pre- Integration Testing	System Integration Testing	User Testing	Implement to Live	Total
<b>SECMP0013</b>		£5,500,000		Not included	Not included	Not included	<b>£5.5m</b>
Implementation costs – supplementary information							
<b>Implementation cost assumptions</b>	<p>A. Costs are exclusive of VAT and any applicable finance charges</p> <p>B. Majority of the costs above represent labour costs.</p> <p>C. Costs provided for Design, Build and Pre-Integration Testing are quotes provided by the Service Providers with specific exclusions of costs as identified above and in section 8, Clarifications and RAID following. DCC have reviewed and challenged the costs from the Service Providers to ensure this reflects best price to date.</p> <p>D. Costs will be refined during future assessments.</p>						
<b>Explanation of Implementation Phases</b>	<p>DCC's implementation costs are provided by implementation phases. The following describes the purpose of each phase:</p> <ul style="list-style-type: none"> <li>• <i>Design: The production of detailed System and Service design to deliver all new requirements.</i></li> <li>• <i>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.</i></li> <li>• <i>Pre-integration Testing: Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC.</i></li> <li>• <i>System Integration Testing: All Service Providers' PIT-complete solutions are brought together and tested as DCC's Total Solution, ensuring all Service Provider solutions align and operate as an end to end solution.</i></li> <li>• <i>User Integration Testing: Users are provided with an opportunity to run a range of pre-specified tests in relation to the relevant change.</i></li> <li>• <i>Implementation to Live Costs: The solution is implemented into production environments and ready for use by Users as part of a live service. This service is subject to implementation costs.</i></li> </ul>						

The fixed price cost for an Impact Assessment is £92,549.

## **7.2 Impact on Charges**

This section describes the potential impact on Charges levied by DCC in accordance with the SEC.

DCC notes that SECMP0013 does not propose any changes to the charging arrangements set out in SEC Section K. DCC has made the assumption that, in the absence of an agreed alternative arrangement by the Working Group, the costs associated with the implementation of SECMP0013 will be allocated to DCC's fixed cost based and passed through to Parties via Fixed Charges.

Subject to the commercial arrangements put in place to support the relevant Release, DCC expects the increase in Charges associated with the implementation of SECMP0013 to commence in the month following the Modification implementation.



## 8 Clarifications and RAID

Note that at the time of the first release of this document, the Service Providers have asked for further clarifications about the proposed design. Responses to these clarifications could significantly impact this PIA and subsequent FIA.

In the following sections, Risks, Assumptions, Issues, and Dependencies have been identified as part of this Preliminary Analysis. It is very likely that more RAID items will be identified, and existing entries updated, at the time of a full FIA.

### 8.1 Clarifications

Clarifications provided as part of the Working Group outputs, which will require further assessment as part of the FIA are included below along with clarification from the previous PIA stage.

ID	Area	Clarification Requested	Detail	Status
MP13_CL1	HAN Divorce	A new command is to be introduced to tell a Smart Meter to leave its HAN. The Service Providers are requesting more detail, about the circumstances in which this capability is expected to be used.		Open
MP13_CL10	Reset and BSS	How is it envisaged that the resetting of devices will be communicated to back office systems? Without this notification, devices will still not be able to be installed again.	Interactions and resetting will be assessed as part of the FIA	Open
MP13_CL11	BER Return	Will CHs that are clearly BER (Beyond Economic Repair) always need to be returned to CSPs for disposal?	The FIA will include the capability to report Dead on Arrival CHs and disposal of HAN devices	Open
MP13_CT21	GPF	What actions must be carried out by the GPF when the CS02f Disconnect Smart Meter from HAN command is sent to a GSME in both a live installation and a QA installation?		Open
MP13_CT22	Firmware	Confirm expectations for how any firmware developed as part of this Modification and delivered as part of a	Assume: - Code deployed into PIT for this Modification will be branched off a version of	Open

		programme release will incorporate any modifications that have been delivered via maintenance releases	<p>firmware that is delivered via the Firmware Management Process (FMP)</p> <ul style="list-style-type: none"> <li>- Defects identified in Prod during PIT will not prevent PIT exit or SIT entry if the fixes are not in the codebase used in PIT. Telefónica expect a SIT test cycle will be used to assure this (outside of the scope of this Modification);</li> <li>- The Comms Hub firmware used to exit PIT will be a merge with whatever version of FMP code production candidate if Telefónica unilaterally view this to be reasonable and possible to merge in the timeframes for testing within the PIT window;</li> <li>- PIT exit and SIT entry criteria will not use FMP / OAB criteria and in particular defect masks will relate only to the functional change in the scope of the CR;</li> <li>- PIT exit and SIT entry is driven only by the production codebase maturity and does not consider not RTL / ITCH variants;</li> <li>- Regression test will include all test products.</li> </ul>	
MP13_CT23	History Device Log Dependency	Confirm if the act of joining a new HAN requires a Trust Centre re-join as per CR535 or as in the PA, Trust Centre Swap Out which would use a Hash Link Key instead of the Trust Centre Link key.	Assume using the Trust Centre re-join as per CR535	Closed

## 8.2 Risks

ID	Area	Risk Description	Mitigation	Impact
MP13_R1	Performance Measures	As we cannot guarantee coverage from the production SMWAN in commercial properties, a Communications Hub installed in a commercial property should not be included in Performance Measure 11 calculations.		M
MP13_DR2	Device Lifecycle	This change introduces state changes in the existing device life cycle. The complexity/feasibility of this is not fully assessed as part of this PA.		M
MP13_DR3	Meter and HAN Device Log	In order to restore a single meter's data from the HAN Device Log (which is currently stored as it is received from the source Comms Hub in DCC Data Systems) the HAN Device Log requires to be parsed and sub-set of it will need to be re-created in a manner the target Comms Hub can understand. This invalidates the integrity of the HAN Device Log. The feasibility of re-creating a HAN Device Log sub-set and the mechanism which will help a Comms Hub validate the sub-set of HAN Device Log are not fully assessed.		H
MP13_TR1	SEC Change	Service Users may carry out activities which result in the removal of a meter from the communications hub whitelist before executing the "divorce" command. If this happens, the divorce command will fail. Failure of the divorce command will mean the meters won't be restored to their original factory state which will allow them to join a new HAN. This in turn could result in Communications Hubs being incorrectly identified as not operating properly and mean an increase in returns.  Telefonica recommend that SEC should be modified to include clear instructions on how the Service Requests and capabilities being introduced by this Modification are to be used.		M
MP13_TR4	Performance Measures	Risk that Service Users will not ensure that communications hubs used to support the meter triage and diagnostics activity are consistently powered and reachable over the SMWAN. This may result in Telefónica not meeting some of the performance measures set out in Schedule 2.2. In mitigation of this risk, Telefónica has proposed that the Communication Hubs deployed to support meter and triage diagnostics are excluded from the following Performance Measures: <ul style="list-style-type: none"> <li>- PM 1.x - SMWAN connectivity</li> <li>- PM 2 – Cat 1 Firmware Payloads</li> <li>- PM 3.x – Cat2/3 HAN interface commands</li> <li>- PM 4.x – RTT 2/3/4</li> <li>- PM 5 – % Message Loss</li> </ul>		M

		- PM 12.x – Power Outage		
MP13_TR6	Scope	<p>There is a risk that CR1047, the delivery of which is assumed to occur before this development of this Modification, is delayed. If that is the case, the development of the changes described in CRP535 (which is in the scope of CR1047) may need to be brought into this Modification.</p> <p>Telefónica has not priced the delivery of CRP535 into this Modification and as such, this may result in longer delivery timescales and will require a review of the cost of delivery.</p>		H

### 8.3 Assumptions

ID	Area	Description	Accepted
MP13_A2	Release	Assumes that the delivery of this Modification will be aligned to a DCC release	Accept
MP13_A3	Release	Security and Protocol Certifications, SIT, UIT and any other test phases will be covered by a DCC release CR	Accept
MP13_A4	Testing	The cost of providing device emulators to support PIT testing is not included in the PA	
MP13_A5	Testing	PIT testing of Communications Hub will be based on a subset of meter test cases using meter device stub firmware	
MP13_A7	Testing	PIT Testing will not be conducted with real meters or other HAN devices, but with test stubs or emulators	
MP13_A11	Meter	Suppliers know which CH that meter was connected to.	
MP13_A12	Security	Private keys used by DCC or the Supplier shall not be replicated or configured to use public key certs (SMKI).	
MP13_A13	Security	Cannot move meter from live SMKI to not live SMKI.	
MP13_A14	Meter	Suppliers will provide the MPxN.	
MP13_DA20	Security	The GBCS Command to disconnect a device from HAN is not expected to update the security credentials. This PIA assumes that Release 2.0 covers security credentials updates (if any) required for this Modification.	
MP13_DA21	Device Responses	The new SRVs and the corresponding responses from devices are expected to introduce changes to the device states in inventory. It is assumed that these state changes will not require additional validation checks at the overall device commission / decommission flow.	High cost impact if more test

			scenarios needed.
MP13_DA23	Data	No changes are expected to the SMI data model.	
MP13_DA24	Location	One of the key assumptions made by the Initial SECAS solution design is that the devices, returned for fault checking and found fit after inspection, will be re-used in the same area of the Network Operator whose credentials are recognised by the device. This would add further complexities to the logistics of the returned Comms Hubs. This PIA assumes that the changes required to track this will be required only at the Service User's systems and shall not impact the DCC Total System. Compare with MP13_T39 below.	Medium cost impact if more use cases needed.
MP13_TA31	Testing	Assume that no uplift of the maintained meter Test Stubs is required to support the testing of the Communications Hub changes defined by this Modification	Open
MP13_TA32	CH Design	Assume that Service Users' managed triage capabilities have no impact on Communications Hub design beyond the additional commands stated in the Modification to manage HAN 'join' and 'divorce'	Open
MP13_TA33	SEC	SEC permits Service Users to install dedicated Communications Hubs in their test lab	Open
MP13_TA34	Security	SMKI certificate policy permits usage of these Communication Hubs in Service Users test lab for Internal quality control and triage purposes	Open
MP13_TA35	CH Warranty	CSPs will not be able to commit to the standard 'length of the contract warranty' warranty on the Communications Hubs used in the Service Users' warehouse for triage purposes, due to increased wear and tear	Open
MP13_TA35A	CH Warranty	Assume there will be a review of the warranty provisions at IA stage. This is due to the increased wear and tear on the communications hubs used to support triage and diagnostics and as such reserves the right to introduce requirement for use on the Service Users and/ or may reserve the right to review the warranty provisions for these devices.	
MP13_TA36	CHIMSM	The Comms Hubs used by Service Users for IQC and triage will follow Communication Hub Installation Maintenance Support Materials (CHIMSM) in relation to a Job Status Request (JSR) submission. Also assume that the Comms Hubs used by Service Users for IQC and triage will comply with the SEC requirements specified in CHIMSM in relation to SR8.14.1/2 (CHSU) submission.	Open
MP13_TA37	Support	The service management wrapper is as per production Communications Hubs	Open
MP13_TA38	Performance Measures	The Communications Hubs used in the warehouse for IQC and triage will be permanently powered on and within SMWAN coverage, such that Performance Measures are not unfairly negatively	Open

		<p>impacted. If this is not the case then CSPOs will require an exemption from Performance Measures on these devices. The performance measurements that would be excluded are:</p> <ul style="list-style-type: none"> <li>- PM 1.3 - SMWAN connectivity level Report</li> <li>- PM 2 – Cat 1 Firmware Payloads</li> <li>- PM 3.x – Cat2/3 HAN interface commands</li> <li>- PM 4.x – RTT 2/3/4</li> <li>- PM 5 – % Message Loss</li> <li>- PM 12.x – Power Outage</li> </ul>	
MP13_TA39	Location	The Service User will install the Communications Hubs for triage purposes inside the appropriate CSP coverage zone	Open
MP13_TA40	CHIMSM	Assume that all the Service Users' obligations relating to CHIMSM are met for any Communications Hubs installed within a Service User's warehouse	Open
MP13_TA41	CH Support	Assume that the existing responsibility for Communications Hub firmware upgrade applies to devices that are dedicated in Service Users' QA warehouses. This includes that the CSPs manage the scheduling of firmware distribution and activation activates and in accordance with Hypercare processes This was introduced in a CR which is not yet agreed and is therefore dependent to instigate the changes under this Modification.	Open
MP13_TA42	CH Support	Post Commissioning Obligations (PCO) continue to apply for Communication Hubs that are permanently installed within Service User warehouses.	Open
MP13_TA43	CH Support	Assume that asset and maintenance charge for Communication Hubs that are permanently installed within Service User warehouses to be as per normal process	Open
MP13_TA44	Support	No special measures will be taken to manage power outage events for these devices.	Open
MP13_C54	Version Support	The change will only be implemented in GFI and RTDS versions uplifted to GBCS 2.0. It will not be implemented in GFI and RTDS 1.3.X.	Open
MP13_C55	Security	The functionality does not require a material change to the security solution such as physical or logical separation from other parts of DCC Total System.	
MP13_C56	Support	The change will not require any separation of duty for the purposes of operational support.	
MP13_C57	Support	The introduction of the new Use Cases are feasible from a GBCS/SMETS/CHTS standpoint.	

MP13_TA61	SEC Change	<p>Assumed draft and propose modifications to the SEC to support this Modification and that these modifications will include at a minimum:</p> <ul style="list-style-type: none"> <li>- Obligations on Service Users to ensure Communication Hubs used to support meter triage and diagnostics are permanently powered on</li> <li>- Acceptance that Service Users are allowed to install dedicated Communication Hubs on their premises for the purpose of meter triage and diagnostics support</li> <li>- Obligation for Service Users to comply with the SEC requirements specified in CHISM in relation to SR8.14.1/2 (CHSU) submission</li> <li>- Obligation for Service Users to comply with the SEC requirements concerning return of Communication Hubs to the CSP</li> <li>- Obligation for Service Users to follow the prescribed steps for divorcing a meter from a HAN prior to attempting to join a new HAN for triage and diagnostics.</li> </ul>	
MP13_TA62	Specifications	Assume modifications to the GBCS / SMETS / CHTS specification will be based on a baseline that was iterated by the changes in CR 1047.	
MP13_TA63	SM WAN Coverage	Assume the Service User will install the Communications Hubs to be used for meter triage and diagnostics in a location where the appropriate CSP SMWAN coverage is provided.	
MP13_TA64	CHISM	Assume all the Service Users' obligations relating to CHISM are met for any Communications Hubs installed within a Service User's warehouse	
MP13_TA65	CH Management	Assume Communication Hubs which will be used to support the meter triage and diagnostics capability introduced by this Modification will be managed in the same way as any other production Communication Hub. This includes how and when Communication Hub firmware is deployed, with no specific requirement for the CSP to notify Service Users on firmware upgrade.	
MP13_TA66	CH Firmware	Assume firmware changes to support the delivery of this Modification will be managed as part of a DCC release operating in parallel with the maintenance release process.	
MP13_TA67	DUIS Version	<p>Assume the DUIS schema version used for the CSP management interface will not be required to increment because of this Modification.</p> <p>If this is not the case, then there will be additional effort to load the updated DUIS schema into Telefónica systems and to regression test this functionality in PIT.</p>	
MP13_TA68	Equipment Specification	Assume DCC-L will manage the process to define any equipment specifications related to hardware that Service Users are required to use to power the Communication Hub when using the functionality introduced in this Modification. Assume this will include any requirements that Telefónica identify.	

MP13_TA69	CH Returns	Assume for Communication Hubs which need to be returned to the CSPs, Service Users will go through the CHIMSM and wider SEC-defined steps related to Service Request processing and logistics interactions for production Communication Hubs.	
MP13_TA70	PIT Approach	<p>Assume the scope of the PIT Approach uplift that is required to support this Modification is limited to changes that are required to assure the specifications as noted in section 1.2.1 and do not introduce any additional scope including but not limited to:</p> <ul style="list-style-type: none"> <li>- Transmission of new GBCS commands to firmware compliant Communication Hubs;</li> <li>- Creation of new dataset to simulate data transfer from DCC on hubs used in this scenario;</li> <li>- Confirmation of correct service reporting and service reporting exemption behaviour;</li> <li>- Testing of new / modified reports;</li> </ul> <p>Potential introduction of multiple testing phases to consider reporting as a separate phase to all other aspects to occur after formal PIT exit / SIT entry.</p>	

## 8.4 Issues

None at this time.

## 8.5 Dependencies

Ref.	Dependency	Impact
MP13_DD1	There is a dependency on the implementation a new CRP 535 (DCC CR1047) which is expected to add the functionality required for this CR at the Comms Hub level. For the already installed Comms Hubs this would require a firmware upgrade. The detailed design and implementation plan of this CRP are not yet available.	Services Users will be unable to retrieve the relevant information to join the meter to a new communications hub. This may result in an uplift to this CR to deliver this functionality and an associated delivery cost impact and delay.
MP13_TD2	TSG specifications must include the changes in this Modification.	
MP13_TD3	Dependency on CPA security characteristics to be updated to align with the future TSG version.	If CPA is not updated to align with the new TSG specifications, then the change can't be delivered



MP13_TD4	Dependency on having in place a delivery programme to deliver this CR from PIT, to cover SIT, UIT and Live	Without a delivery programme coverage, the release of this change can't be completed
MP13_TD5	Dependency on the Go Live of R2.0 as this Modification cannot be delivered without an uplift to GBCS and the Dual Band Communications Hubs.	
MP13_CD6	DUIS, MMC and GBCS changes (both schema and documentation) must be identified, and all the changed documentation must be released before start of development activities related with the implementation of this CR.	
MP13_AD7	Delivery will be based on a stated GBCS version, most likely 3.3.	
MP13_AD8	Delivery of this CR is dependent on a DCC release CR to capture Test (post PIT), Certification and Release Management costs and activities within the release.	
MP13_DD11	The ability to read the TC Link Key Hash of the historic Devices connected to a Comms Hub will be implemented as part of CRP535. The DSP related changes for CRP535 will be implemented as part of CR1118. This CR depends on CRP535 changes and therefore CR1118 will need to be implemented either before or alongside this Modification.	High impact on the timescales.
MP13_DD12	The version of GBCS that includes the definition of the proposed use case CS02f (Disconnect Smart Meter from HAN) will need to be available before the implementation of this Modification commences.	High impact on the timescales.
MP13_TD14	<p>Dependency on DCC-L arranging for uplifted specifications (which may include GBCS / SMETS / CHTS) to be added within the following documentation prior to Telefónica deploying any Production firmware variants under this Modification attempting into the Production environment:</p> <ul style="list-style-type: none"> <li>- CPL template</li> <li>- SEC schedule 11 installation and maintenance validity periods</li> </ul> <p>Noting that the concepts that are introduced in SEC schedule 11 have not currently been incorporated within Telefónica's CSP contract</p>	<p>Firmware versions compliant with the GBCS version associated with this Modification cannot be submitted to the CPL if the CPL template does not support the specific GBCS version and therefore cannot be pre-notified or OTA'd onto installed Communication Hubs.</p> <p>If the SEC schedule 11 has not been updated, then the DCC will be non-SEC compliant should Telefónica deploy any Communication Hubs operating a firmware version associated with this Modification in the Production environment.</p>

MP13_TD15	Dependency on the DCC-L providing technical specifications or CRPs/IRPs related to any additional GBCS functionality related to this Modification prior to agreement of the Impact Assessment associated with this Modification.	Telefónica will produce a FIA based on material provided however this may include (1) additional planned delivery time to review and assess specifications and (2) retaining additional contingency related.
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## Appendix A: Glossary

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

Acronym	Definition
ASN.1	Abstract Syntax Notation protocol (protocol specification)
BEIS	Department for Business, Energy and Industrial Strategy
CH	Communications Hub, Comms Hub
CHF	Communications Hub Function
CHIMSM	Communication Hub Installation Maintenance Support Materials
CHM	Communications Hub Manager
CHTS	Communications Hub Technical Specification
CH2 CHDS	Communications Hub Detailed Specification
CPA	Commercial Product Assurance
CR, CRP	Change Request, BEIS Change Request
CSP	Communication Service Provider
CSPM	CSP Management Gateway
DBCH	Dual Band Communications Hub
DCC	Data Communications Company
DLMS/COSEM	Protocol used for energy metering
DSP	Data Service Provider
ESME	Electrical Smart Metering Equipment
FIA	Full Impact Assessment
FMP	Firmware Management Process
GBCS	Great Britain Companion Specification

GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
HDE	HAN Device Emulators
iQC	Inbound Quality Check
IRP	Issue Resolution Proposals, used as technical CRs to the regulatory documents (DUIS/MMC, SMETS and GBCS)
JSR	Job Status Request
MPxN	Generic term to include MPANs (Meter Point Administration Number) and MPRNs (Meter Point Registration Numbers).
NO	Network Operator
OAB	Operational Acceptance Board
OTA	Over The Air
P & C	Parse and Correlate
PIA, PA	Preliminary Impact Analysis
PIT	Pre-Integration Testing
PM	Performance Measures
PPMID	Pre Payment Meter Interface Device
QA	Quality Assurance
RTDS	Reference Test Data Set
SBCH	Single Band Communications Hub
SEC	Smart Energy Code
SIT	Systems Integration Testing

SMETS	Smart Metering Equipment Technical Specifications
SMHAN, SMHAN	Smart Metering Home Area Network
SMI	Smart Metering Inventory
SMWAN, SMWAN	Smart Metering Wide Area Network

SP	Service Provider
SR	Service Request
TSG	Technical Specifications Group
UIT	User Integration Testing
WAN	Wide Area Network

## Appendix B: Changes to Support Requirements

This Appendix includes information on changes to the SEC and Technical Specifications. Note that the version numbers and some of the text is yet to be finalised; in these cases this is marked by [TBC] indicating the numbering or text is To Be Confirmed.

### Annex A: Changes to Support Requirement 1

The following additions are to be incorporated at the version of SEC and Technical Specifications at which this Modification is to be implemented.

#### APPENDIX AB - Service Request Processing Document

Immediately before clause 16, insert the following clause:

15.5 Where the DCC receives a Response from a Device indicating the Successful Execution of a 'Disconnect Smart Meter From HAN' Service Request, the DCC shall set the SMI Status of the relevant Device to 'pending', disassociate the Device in the Smart Metering Inventory from any Communication Hub Function with which it is Associated and end any record of linkages between the Device and MPAN(s) or MPRN (as applicable).

#### APPENDIX E - DCC User Interface Services Schedule

Add the following row:

Service Reference	Service Reference Variant	Description	Eligible Users	Target Response Time	Non-Device Services	Notes
[TBC]	[TBC]	Disconnect Smart Meter From HAN	Import Supplier, Gas Supplier	30 seconds		

#### APPENDIX AD - DCC User Interface Specification

[TBC but to add new Service Request]

## APPENDIX AF - Message Mapping Catalogue

[TBC but to add new Service Request]

### Schedule 9 - SME Technical Specifications Version [TBC]

In section 4.5.3 add the following new subsection:

#### **Disconnect from Smart Metering Home Area Network**

A Command to disconnect from the ZigBee SEP Smart Metering Home Area Network over which the GSME is currently communicating, and place the GSME in a state where it is capable of establishing communications with a new ZigBee SEP Smart Metering Home Area Network.

In section 5.6.3 add the following new subsection:

#### **Disconnect from Smart Metering Home Area Network**

A Command to disconnect from the ZigBee SEP Smart Metering Home Area Network over which the ESME is currently communicating, and place the ESME in a state where it is capable of establishing communications with a new ZigBee SEP Smart Metering Home Area Network.

### Schedule 8 - GB Companion Specification Version [TBC]

Section 13 is titled "Managing Security Credentials on Devices". Keep the existing sections and then add a new section at the end as follows:

#### Section 13.9 – CS02f Disconnect Smart Meter from HAN

Add the section 13.9 in the embedded document after Section 13.8:



section 13.9.docx

In "Section 20 Mapping Table" in the Table 20, Use Case reference tab, add the first row specified in the Use Case reference tab of the Annex C embedded document. This table is found on page 41 following.

## Other Documents

Changes related to testing may also be required.

### Annex B: Changes to Support Requirement 2

The following additions are to be incorporated at the version of SEC and Technical Specifications at which this Modification is to be implemented.

Note: No changes to CHTS are specified since there will be existing requirements for CH to support 'Read Operational Data' (and the CHF Historic Device Log is Operational Data), Read Configuration Data' (and the CHF Device Log is Configuration Data) and 'Restore CHF Device Log'. **[DN: to confirm whether the BEIS CRP will include the reads already, and therefore they do not need to be part of this modification]**

#### APPENDIX E - DCC User Interface Services Schedule

Add the following rows:

Service Reference	Service Reference Variant	Description	Eligible Users	Target Response Time	Non-Device Services	Notes
[TBC]	[TBC]	Read Current and Historic HAN Device Logs	Import Supplier, Gas Supplier	30 seconds		
[TBC]	[TBC]	Restore Specified HAN Device Log for Specified Smart Meter	Import Supplier, Gas Supplier	30 seconds		

## APPENDIX AC - Inventory Enrolment and Withdrawal Procedures

Amend clause 4.3 with the underlined text as follows:

4.3 Following the Successful Execution of a 'Restore Specified HAN Device Log for Specified Smart Meter' or an 'Update HAN Device Log' Service Request requesting the addition of a Device to the Device Log of a Communications Hub Function, the DCC shall: (a) update the Smart Metering Inventory to Associate the Device with the applicable Communications Hub Function; (b) in the case of Smart Meters only, record the MPAN(s) or MPRN (as applicable) provided within the Service Request against that Smart Meter and notify the Electricity Distributor or Gas Transporter (as applicable) of the MPAN(s) and/or MPRN and of the Smart Meter's Device ID and Device Type; and (c) other than in the case of a Type 2 Device, set the SMI Status of the Device to 'whitelisted'.

## APPENDIX AD - DCC User Interface Specification

[TBC but to add new Service Requests. The 'Restore Specified HAN Device Log for Specified Smart Meter' SR will need to have 3 parameters: Smart Meter EUI-64 ID; the base64 encoded version of the CHF Device Log to be restored and the MPxN to be linked to the Smart Meter.]

## APPENDIX AF - Message Mapping Catalogue

[TBC but to add new Service Requests]

## Schedule 8 - GB Companion Specification Version [TBC]

To Table 20, Use Case reference tab, add the second row specified in the Use Case reference tab of the Annex C embedded document.

To Table 20, SMETS Required objects tab, add the rows specified in the SMETS Required objects tab of the Annex C embedded document.

This produces the new CCS07 Use Case and Message Template as in the following embedded documents: **[DN: Use Case and Message Templates to be incorporated]**



## Other Documents

Changes related to testing may also be required.

### Annex C: GBCS Section 20, Table 20 Additions



secmp00013 table  
20 additions.xlsx

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This adds the new Use Cases and corresponding GBZ and DLMS/COSEM Message Templates. The additions are as per the following embedded documents

Resulting Use Cases and GBZ Message Templates



SECMP0013 Use  
Cases.html

Resulting DLMS/COSEM Message Templates:



SECMP0013 DLMS  
Message Templates.