Data Communications Company

SEC Modification Proposal, SECMP0122B, multiple Change Requests

Operational Metrics

Preliminary Impact Assessment (PIA)

Version:	**0.93**
Date:	**8th December, 2020**
Author:	**DCC**
Classification:	**DCC Public**

Data Communications Company

Contents

1 Document History

1.1 Revision History

Revision Date	Revision	Summary of Changes
04/09/2020	0.3	Initial draft version, internal DCC review
02/10/2020	0.51	Changed Mod name to SECMP0122B, interim release to SECAS
24/10/2020	0.8	Added detail on technical sections
7/12/2020	0.92	Updated ROMs and durations

1.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	MP122 Business Requirements v1.2 (draft6)	SECAS	24/07/2020
2	MP122 Preliminary Assessment Request	SECAS	14/05/2020
3	OPSG OMR Report Final	OPSG	12/05/2020`
4	MP122 DCC Preliminary Assessment v0.5	DCC	25/06/2020
5	SECMP0122 FIA February 2021 Release	DCC	03/09/2020

References are shown in this format, [1].

2 About this Document

The Proposer for this Modification is Gemma Slaney from Western Power Distribution. The original proposal was submitted on 24th March 2020.

As part of the process of developing a solution for this Modification, two tranches of work were identified:

1. Where the data is identified as being already available to the DCC Technical Operations Centre (TOC), working within the constraints of the current solution should involve no commercial change to the DCC Solution, although there will be a direct impact on support and maintenance. This is referred to as the "February 2021 Release". Document [5] contains the Full Impact Assessment for this functionality.

2. Where further "external data" has been identified, it has been separated out with individual DCC Change Requests sent to the relevant Service Providers, as identified in the solution analysis. These data requests are highlighted in this document, and are considered as PIAs with a ROM cost assessed for each requirement. If the Working Group decides it wants to go ahead with this external data and associated development, it will be sent out for a FIA.

Note that these additional external data requests will also require contractual negotiations between the DCC and the impacted Service Providers, which is expected to take at least six months to complete. These changes were grouped into an arbitrary release for ease of reference, although detailed planning will be required if DCC is given the go ahead to include this data. In order to distinguish this document from previous released documents, this "branch" of the Modification is referred to as SECMP0122B.

The context, Business Requirements, specific measures and indicators, and supporting material which are the background to this Modification are included in document [5].

3 Change Request CR1418, Throughput of Alerts

This Change Request is related to Requirements 2.1.2 and 2.2.8 described in document [1]. The functionality required from Service Providers other than the DSP is covered in CR1438 described following. To complete this change will require implementation of both CR1418 and CR1438, although delivery of CR1418 alone would give reporting for CSP South and Central.

The DCC TOC currently does not receive any data from the CSPs containing measurements from when the alert reaches the Comms Hub. The DCC also cannot currently identify when an alert enters the Service User's gateway, only when the DSP tried to send it to them. These changes will require further data supply and contractual change as described in CR1418 and CR1438.

3.1 Business Requirements

DCC require the following requirement is to be assessed to enrich TOC data and a PIA produced:

[A] - DSP shall identify the throughput of all Alerts at the following points: Received by Comms Hub/Devices (where this can be logged), Received by CSP/S1SP, Passed to the DSP, Received by the DSP, Passed to Service User and the Service User handshake received confirming receipt.

[B] - Pursuant to Requirement A, the DSP shall provide data to TOC at intervals of 15 minutes.

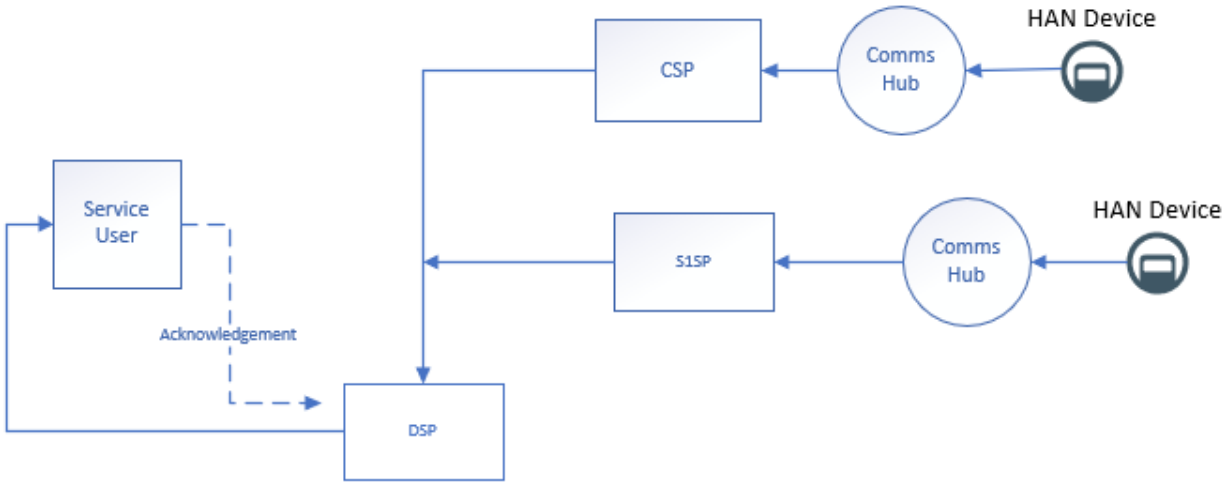

Figure 1: Schematic Diagram of Alert Flow

3.2 Solution Context

This change to the DSP will provide timing information for Device Alerts from SMETS2 Devices, and SMETS1 Alerts associated with SMETS1 Devices. This will enable DCC to improve the logging and understanding of alert performance.

The scope of the solution will include DCC Alerts used to carry Device Alert information when it is not feasible for the Device to target a Device Alert at a User directly, such as Device Alerts from PPMIDs.

This CR provides additional timing points for the following alert types:

- Device Alerts from SMETS2 Devices, in two categories:
  - those delivered as Device Alerts to the Service User;
  - Device Alerts where the target is DSP (i.e. the Access Control Broker (ACB) User ID) and DSP generates DCC Alerts to deliver the information to Users, namely N39, N53 and N54[1]
- SMETS1 Alerts, which are based on alerts from SMETS1 Devices[2]

The following alert types are out of scope:

- DCC Alerts not used to deliver Device Alert information
- SMETS1 Service Provider (S1SP) Alerts

3.3 DSP Solution Design

DSP will deliver a new logging facility in addition to the Service Audit Trail (SAT). This log will provide additional data from within the alerts, or additional timing points from the CSP or S1SP to be communicated to DSP along with the alert. This data will show the lifespan of the alerts, including alert generation time (where available), time of arrival at DSP, time of leaving, and time of acknowledgement by the Service User.

Where supported two other timing points will be in the log, namely time received at the Comms Hub and time received at the CSP/S1SP. C changes will be required to the SMWAN interfaces with the Arqiva CSP and with the S1SPs. It should be possible for the CSP North to fully support these but will require changes as detailed in CR1438.

CSP South and Central messages are delivered directly from the Comms Hub to the DSP, and rather than adding the time received at the CSP, the User Datagram Protocol (UDP) packets sent by CSP South and Central already contain the Comms Hub received time and data. This will be extracted from the packets by the DSP.

The two new timing points will be added to the S1SP SMWAN interface and should be supported by S1SPs where feasible, but the ability to support the Comms Hub received time may vary by device model, so that timing points may not be populated in all cases. SMETS1 Alerts are sent to DSP as defined in DUIS and includes a signature by the S1SP. To be able to add metadata to the alert data, it will be necessary to define a new wrapping structure in the S1SP SMWAN interface (note that this is not part of DUIS), which will contain the SMETS1SignedResponse along with the new metadata. Responses to Service Requests are also carried in the SMETS1SignedResponse, so this change will require regression testing of those too.

For DCC Alerts that are used to carry Device Alerts where they cannot be targeted directly at the User by the Device (e.g. from PPMIDs), timing information of the Device Alerts will also be recorded in the SMWAN Gateway, and will be added to logging information from the generation of the DCC Alert.

The **Alert Supplementary Timing Log** is expected to have characteristics as follows:

- Logs will be issued periodically at intervals of 15 minutes (or 50Mb if reached before 15 minutes)

[1] In some cases there may be more than one DCC Alert triggered by the same Device Alert targeted at the DSP.
2 SMETS1 Alerts do not always correspond to alerts originated by devices, i.e. they can originate from within a S1SP.

- Where no Device Alerts/SMETS1 Alerts are sent in a reporting period, no logs shall be issued
- A new row will be created for each alert, containing information about the end-to-end timing of the delivery of that alert
- Logs will include data from DSP inspecting alert payload data and lookups in the Smart Metering Inventory (SMI)

The data within in the **Alert Supplementary Timing Log** is will include the Device Alert Code or SMETS1 Alert Code and supporting information.

The following DSP Components will be affected:

- the two SMWAN Gateways and the SMETS1 SMWAN Gateways
- amendments to the SMETS1 SMWAN interface spec
- Transform
- Enterprise Systems Interface (ESI) reporting to deliver the new logs to the TOC.

3.3.1 Other DSP Changes and Impacts

Security Impact	Assumes that the change will not require a penetration test, changes to the Protective Monitoring solution or any additional encryption. A more detailed Security impact will be carried out as part of the FIA.
Safety Impact	A preliminary safety impact assessment indicated a systems safety impact. An update of the DSP Safety Case deliverables and safety impact assessment of the revised DSP design will also be required – this effort will be part of the Full Impact Assessment.
Infrastructure Impact	This change will require some additional processing to extract information from alert messages and additional disk space to store the logs. DSP will need to analyse additional resource requirements as part of the Full Impact Assessment. No costs have been included in the indicative pricing for additional infrastructure.
Integration Impact	Significant System Integration Testing (SIT) will be required, which will include the creation of at least two new test scenarios and two new test scripts. It is assumed that no User Integration Testing is required as the log is for DCC use only.

3.4 Timescales and Costs

As the changes will impact the DCC Total System, this change should be aligned to a scheduled SEC Release. A likely candidate will be identified in the FIA.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1418	£8,702	30 days	£300,000 - £450,000	3 Months

4 CR1438, Throughput of Alerts

This Change Request is related to Requirements 2.1.2 and 2.2.8 described in document [1]. The functionality required from Service Providers other than the DSP is covered in this CR1438. To complete this change will require implementation of both CR1418 and CR1438.

The DCC TOC currently does not receive any data from CSP North and the S1SPs containing measurements from when an alert reaches the Comms Hub. CGI South and Central data is already available. The DCC also cannot currently identify when an alert enters the Service User's gateway, only when the DSP tried to send it to them. These changes will require further data supply and contractual change as described in CR1418 and CR1438.

4.1 Business Requirements

DCC require the following requirement is to be assessed to enrich TOC data and a PIA produced:

[A] The Service Provider shall identify the throughput of all Alerts at the following points: Received by Comms Hub/Devices (where this can be logged), Received by CSP/S1SP/ DCO, Passed to the DSP

[B] The Service Provider shall provide reporting to DCC identifying receipt of an alert from HAN Devices, the Communications Hub (where this is available) shall record the date and time

[C] Pursuant to [A], the Service Provider shall provide data to the TOC at intervals of 15 minutes.

Note these requirements relate only to device alerts while S1SP Alerts are out of scope.

4.2 Solution Context

This change to the CGI IE will provide timing information for Device Alerts from SMETS2 Devices, and SMETS1 Alerts associated with SMETS1 Devices. This will enable DCC to improve the logging and understanding of alert performance.

The scope of the solution will include DCC Alerts used to carry Device Alert information when it is not feasible for the Device to target a Device Alert at a User directly, such as Device Alerts from PPMIDs.

As described for CR1418, this CR provides additional timing points for the following alert types:

- Device Alerts from SMETS2 Devices, in two categories:
    - those delivered as Device Alerts to the Service User;
    - Device Alerts where the target is DSP (i.e. the Access Control Broker (ACB) User ID) and DSP generates DCC Alerts to deliver the information to Users, namely N39, N53 and N54[3]

[3] In some cases there may be more than one DCC Alert triggered by the same Device Alert targeted at the DSP.

- SMETS1 Alerts, which are based on alerts from SMETS1 Devices[4] (though it should be)

The following alert types are out of scope:
- DCC Alerts not used to deliver Device Alert information
- SMETS1 Service Provider (S1SP) Alerts

4.3 CGI IE Solution Design

CGI IE will be modified to capture additional information to support the requirements, as follows.

The solution will record a timestamp at an additional timing point for those SMETS1 Alerts which are based on alerts from SMETS1 Devices. The additional timestamp will be included in the messages for SMETS1 Alerts passed to the DSP over the SMWAN interface, which will be modified accordingly to include this.

There are multiple device interactions involved in the retrieval of alerts from devices by the IE S1SP, so the additional timing point will be the time at which the final communication from a Device in relation to an Alert Response reaches the S1SP. This is the same time which is used when calculating performance measure PM1.5.

It is assumed that the additional timestamp passed to the DSP will be included in the feed from the DSP to the TOC.

The time at which the IE S1SP passes messages to the DSP is already captured locally by the system in the Security Module audit logs. CR1362 'S1SP/DCO Service Audit Trail Data for TOC' covers the change to feed this information to the TOC. The costs are not included here but to meet this requirement CGI IE will have to deliver CR1362.

4.3.1 Other DSP Changes and Impacts

Security Impact	Assumes that the change will not require a penetration test, changes to the Protective Monitoring solution or any additional encryption. A more detailed Security impact will be carried out as part of the Full Impact Assessment.
Safety Impact	A preliminary safety impact assessment indicated a systems safety impact. An update of the DSP Safety Case deliverables and safety impact assessment of the revised DSP design will also be required – this effort will be incurred in the FIA.
Infrastructure Impact	This change will require some additional processing to extract information from alert messages and additional disk space to store the logs. DSP will need to analyse additional resource requirements as part of the Full Impact Assessment. No costs have been included in the indicative pricing for additional infrastructure.
Integration Impact	No Integration Testing will be required.

[4] SMETS1 Alerts do not always correspond to alerts originated by devices, i.e. they can originate from within a S1SP.

4.4 Other Service Provider Changes

Secure will provide S1SP's Service Audit Trail (SAT) to the DCC TOC periodically over with the following time-points:

- T1 When alert condition was triggered in device
- T2 When alert was sent by CH and received by SMSO
- T4 When alert condition was notified to IP5B
- T5 When alert was delivered by IP5B to DSP

One SP believes they cannot provide data for alerts received by CHF.

CSP North has indicated a significant impact on their systems including impacts to Message Motorway, Network Traffic and Spectrum requirement, the Business Support Systems (BSS) including data and structure changes to Billing and Financials, performance measures and service reporting.

4.5 Timescales and Costs

As the changes will impact the DCC Total System, this Modification should be aligned to a scheduled SEC Release. A likely candidate will be identified at the Full Impact Assessment stage.

The expected time to design, develop, and implement the DSP changes will be approximately 6 months.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1438	£210,000	50 days	£1,600,000 to £2,000,000	12 Months

5 CR1420, Incident Reporting to Support Revised PMR

This Change Request is related to Requirement 5 described in section 2.5 of document [1], with a further breakdown of incidents and an accelerated response time from the Service Providers.

5.1 Business Requirements

DCC require the following requirement is to be assessed to support the revised Performance Measurement Reporting (PMR) and a PIA produced:

[A] All Incidents logged in Remedy shall be reported by Category, with statistics identifying number of Incidents per Category, the number that met the Target Initial Response Time and the number that met the Target Resolution Time, broken down by Resolver Group where the resolver is DCC, DSP, CSP, S1SP, DCO or other Service Providers.

[B] Pursuant to [A], the reporting shall be provided to support the revised PMR within 1, 2, 3, 5 Working Days of Month End (rather than current 10 Working Days).

5.2 Solution Description

As the DCC is using data already in the TOC, the impact is limited to reducing the delivery timescales from 25 to 10 days and manual workarounds from the Service Providers. This requirement does not impact the DCC Total System, but rather Services Teams for each Service Provider. In this PIA the costs presented are those associated with setting up and delivering the new requirements, rather than the Application Support (ongoing) costs. The latter costs will be established in any FIA.

At the end of each measurement period, Secure today receives PM025 data from DCC, and Secure provides following 4 deliverables as initial submission as part of performance reporting package by 10th Business Day following measurement period end:

- ESI-101 file
- ESI-102 file
- Service Level Management Report (SLMR)
- Performance Monitoring Report

All the Service Providers noted the intention to change the format and content of the ESI-101 and ESI-102 files, which would entail extra work for all. The details of this work will be established in the Full Impact Assessment.

5.2.1 DSP and CGI IE Service Impact

For Requirement A: The DSP and CGI IE services will meet this requirement subject to the following dependencies:

- DCC will make the PM025 DCC Service Management System (DSMS) Report available to DSP daily.
- PM025 will contain the Incident Severity for each Incident.

For Requirement B: The DSP and CGI IE services will meet this requirement, producing the Monthly Performance Report by Working Day 2 instead of Working Day 10, by following the updated process below:

1. DSP will review and provide updates for PM025 on a weekly or ad-hoc basis during each month

2. DSP will provide draft performance measures for PM4.1, PM4.3 and PM4.4 split by Incident Category by working day 2 after month end

3. DCC will respond to the draft performance measures by working day 4

4. DSP and CGI IE will issue the final performance measures by working day 5

The impact on the DSP contract and associated service credits will be reviewed if this change proceeds to Full Impact Assessment.

Both the DSP and CGI IE have indicated a risk in 2 – 5 day cases where they might not be able to meet required turnarounds at the end of the month. DCC have proposed that reporting is included in a monthly return, but commentary and responses from the Service Providers will be included in the following month's report.

5.2.2 CSP South and Central

CSP South and Central have indicated that using their existing systems, they can only deliver the reports based on current agreed timelines for PM7.4 which is 10 working days from month end. These costs include estimated changes to Performance Measures. However, CSP South and Central believe that a complete overhaul of their performance measures relating to this requirement is required. The anticipated changes include:

- Design, build and system test modifications to the Telefónica CSP solution to support the delivery of the revised performance measures covering the following:
    - Decommissioning of the existing PM7.4 performance measure and associated report for: ‘Percentage Incident Resolution of Severity 3, Severity 4 and Severity 5 Incidents within SLA’
    - Establish new and separate PM7.x performance measures for: ‘Percentage Incident Resolution of **Severity 3** Incidents within SLA', ‘Percentage Incident Resolution of **Severity 4** Incidents within SLA’ and ‘Percentage Incident Resolution of **Severity 5** Incidents within SLA’.
- Testing of the Telefónica solution up to and including the PIT test phase
- Deployment and testing of the changes in Telefónica’s PIT environment, including non-functional testing.

As per the PM7.4 report, incidents will be sourced from the Telefónica Remedy system rather than the DCC-L Remedy system.

It should be noted that CSP South and Central have noted a dependency on a separate DCC CR1405 before proceeding with this change. There is a risk raised by the CSP South and Central that there may be significant differences between data provided at the stage of two working days after month end compared to five working days.

5.2.3 Other Service Providers

Other Service Providers that were less impacted by these changes identified that some setup would be required, but there would also be a permanent addition to Application

Support levels required. The Application Support costs have not been captured at this stage but will be fully assessed at the FIA.

Several SPs noted potential contractual changes required to implement this change. These costs have not been included in the costs below. One Service Provider is part of the SMETS1 FOC and provided a ROM only; they will not be available to carry out a FIA until at least February 2021.

5.3 Timescales and Costs

As the changes do not impact the DCC Total System, this Modification can be scheduled outside the SEC Release dates. A likely candidate will be identified at the Full Impact Assessment stage.

The expected time to design, develop, and implement the DSP changes will be approximately 1 month.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1420	£247,706	30 days	£1,520,000-£1,550,000	3 Months

It should be noted that all Service Providers believed this change should be carried out alongside CR1430, stating both as dependencies. In some cases, it was noted that implementing both CR1420 and CR1430 together will result in synergies and potential economies of scale, thus reducing the costs, and in some cases it was noted that this forms a dependency between the two Change Requests.

6 CR1430, PMR Reduced Timescales

This Change Request is related to Requirement 4 described in section 2.4 of document [1], with a further breakdown of incidents and an accelerated response time from the Service Providers.

6.1 Business Requirements

DCC require the following requirement is to be assessed to support the revised PMR timelines and a PIA produced:

[A] All existing reports provided to support the DCC Performance Measures Report which include ESI-101, ESI-102 and the Service Provider Monthly Performance Measurements Report are to be provided to DCC on Working Day 2 following Month End. For clarity, this is to be the initial submission.

[B] If a final submission is applicable, the Service Provider shall provide DCC with an uplifted set of reports which include ESI-101, ESI-102 and the Service Provider Monthly Performance Measurements Report by Working Day 5 following Month End.

[C] Relevant to ESI-101, ESI-102 and the Service Provider Monthly Performance Measurements Report, on request from the DCC the Service Provider shall provide DCC with supporting commentary for any events that impact meeting the SLAs contained within these reports as events occur and are investigated throughout the month on request from the DCC within 2 Working Days.

[D] Relevant to the reports identified in this CR, the Service Provider shall provide commentary as events occur and are investigated throughout the month on request from the DCC within 2 Working Days.

6.2 Solution Description

This requirement does not impact the DCC Total System, but rather Services Teams for each Service Provider. As part of this PIA the costs presented are those associated with setting up and delivering the new requirements, rather than the Application Support (ongoing) costs. The latter costs will be established in any FIA.

At the end of each measurement period, the Service Providers today receive PM025 data from DCC, and Secure provides following 4 deliverables as initial submission as part of performance reporting package by 10th Business Day following measurement period end:

- ESI-101 file
- ESI-102 file
- Service Level Management Report (SLMR)
- Performance Monitoring Report

All the Service Providers noted the intention to change the format and content of the ESI-101 and ESI-102 files, which would entail extra work. The details of this work will be established in the FIA.

6.2.1 DSP and CGI IE Service Impact

For Requirement A, the DSP and CGI IE service teams will meet this requirement, producing the Performance Measures Report (initial submission) by WD 2 instead of WD 10, by following an updated process.

The ESI-101 and ESI-102 reports will also be issued by DSP on WD 2.

6.2.2 CSP South and Central

CSP South and Central believe that a complete overhaul of their performance measure system relating to this requirement is required. The initial PIA estimate provided is being challenged by DCC; the costs for both the FIA preparation and ROM are not acceptable.

6.2.3 CSP North

CSP North have not completed their PIA response yet. Discussions have indicated a significant cost with a concern that they might not be able to meet the reqired time to time taken to quality check and validate figures in many cases.

6.2.4 Other Service Providers

Several SPs noted potential contractual changes required to implement this change. These costs have not been included in the costs below.

Other Service Providers that were less impacted by these changes identified that some setup would be required, but there would also be a permanent addition to Application Support levels required. The Application Support costs have not been captured at this stage.

The DXC Service Provider is part of the SMETS1 FOC and provided a ROM only; they will not be available to carry out a FIA until at least February 2021.

Trilliant's Service Level Reporting Service Design involves interaction and a review with DXC and the DCC. The BAU process timeline is 10 days and determining detailed steps will require a review with DXC. Changes to the ESI reporting will be estimated as part of the FIA.

Secure have indicated significant exclusions to the required reporting as shown below. Changes to meet the lowest number of working days in the requirement

6.2.5 Exclusions and Exceptions

In specific cases, the Service Providers have indicated they might not be able to support specific reporting by set numbers of days as follows.

Service Provider	Measure	WD	Notes
Capgemini	Reporting the TRT	2	may not be possible due to amount of time taken to prepare the report
CGI IE	Incident Response, Notification and Resolution	2 - 5	More frequent review makes Incidents raised earlier in the month easier to agree on but, as timelines are tight at the start of the month, it makes it harder to agree Incidents that are raised very late in the month. Hence there might be a

			small number of Incidents that are not agreed by WD 2 and might not be agreed until WD 5.
CGI IE	Problem Management	2 - 5	More frequent review makes Incidents raised earlier in the month easier to agree on but, as timelines are tight at the start of the month, it makes it harder to agree Incidents that are raised very late in the month. Hence there might be a small number of Incidents that are not agreed by WD 2 and might not be agreed until WD 5.
Critical Software	Requirements A, B, and D		Critical Software is dependent on receiving the DSMS data from DCC, and clarification of any questions that may arise during the analysis of the referenced data from the Application, Network, and Security Operations (ANSO)[5] and DCC. This is due to Critical Software not having direct access to the DSMS and must obtain this data from these intermediaries for further analysis. Believe they cannot meet these requirements due to data supply concerns.
CSP	Incident Response, Notification and Resolution	2 - 5	There is a risk raised by the CSP South and Central that there may be significant differences between data provided at the stage of two working days after month end compared to five working days.
CSP	Requirements C and D	2+	Responses and commentary relating to the 2 WD taken to quality check and validate figures for requirements C and D would be best endeavours as CSP South and Central need to work with their vendors/contractors to obtain this information, and cannot guarantee a timely turnaround.
DSP	Incident Response, Notification and Resolution	2 - 5	More frequent review makes Incidents raised earlier in the month easier to agree on but, as timelines are tight at the start of the month, it makes it harder to agree Incidents that are raised very late in the month. Hence there might be a small number of Incidents that are not agreed by WD 2 and might not be agreed until WD 5.
Secure	Requirement A	7	With existing system Secure will not be able to reduce this timeline from 7WD following measurement period end because TRT's of some of the transactions takes up to 48 hours, and is coupled with further reporting server processing and authored report generation. It will take a "major change" to the core S1SP and reporting system and corresponding performance testing to reduce the time further which will require significant cost, an in-depth review and technical assessment.

[5] The (ANSO) service is provided by DXC for the Trilliant Head-End system

			Note: CSP reporting which may not be available to Secure earlier, is essential for generation of this performance report package
Secure	Requirement B		Following cannot be reduced below 10 WD after period end: a) SLMR reporting b) Operational effective report: Capacity and availability report c) Service failure report d) Quarterly summary report e) Annual summary report
Secure	Requirement C		Secure believe they could respond to all cases in 3WD, but can attempt to close by 2WD.
Vodafone	All		Do not believe they could meet any of the requirements without "significant investment" in systems and current reporting processes

For 2 – 5 day cases where the Service Providers have indicated they might not be able to meet required turnarounds at the end of the month, DCC have proposed that reporting is included in a monthly return, but commentary and responses from the Service Providers will be included in the following month's report.

Other dependencies and potential issues have been reported, and would be investigated in a FIA.

6.3 Timescales and Costs

As the changes do not impact the DCC Total System, this change can be scheduled outside the SEC Release dates. A likely candidate will be identified at the Full Impact Assessment stage.

The expected time to design, develop, and implement the DSP and CGI IE changes will be approximately 3 months.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1430	£323,667	40 days	£2.03-£2.18million	12 Months

For both the Secure and Vodafone responses, DCC intend to revisit these quotes from the SPs, and ask them to re-submit quotes to indicate the changes required in their systems and processes to match the requirement. By contrast the CSP South and Central response aims to meet all the requirements but at a significant effort and cost. DCC have included a reduced estimate for CSP South and Central in the above costs, but note this is still a work in progress and may end up costing significantly more. CSP South and Central do not believe they could start work on the FIA without significant mobilisation time.

It should be noted that several Service Providers believed this change should be carried out alongside CR1420, stating both as dependencies. In some cases it was noted that

implementing both CR1420 and CR1430 together will result in synergies and potential economies of scale, thus reducing the costs. In some cases it was noted that this forms a dependency between the two Change Requests. The costs have been left as standalone at this stage.

In addition this change would have an impact on both contracts and Application Support costs for the Service Providers. These have not been provided in the costs above but will be fully assessed as part of the FIA.

7 CR1421, SRV 11.1 (Update Firmware)

CRs 1421, 1423, and 1440 are Smart Metering System dependent, and will have Smart Metering System changes associated with them. The solution for CR1421 (which is included in SECMP0007) forms the basis for CR1423 and CR1440.

As SECMP0007 has now been approved, with expected implementation in the DSP in November 2021, and CSP uptake follows in later releases, CR1421 should be considered redundant. However, TOC development and reporting requirements will still need to be carried out to enable firmware update reporting (after SECMP0007 Go Live) and is covered by the DCC estimates stated following.

8 CR1423, Comms Hub Firmware Image Data

This Change Request is related to Requirement 2.1.1 and 2.2.7 of document [1], with reporting on the attempts and success of the download of Comms Hub Firmware Images.

8.1 Business Requirements

DCC require the following requirement is to be assessed to support the revised PMR timelines and a PIA produced:

[A] Messages to upgrade Comms Hub Firmware Images are not visible to DCC as they are sent directly on CSP and S1SP networks. DCC need to report on attempts and success of the download of Comms Hub Firmware Images. The Service Provider shall provide data to the Technical Operations Centre (TOC) daily identifying throughput.

8.2 DSP Solution

The requirement for DSP is to build a mechanism using which CSPs can send the status of a Comms Hub firmware update carried out by the CSP. The mechanism to track progress of Comms Hub firmware will make use of (and is dependent upon) the tracking solution proposed under SECMP0007.

The new SMWAN interface built in SECMP0007 can be used by CSPs for reporting the status of the Comms Hubs firmware distribution as well, thus avoiding the need for an interface specifically for this purpose. This interface will support notification of a single Device or a bulk notification of up to 50,000 Devices. The specifics of the interface behaviour will be finalised during the design phase of CR1423.

The statuses applicable for Comms Hubs firmware distribution are a sub-set of the statuses identified under SECMP0007, and may be subject to change at the FIA stage.

DSP components impacted by this change are as follows.

Tech Specs; DUIS, DUGIDS	No changes required under this CR as the DUIS and DUGIDS changes will be handled by SECMP0007.
Request Management	Changes to support firmware tracking of SMETS2+ Comms Hubs.
Data Management	No changes required as they will be handled by SECMP0007.
Transform	No impact as this does not introduce any new GBCS Use Cases.
CSP SMWAN Gateway	The interface introduced in SECMP0007 can be used for reporting the firmware distribution status of Comms Hubs as well. Minor changes are required to the SMWAN Gateway to extend the available device types and status values.
SSI/SSMI	No changes
Security	No impact anticipated, but a more detailed assessment will be carried out in the FIA
Infrastructure	No impact expected.
Service Impact	None expected.

In terms of integration testing, some impact on SIT and UIT with the CSPs is expected, and will be assessed in the FIA.

The DSP believes that the changes associated with CR1421 and CR1423 would take a combined 9 months to implement.

8.3 CSP Change

CSP North noted the following impacts:

- Message Motorway, Network Traffic and Spectrum requirement
- Comms Hub Management; Firmware Updates and Diagnostics requirements
- Business Support Systems; Data and Structure changes to Billing and Financials, performance measures and service reporting
- Service Processes and Service Operations

Note that CSP South and Central provided their PIA response on the basis that the reporting is provided on a monthly basis. This does not meet the requirement of a daily feed to the TOC, but will be addressed as part of the FIA.

Both CSPs expected contract schedules to be amended for at least the following:

- Schedule 2.2 Performance Measures
- Schedule 3 DCC Responsibilities
- Schedule 7.1 Charges and Payments
- Schedule 6.1 Milestones

This is subject to a more detailed review during the FIA stage.

8.4 Relationship with SECMP0024

In terms of the relationship between SECMP0024 and CR1423, it should be noted that the requirement in SECMP0024 is covered as one of the requirements in CR1423. The DSP could deliver the SECMP0024 requirement as a standalone DSP change today, and that has been covered in the latest PIA for that Modification. But it should be noted that CR1423 also includes the same change for creation of a DCC Alert for Comms Hub Firmware Activation.

From a CSP perspective, CR1423 also includes the CSP changes to notify the DSP of the distribution of new firmware to the Comms Hub, so there is CSP change to be made in CR1423. Note: activation is already covered by the Activation command. As the CSPs will already have built the base Firmware Tracking capability under SECMP0007 then adding Comms Hubs to the Notification API should be relatively straightforward.

8.5 Timescales and Costs

As this change does impact the DCC Total System, this change should be scheduled alongside the SEC Release dates. A likely candidate will be identified at the Full Impact Assessment stage.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1423	£181,435	50 days	£1.35-£1.55million	6 – 12 Months to PIT Complete

CSP North have indicated that their charges for the FIA could be reduced if this work is carried out in conjunction with SECMP0007.

9 CR1440, Update Firmware SMETS1 Process

This Change Request is related to Requirement 2.1.1 and 2.2.6 of document [1].

In SMETS1, SRV 11.1 sends the firmware image to the S1SP rather than the device. The image is sent to the device and activated through SRV 11.3. DCC will report on the success of SRV 11.1 to the S1SP as requested and the sending of the image and activation will be through reporting of SRV 11. 3 per the reporting request for this.

This change impacts the DSP and SMETS1 Service Providers.

9.1 Business Requirements

DCC requests that the following requirements be assessed and a PIA produced:

[A] (SMETS1) - DCC require data to be able to link SRV 11.1 to targeted Devices (including Comms Hubs) within the SMETS1 estate.

[B] The SMETS1 Service Provider shall report the success or failure and round trip time of the upload of Firmware Image to individual Devices (including Comms Hubs) .

[C] The SMETS1 Service Provider shall report the success or failure and round trip time of the activation of a Firmware Image to individual Devices (including Comms Hubs).

[D] Pursuant to Requirements A, B and C, the Service Providers shall provide data to the TOC on a daily basis identifying throughput.

9.2 Overall Solution

The DSP will build a firmware tracking mechanism that records and reports the firmware distribution status of all SMETS1 Devices (ESME, GSME, PPMID and Comms Hubs). This tracking shall be in line with the SMETS2+ firmware distribution tracking mechanism proposed under SECMP0007 and CR1423.

For the S1SPs, the proposed solution is to align very closely to the SECMP0007 solution with differences shown in *red* following:

- DSP tracking and notification to Service Users (new DCC Alerts at various stages of distribution: CSP -> Comms Hub -> ESME/GSME/*PPMID*)
- New *S1SP to DSP API or S1SP Alert for S1SPs* to notify success/failure of distribution to the Comms Hub
- New *S1SP to DSP API or S1SP Alerts from the S1SP* to notify success/failure of distribution over the HAN to the end device *(if relevant and available)*
- Existing Activation Responses/Alerts complete the tracking process
- All of the above to be logged by DSP and sent to TOC on a regular basis as part of the Service Audit Trail.

Note while the DSP changes are incremental on top of SECMP0007, for the S1SPs this is a completely new, standalone change.

9.2.1 DSP and CGI IE Solution

This requires S1SPs to send updates to DSP at different steps in their processing. The notifications from the S1SPs will be sent using S1SP Alerts. Unlike CR1423 above, these statuses will need to be discussed with the S1SPs as part of their FIA.

Where the reporting is dependent on device alerts, the reporting mechanism will only be available where those devices provide those alerts, i.e. they have the necessary functionality, are configured accordingly and communicating successfully. The SMETS1 IOC/MDS PPMID devices do not support the capability of returning an acknowledgement upon receipt of a firmware image during the distribution/activation of a new image. As a result, for PPMIDs the proposed reporting mechanism will only report the distribution status to the Comms Hub.

The completion of SR11.3 will always be indicated by an asynchronous service response containing the status; this is a change to the current behaviour where an S1SP alert may be used to indicate completion. This will provide clarity to upstream systems and user systems, avoiding complexity that could have been introduced by using various S1SP alerts to indicate completion.

To support the CR1440 changes, a number of existing S1SP specific responses currently issued as S1SP alerts will need to be changed. S1SP alerts currently sent upon processing of an 11.1 will be removed entirely and replaced with the existing failure Firmware Verification alert. S1SP Alerts that currently exist for 11.3 responses will be converted to standard service responses.

The impact of this change in terms of DSP and CGI IE components and Services is limited to Request Management, as the changes implemented in SECMP0007 will cover a large part of the required work.

9.2.2 Other Service Providers

The Secure S1SP design for ESME, GSME, CH and PPMID firmware upgrades:

1) User provides SRV 11.1 with list of devices and target firmware version to firmware upgrade.

2) At SRV 11.1, Secure S1SP authenticates the firmware hash, but does not trigger any firmware image transfer to the device target.

3) User provides subsequent SRV 11.3, which triggers firmware image transfer to end device and activation of firmware on the device.

Note that Secure will transfer the S1SP's Service Audit Trail to the TOC periodically in a defined secure File Transfer Protocol (sFTP) folder. The frequency of the will be agreed in the FIA.

The round-trip time of SRV 11.3 can be calculated by DSP as (T14-T1) in service audit trail produced by Secure at the end of measurement period.

Trilliant will provide of data to DXC to support reporting including:

- Start and end times of the firmware image loading
- Status of the firmware image loading (success or failure)
- Status of the firmware image activation (success of failure)
- End time of the firmware image activation

Note: The firmware activation begins directly when the firmware image loading is finished. Therefore the EndDateTime of the firmware image loading will be used to provide a StartDateTime of the firmware activation. DXC will manage the logs, extract the data and send them to the DCC TOC.

The DXC Service Provider is part of the SMETS1 FOC and provided a ROM only; they will not be available to carry out a FIA until at least February 2021.

Integration between the S1SPs and the DSP will be required, hence SIT and UIT will be required as part of a SEC Release to be determined.

9.3 Timescales and Costs

As this changes does impact the DCC Total System, this change should be scheduled based on the SEC Release dates. A likely candidate will be identified at the FIA stage.

The expected time to design, develop, and implement the DSP changes will be approximately 3 months, but the S1SP durations are expected to be longer.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1440	£70,000	50 days	£1.45-£1.85million	6 – 12 Months to PIT Complete

10 CR1429, Additional CSP Reporting to validate 90 Day No SMWAN Incidents

This Change Request is related to Requirement 2.2.2 of document [1] and impacts both the CSPs. The CSPs are required to provide data relating to 90 Day Install No SMWAN Incidents that they have received and closed.

10.1 Requirements

As a result of the changes being made to support SECMP0122, and specifically 2.2.2 Install and Commission: “Measure daily total volume of Install and Commission versus Install and Leave)", DCC are required to measure the daily total volume of Install and Commission versus Install and Leave. This shall include a category for any Comms Hubs awaiting a decision that are still within the 90 Day investigation period for Install and Leave. DCC can report on Communications Hub Status Update – No WAN SRV 8.14.2’s seen in the system and can then compare this to Remedy Data to link to Incidents raised by DSP as a result of 8.14.2’s. DCC’s process for this will rely on matching data from 2 different data sources so this can be used to validate DCC reporting.

[A] The Service Provider shall provide data relating to 90 Day Install No SMWAN Incidents that they have received (including but not limited to Incident ID, Category, submit date, GUID, MPxN and Diagnostics Results, Exception/Exclusion Information).

[B] The Service Provider shall provide data relating to 90 Day Install No SMWAN Incidents that have been closed (including but not limited to Incident ID, Category, submit date, GUID, MPxN and Diagnostics Results, Exception/Exclusion Information).

[C] The Service Providers shall provide this data to the TOC on a daily basis.

10.2 CSP Solutions

CSP South and Central believe the requirement can be met, but suggested weekly reporting would be more cost-effective than each Working Day. They also suggested that extracts will be based on the incident status being set to ‘resolved’ rather than ‘closed’, because there is a difference in DCC and CSP South and Central business rules. However there is alignment on when an incident is set to resolved.

CSP North have identified changes on Data and Structure changes to Ordering and Logistics, Billing and Financials, performance measures and service reporting.

For both CSPs, integration testing will be required.

10.1 Timescales and Costs

This change does not impact the DCC Total System. A likely candidate will be identified at the Full Impact Assessment stage.

SP Costs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	Implementation Duration
CR 1429	£87,884	30 days	£550,000	3 – 6 Months to PIT Complete

11 Impact on DCC Systems, Processes and People

As defined the changes included in this document are confined to changing the DCC TOC systems and the provision of external data with changes impacting both the SMETS1 and SMETS2 Service Providers.

11.1 DCC Technical Operations Centre Development and Testing

The full range of activities required to implement the reporting related to external data elements of the SECMP0122B requirements including design, development, testing, and implementation and would be performed by the DCC TOC in-house contractors and permanent staff.

The DCC Technical Operations Centre development for this release includes:

- Deliver Data Model algorithms, build report, test, document, update database, update interfaces, and document solution

It is expected that the same team used to deliver the SECMP0122A release will move on to this development work. Initial high-level analysis suggests that the development, test, and implementation costs and durations associated with the "external" data requirements will be very similar to those based on data already held in the DCC TOC.

11.2 DCC Application Support

There will be a considerable increase in the number of Full Time Equivalents (FTE) required to support, maintain, and deliver the reporting on a monthly basis. This is not part of the PIA, but will be expanded upon if approval for any of the CRs is given.

11.3 DCC Contractual Negotiation

If the go ahead is given to proceed to FIA for any of the external data changes, DCC staff will need to carry out contractual negotiations with the impacted Service Providers part of the process.

11.4 Infrastructure Impact

To meets the requirements stated above may require additional infrastructure, potentially building a new database, while allowing for a new innovative monitoring and alerting solution. These costs will be facilitated by economies of scale, and will be absorbed into TOC running costs.

It should be noted that the solution as proposed should not add noticeable traffic or processing to the Smart Metering System or network.

11.5 Service Provider Application Support

Impacts to Service Design, Service Management and other Application Support functions for the Service Providers are anticipated, and it is expected that further staffing will be required to support some of the PIA changes listed in this Modification. Where these costs have been identified as manual efforts to review or check data returns, they have been included in the Costs section below, unlike typical SEC Modifications.

These costs will be refined as part of the Full Impact Assessment covering external data contractual changes, and will reflect the complexity and other properties of the solution.

11.6 Contractual Change and Data Provision

At this stage it is difficult to predict the level of complexity, duration, or costs associated with any contractual change with resultant negotiations between DCC and the Service Providers. Clearly some of the requirements impact only one or two Service Providers, while others impact all the SPs.

Data provision may be a slight concern as there are some S1SPs who do not send data to the DCC in any form at this time. A ROM has been included for this figure, and these costs will be more fully evaluated as part of the FIA.

12 Implementation Approach and Timescales

A key factor in planning and delivering this Modification's implementation and release is that some of the changes are not part of the Smart Metering System, and other changes will impact the Service Management functions for the Service Providers requiring changes to Service Provider's internal systems, which may impact timescales.

13 Costs and Charges

The table below summarises the cost of delivering the changes and Services required to implement the CRs listed above for this Modification. The scope of supply under this PIA includes design, development (build) and PIT testing. Activities out of scope of this cost include Application Support, infrastructure improvements, and Service Provider contract changes. These would be defined as part of the FIA. Changes such as CR1421, 1423, and 1440 will require changes to the Smart Metering System, and hence will require PIT, SIT and UIT integration testing if these options are selected.

The Rough Order of Magnitude cost (ROM) shown below describes indicative costs. 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. As a result the final price is likely to result in a variation.

Also note that at the time of the release of this PIA, DCC is actively challenging several of the submissions from the Service Providers in terms of omissions, feasibility, technical content, costs for implementation, and durations for both the FIA and implementation. Costs are shown as a range where a single Service Provider is impacted, or where at least one SP has provided a range. For cases where S1SPs are involved, a separate ROM for the S1SPs is shown.

CR	SPs	Cost to Produce FIA	Required Time for FIA (Max)	ROM	S1SP ROM (#)	Implementation Duration
CR 1418	DSP	£8,702	30 days	£300,000 to £450,000	n/a	3 Months
CR 1438	CSP North, S1SPs	£209,626	50 days	£1,600,000-£2,000,000	£650,000-£950,000	12 Months
CR 1420	DSP, CSPs, All S1SPs	£247,706	30 days	£1,520,000-£1,750,000	£520,000-£550,000	3 Months
CR 1430	DSP, CSPs, All S1SPs	£323,667	40 days	£2,030,000-£2,180,000	£300,000	12 Months
CR 1421		Not applicable	Not applicable	Not applicable	n/a	Not applicable
CR 1423	DSP, CSPs	£181,435	50 days	£1,350,000-£1,550,000	n/a	12 Months
CR 1440	DSP, S1SPs	£70,000	50 days	£1,450,000-£1,850,000	£1,450,000-£1,850,000	12 Months
CR 1429	CSPs	£87,884	30 days	£550,000		3 Months

It might be possible to run some of the FIA production and implementation activities in parallel, and to reduce the timescales, but both the costs and durations have been calculated in a standalone format.

DCC costs to support the CR design work as part of the FIA, and the ROM for implementation have been estimated on the basis that all Change Requests have been authorised to go forwards. Naturally if a limited number of CRs are approved, these costs will be reduced, and these will need to be recalculated based of the magnitude of the work required.

DCC Costs	Cost to Produce FIA	Required Time	ROM
DCC	£65,250	40 days	£642,000

Appendix A: Glossary

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

Acronym	Definition
BSS	(CSP North) Business Support Systems
CGI IE	CGI Instant Energy (SMETS1 DSP)
CH, Comms Hub	Communication Hub
CHF	Communications Hub Function
CoS	Change of Supplier
CPM	Code Performance Measure
CSP	Communications Service Provider
DCC	Data Communications Company
DSP	Data Service Provider
DUIS	DCC User Interface Specification
DSMS	DCC Service Management System
ESI	Enterprise Systems Interface, a file format
ESME	Electricity Smart Metering Equipment
FIA	Full Impact Assessment
FTE	Full Time Equivalent (Employee)
GBCS	Great Britain Companion Specification
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
IHD	In Home Display
IOC	Initial Operating Capability
I&C	Installation and Configuration
KPI	Key Performance Indicators
MDS	Morrison Data Services
MoO	Mode of Operation
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
OMR	Operational Metrics Review
OPSG	Operations Sub-Group
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
PMA	Performance Methodology Approach
PMM	Performance Measurement Methodology
PMR	Performance Measurement Report
PPMID	PrePayment Meter user Interface Device
ROM	Rough Order of Magnitude (cost)
RSVP	Rate, Speed, Volume, Payload, a measure of performance of SRVs
RTT	Round Trip Time
SAT	Service Audit Trail
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SLA	Service Level Agreement
SLMR	Service Level Management Report
SMETS	Smart Metering Equipment Technical Specification
SMKI	Smart Metering Key Infrastructure
SM WAN, SMWAN	Smart Metering Wide Area Network
SP	Service Provider
SR	Service Request
SRV	Service Request Variant
SSI	Self Service Interface
S1SP	SMETS1 Service Provider
TOC	Technical Operations Centre
TRT	Target Response Time
TTO	Transition to Operations
UIT	User Integration Testing

WD	Working Days