

SEC Modification Proposal, SECMP0217, DCC CR4888

Obtaining Timestamps to allow Target Response Time Measurements

Preliminary Impact Assessment (PIA)

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1 Executive Summary

The Change Board is asked to approve:

- Total cost to complete the Full Impact Assessment (FIA) of £1,000,498 which comprises:
 - Measuring SRV Responses and Alerts, £270,421
 - System Availability, £215,077
 - Meeting Target Performance Levels, £515,000
- The timescales to complete the Full Impact Assessment of 30 to 60 days
- ROM costs for Design, Build and PIT of £7.86-£8.9million which comprises:
 - Measuring SRV Responses and Alerts, £3.69million - £3.94million
 - System Availability, £1.17m - £1.54m
 - Meeting Target Performance Levels, £3m-£3.42m
- A timescale to complete Design, Build and PIT of 8 - 12 months

Problem Statement

Customers and Suppliers are unable to manage services and issues effectively as it is not clear if performance issues are due to the Data Services Provider (DSP), the Communications Services Provider (CSP), SMETS1 Service Providers, the Home Area Network (HAN), or Device performance, message

size, or orchestration. Round Trip Time (RTT) timings in the current MP122A reporting have indicators which can determine where performance issues may lie. However, these are not true measures of performance. An additional impact is the inability to include Target Response Time (TRT) for key business processes in the Operational Performance Regime (OPR), which is an Ofgem objective.

The DCC does not currently have the capability to measure TRTs at an individual SRV level and in real-time, as required by the SECMP122A legal text in Sections H13.1 and H13.1A.

This modification seeks to address the need for renewing the derogations linked to Code Performance Measure 6A. It proposes to obtain timestamps from the CSPs when Service Requests (SRs) have been successfully delivered to and from the Communications Hubs.

Benefit Summary

Obtaining valid timestamps related to the true Target Response Time would allow the DCC, its customers and Service Providers to see potential issues much more clearly than previously and allow for better management of performance issues. Additional timestamps from Communications Devices will aid monitoring and reporting on Comms Hub performance.

Depending on the outcome of this Modification, there may be a need to update the legal text that was provided for SECMP0122A to provide correct definitions of the reporting measures.

2 Document History

of this Modification, the previous CR numbers are used for reference at this stage.

2.1 Revision History

Note that the DCC Technical Operations Centre (TOC) previously identified as the DCC team providing the reporting has been renamed to the Data Science and Analytics (DS&A) team.

Revision Date	Revision	Summary of Changes
12/04/2023	0.1	Initial compilation
1/05/2023	0.25	DCC internal review, plus challenges issued to Service Providers
11/05/2023	0.3	Minor amendments

2.2 Associated Documents

This document is associated with the following documents:

	Title and Originator's Reference	Source	Issue Date
1	MP217 Business Requirements v0.7	SECAS	21/12/2022
2	DP217-Modification-Report-v0.2	SECAS	11/10/2022

References are shown in this format, [1].

2.1 Document Information

The Proposer for this Modification is Andy Norman from the Data Communications Company (DCC).

The original Preliminary Impact Assessment for SECMP0217 was requested of DCC on 30th January 2023.

Three Change Requests (CR) were previously raised as part of the OPR Working Group, and these will form the basis for the changes required for SECMP0217. Due to the size and complexity

3 Solution Requirements and Overview

In this section, the context of the Modification, assumptions, and the requirements are stated.

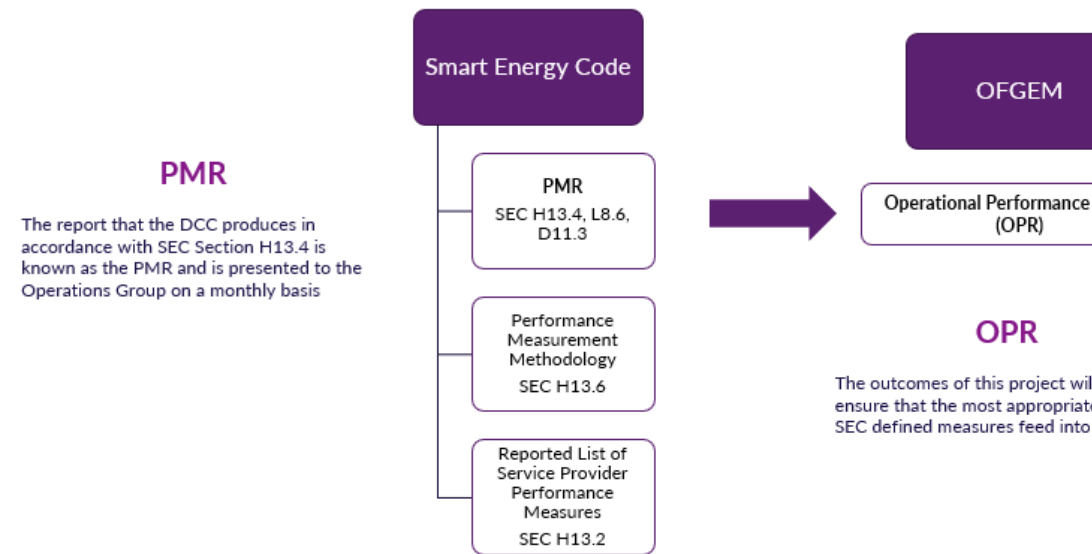
The problem statement and requirements have been provided by SECAS, the Working Group, and the Proposer.

3.1 Introduction

Issues with transparency of reporting and relevance of the measures contained within the Data Communications Company (DCC) Performance Measurement Report (PMR) have arisen. In its monthly review of the PMR, the Operations Group has found it increasingly difficult to report to the Smart Energy Code (SEC) Panel on the issues within the report.

As a result of the issues encountered by the Operations Group, the Operational Metrics Review (OMR) was undertaken to better understand the PMR measures, consider amendments and recommendations of new performance indicators.

Figure 1: Relation between PMR and OPR



A series of ten business processes and associated Service Request Variants (SRV) were identified in the Ofgem DCC Operational Performance Regime (OPR) Review seeking improved metrics for reporting. As part of SECMP0122, DCC delivered Round Trip Time (RTT) reporting rather than the Target Response Time (TRT) requested by Ofgem.

This Modification provides changes that will:

1. Implement technology changes that will allow the reporting of TRT, removing the device processing times and HAN times (originally referred to as CR4253)
2. Measure and indicate system availability (CR4258)
3. Uplift the DCC Total System to meet the Target Response Times (CR4259)

3.2 Problem Statement and Context

Target Response Times (TRTs) measure the time it takes for a Service Request (SR) to travel across the DCC Systems whereas Round Trip Times (RTTs) include time for a message to be sent across the DCC Systems but also time spent on the Home Area Network (HAN). Smart Energy Code (SEC) Modification SECMP0122A, 'Operational Metrics', introduced several reporting requirements for the DCC to report on RTTs. The MP122A legal text has resulted in RTTs being categorised as TRTs, which is incorrect.

TRTs are the target performance measures defined in SEC Appendix E 'DCC User Interface Services Schedule'. The TRTs are defined differently for Smart Metering Equipment Technical Specifications (SMETS) 1 Devices and SMETS2+ Devices:

- SMETS1 Devices – starting from the DCC User Gateway and ending on provision of the Service Response to the User, but only counting the processing time between the DCC User Interface to the DCC SMETS1 Processing Systems (inclusive); and/or the DCC SMETS1 Processing Systems to the DCC User Interface (inclusive).
- SMETS2+ Devices – starting from the DCC User Gateway and ending on provision of the Service Response to the User, but only counting the processing time between the DCC User Interface to the Communications Hub (inclusive); and/or the Communications Hub to the DCC User Interface (inclusive).

TRTs set the expected performance for messages travelling through the DCC networks and systems. They only measure performance within the DCC environment (DCC User Gateway to Communications Hub and reverse). They do not provide a holistic view of a message journey, as they do not measure the time spent

on the HAN. The DCC does not currently have the capability to measure TRTs at an individual SRV level and in real-time, as required by the SECMP122A legal text in Sections H13.1 and H13.1A. At present, the TRT reporting requirements are met using test messages.

Round Trip Times are measured as the time taken from a request being accepted by the Data Service Provider (DSP) and then subsequently sent back to the customer, i.e., the round trip time of the message. This time includes not only the time for processing and sending messages across and between the DSP and CSPs), but also includes process time for the Communications Hub and Devices, as well as transfer time across the HAN. This means that while RTTs are an excellent measure for true customer experience, they do not measure performance that is solely within the DCC Total System. Furthermore, RTTs are not currently defined within the SEC. Complexities such as message size, HAN performance, Device performance and orchestration may be having an impact on the overall performance of the service for DCC customers. Where RTTs are measured in the absence of TRTs, it is not possible to ascertain the source of service-impacting issues. Consequently the DCC cannot advise its customers, or effectively manage its Service Providers (SPs) to assist in improving service.

SECMP0122A 'Operational Metrics' introduced several reporting requirements for the DCC to report on RTTs. Whilst the design facilitated the Working Group request to measure RTTs, what was implemented within SEC Section H13 were requirements to report on TRTs. Therefore, the legal text doesn't reflect the actual DCC design for SECMP0122A. This has resulted in the DCC seeking derogations which are largely linked to Code Performance Measure 6A:

- 6A Percentage of each of the Business Processes described in Section H13.1A which is delivered within the applicable Target Response Time. There shall be a separate Code Performance Measure for each combination of Business Processes and either Region (for SMETS2) or SMETS1.

Without the addition of timestamps to support the measurement of Target Response Times, the DCC cannot comply with Code Performance Measure 6A in Section H13.1.

As part of this Modification Proposal, the DCC also proposes that the targets associated with TRTs are reviewed. The current technology was chosen (and subsequently developed) to meet the 30- second TRTs at an aggregate level across all SRVs and across all regions. The introduction of Code Performance Measure 6A in the SEC changed the requirements but the systems were not uplifted to reflect the change. This needs to be addressed by either (a) uplifting the systems to support the new requirements (outside of the SEC Modification Process), or (b) amending the targets in the SEC to reflect the current system capability.

Note that SECMP0187 'Incorporation of Target Round Trip Times and Target Success Rates into the SEC', proposes adding definitions for 'Round Trip Time' and 'Success', and to provide indicative values for successful RTTs. SECMP0187 will focus on the targets and reporting, once SECMP0217 introduces timestamps for SRs (Alerts will not be included). SECMP0122B 'Operational Metrics – Part 2' is also linked to this proposal, however the proposed solution will obtain timestamps from Alerts (not SRs), from the point where Alerts leave the Communications Hub and when Alerts enter the Service User gateway.

3.3 Business Requirements

This section contains the considerations and assumptions for each business requirement as described in document [1].

#	Requirement
1	The Data Communications Company (DCC) will measure the Target Response Time (TRT) of Service Reference Variants (SRVs), SRV responses and Alerts from the receipt of the SRV from the Service User to the SRV reaching the Communications Hub / Home Area Network (HAN) border or Smart Metering Equipment Technical Specifications 1 (SMETS1) Service Provider (S1SP) equivalent and from the Communications Hub / HAN border or S1SP equivalent to the time the SRV response or Alert reaches the Data Service Provider (DSP).
2	The DSP will measure the time taken for SRVs to reach the Communication Service Provider (CSP) and / or S1SP, measuring from receipt of the SRV from the Service User, the time taken in the DSP system to the time the SRV is passed to the CSP or S1SP.
3	The DSP will measure the time taken for SRV responses and Alerts to reach the Service User, measuring from receipt of the SRV response / Alert from the CSP or S1SP through to the time the SRV response / Alert leaves the DSP system and is passed to the Service User and the DSP receives the handshake from that Service User.
4	The CSP and / or S1SP will measure the time taken for SRVs to reach the Communications Hub / Home Area Network (HAN) border, measuring from receipt of the SRV from the DSP, the time taken in the CSP / S1SP system to the time the SRV reaches the Communications Hub / HAN border (or S1SP equivalent).
5	The CSP and / or S1SP will measure the time taken for SRV responses and Alerts to reach the DSP, measuring from receipt of the SRV response / Alert at the Communications

	Hub / HAN border (or S1SP equivalent), to the time it reaches the DSP.		- End-to-end Service availability by CSP Region - Reporting Service availability by time of day - Measuring Service downtime - Planned Maintenance - Measuring Service Reliability
6	The DSP / CSP / S1SP reporting to DCC should identify individual SRVs and Alerts, date, time and Global Unique Identifier (GUID) in a file format to be agreed with DCC.		
7	Reporting will contain the performance of each SRV-type in the production system, dimensioned by region, meter type (Electricity Smart Metering Equipment (ESME) / Gas Smart Metering Equipment (GSME)), and specification (SMETS1 / SMETS2) where applicable. The DCC will report on the SRVs that belong to the below ten Business Processes: - Installation and Commission - Change of Supplier (Gain) - Change of Tenancy - Tariff Updates - Pre-Payment - Security and Key Management - Update Device Firmware - Logistics CH Ordering and Returns - Distribution Networks Post I&C Activity - Meter Reads	9	DSP will provide further reporting for parts of the system that where it has sole responsibility: the Registration Data Interface, the Smart Metering Key Infrastructure (SMKI) Repository Interface, and the Self-Service Interface (SSI). The reporting shall include: - Monthly view of end-to-end Service availability - End-to-end Service availability by CSP Region - Reporting Service availability by time of day - Measuring Service downtime - Planned Maintenance - Measuring Service Reliability
8	DSP / CSP / S1SP will provide further reporting for parts of the system that they have responsibility; Sections relating to the DCC User Interface Specification (DUIS). The reporting shall include: Monthly view of end-to-end Service availability	10	Trusted Service Provider (TSP) to report for SMKI Services Interface¹. The reporting shall include: - Monthly view of end-to-end Service availability - End-to-end Service availability by CSP Region - Reporting Service availability by time of day - Measuring Service downtime - Planned Maintenance - Measuring Service Reliability

¹ Note this reporting is carried out by the DSP, not the TSP.

11	The DCC will receive all initial reports from Service Providers within 2 Working Days of month end, with a final report agreed with DCC within 5 Working Days of month end.
12	Regarding reporting, each Service Provider will exclude the time for any SRVs quarantined by the Anomaly Detection Attributes (ADA) or Anomaly Detection Threshold (ADT) processes.
13	The DCC will make available reports to DCC Users that will show TRT performance of SRVs relating to the ten Business Processes in business requirement 7, from the receipt of the SRV from the Service User to the SRV reaching the Communications Hub / HAN border or S1SP equivalent and from the Communications Hub / HAN border or S1SP equivalent to the time the SRV response or Alert reaches the DSP.
14	The target levels for each Target Response Time (TRT) will be aligned to the targets in SEC Section H13.1.
15	The DCC is to align its Service Provider contracts to these new performance standards that have been obtained through requirements 2, 3, 4 and 5 of this document.
16	The DCC's service performance is to be compliant against these new performance standards.

Table 1: Business Requirements for SECMP0217, CR4888

For **Requirement 1**, The intent of this modification is to enable the DCC to measure TRT performance across the DCC Total System. This includes the time spent between the DSP and Communications Hub, and excluding time spent at the HAN. It is the DCC's intent to take timestamps at various points across the DCC Total System.

Timings for each Service Provider should be taken ideally using timestamps at the boundary or edge of the Service Provider's responsibility, such as the incoming (F5) load balancer. However if this is going to be difficult or too complex to achieve, the Service

Providers should consider alternative approaches such as application processing time.

Note the time for any SRVs quarantined by the Anomaly Detection Attributes (ADA) or Anomaly Detection Threshold (ADT) processes will be excluded as expanded on in Requirement 12. Responses will not be received for ADA failures. Where there is an ADT quarantine, the SEC Party can release at up to 30 days later. If a SEC Party chooses to release data from quarantine this will skew reported data unless this time is stripped out.

In **Requirement 2**, the DSP is responsible for the SRV once it has been received from the Service User, to the time it passes through its system and reaches the CSP or S1SP. Timestamps at either end of this segment of the journey will allow the DCC to understand how long it takes each SRV to pass through the relevant Service Provider's remit.

In a similar way, **Requirement 3** is based on the DSP responsibility for the SRV response / Alert once it has been received from the CSP or S1SP, to the time it passes through its system and reaches the Service User. Timestamps at either end of this segment of the journey will allow the DCC to understand how long it takes each SRV response / Alert to pass through the relevant Service Provider's remit.

As indicated in **Requirement 4**, the CSP / S1SP is responsible for the SRV once it has been received from the DSP, to the time it passes through its system and reaches the Communications Hub / HAN border. Timestamps at either end of this segment of the journey will allow the DCC to understand how long it takes each SRV to pass through the relevant Service Provider's remit.

Requirement 5 covers the same remit for Service Responses or Alerts.

System Availability is the driver for Requirement 8, 9, and 10. Service Provider reporting on the attributes will provide further visibility of service availability to the DCC and its Users. Those key business processes impacted by partial availability shall be reported alongside the metrics and indicators for service availability of a particular Service. Note that the Service Level percentages reported for each key business process are an indicator, and would quantify the time, during the reporting period, in which the DCC has the capability to successfully process and deliver a particular Service Request that makes up a particular business process, as defined in the SRVs in in Table 1. Further information on system availability metrics is given in

Appendix B: Reporting Metrics near the end of this document.

Target levels will be at 96% as a minimum, with an optimal level of 99% against contracted rates.

The Preliminary Impact Assessment (PIA) should contain options based on live network and systems monitoring and by any alternate method that the Service Provider identifies. The preferred overall output will be an Enterprise Systems Interface (ESI) file sent from the DSP to DCC.

While **Requirement 11** states SPs will deliver initial reports from Service Providers within two Working Days (WD) of month end, and the final report agreed with DCC will be delivered within five WD of month end, some Service Provider existing contractual timelines as elaborated on in the PIA and FIA for SECMP0122A are 10 WD. The change to reduce the timelines for all the Service Providers was dropped for SECMP0122A. This requirement was not required for the OPR reporting.

Requirement 12 details exclusions and exceptions. During solution development, the DCC will develop a further list of exceptions, in regards to SRVs that will not be part of TRT reporting.

Changing the TRTs to be aligned with SEC Section H 'DCC Services' as stated in **Requirement 14** will mean that if in the future, the H13.1 Target Service Level and Minimum Service Level are changed, the TRTs relating to the ten Business Processes will also be changed, without the need of a subsequent modification.

Requirement 15 will ensure that the Service Providers are under contract to deliver an agreed level of performance. While completing the PIA, Service Providers were asked to indicate if they believe there will be any change to their contracts (for example, Substantial, Large, Minimal, or None), with a full estimate to be captured in the Full Impact Assessment (FIA).

Service Providers should provide options for meeting the new performance standards against the following parameters:

- Maximum message size
- Minimum message size
- Typical message size based on service user behaviours (This option is subject to discussion with DCC)

These impacts may include, but not be limited to, changes in the following areas:

- Contractual Risk Approach
- Operational Processes
- Service Management
- Technical Solutions
- Other

Where a Service Provider recognises or identifies any concerns regarding the ability to meet any of these new Performance Standards then these should be highlighted to DCC for further discussion in the PIA, including any detail relating to the concerns and any related limitations (Contractual, Technical, Process, Reporting etc.) that may prevent meeting the relevant Performance Standards. These may include new Contractual Performance Measures aligned to the 10 business processes. Any concerns, limitations or new deliverables will be fully evaluated in the FIA.

Finally, **Requirement 16** means the DCC being compliant with the agreed new performance standards and ensuring both the DCC and Service Providers are delivering an agreed level of service to Users.

Requirements 1 – 5, 12, and 13 are categorised as “Must” while 6 – 11 and 14 – 16 are “Should” using the MoSCoW requirements categories.

Three Change Requests (CRs) were previously raised as part of the OPR Working Group, and these will form the basis for the changes required for under this modification. The previous CR numbers are used for reference at this stage as follows.

CR	Title	SECMP0217 Requirements
CR4253	Measuring SRV Responses and Alerts	1 – 7, 11, 12
CR4258	System Availability	8 -10
CR4259	Meeting Target Performance Levels	13 – 16

Table 2: Change Requests and Content

3.3.1 Key Business Processes and SRVs for Reporting

The TRT reporting that this Modification proposes to introduce will capture the below business processes and relevant SRVs:

Business Process	SRV	Description	SMETS1 Applicable
Install and Commission²	8.11	Update HAN Device Log	Yes
	6.21	Request Handover of DCC Controlled Device (Update Supplier Certificates)	No
	8.1.1	Commission Device	Yes
	8.7.2	Join Service (Join GPF with GSME)	Yes
	6.20.1	Set Device Configuration' (Import MPxN)	No
	1.1.1	Update Import Tariff (Primary Element)	Yes
	6.8	Update Device Configuration (Billing Calendar)	Yes
	8.14.1	Communications Hub Status Update Install Success	No
Change of Supplier (Gain)	6.23	Update Security Credentials (CoS)	Yes
	1.1.1	Update Import Tariff (Primary Element)	Yes
	6.8	Update Device Configuration (Billing Calendar)	Yes
Change of Tenancy	3.2	Restrict Access for Change of Tenancy	Yes
Tariff Updates	1.1.1	Update Import Tariff (Primary Element)	Yes
Pre-Payment	1.6	Update Payment Mode (Payment Mode = Prepayment)	Yes
	2.1	Update Prepay Configuration	Yes
	2.2	Top Up Device (Update Balance with positive value)	Yes
Security and Key Management	6.15.2	Update Security Credential (Device) – Credential Type = Digital Signature	No
	6.15.2	Update Security Credential (Device) – Credential Type = Key Agreement	No
	6.17	Issue Security Credentials – Credential Type = Digital Signature	No
	6.17	Issue Security Credentials – Credential Type = Key Agreement	No
Update Device Firmware	11.1	Update Firmware Note: In respect of SMETS2+ Devices the DCC must ensure that the associated firmware update has been delivered to all relevant Communications Hub Functions within five days of receipt of the Service Request.	Yes
	11.3	Activate Firmware (Individual SR for each GUID for firmware activation) Note: SMETS1 five-day Target Response Time.	Yes
Logistics CH Ordering and Returns	8.14.3	Communications Hub Status Update – Fault Return	No
	8.14.4	Communications Hub Status Update – No Fault Return	No
Distribution Networks Post I&C Activity	6.15.1	Update Security Credentials (Update Network Operator Certificates)	Yes
	6.5	Update Device Configuration (Voltage)	Yes
	6.22	Configure Alert Behaviour (Update ENO Alter Configuration)	No
Meter Reads	4.6.1	Retrieve Import Daily Read Log	Yes
	4.6.2	Retrieve Export Daily Read Log	No
	4.8.1	Read Active Import Profile Data	Yes
	4.8.2	Read Reactive Import Profile Data	Yes
	4.8.3	Read Export Profile Data	Yes
	4.10	Read Network Data	Yes
	4.17	Retrieve Daily Consumption Log	No

Table 3: Business Processes and SRVs for Reporting

These SRVs will be included in a monthly report with Rate, Speed, Volume, and Payload (RSVP) metrics. RSVP will be used as an indicator of performance for identified key User business processes. The RSVP metric will measure the relevant SRVs, service responses,

² Note, although some of the SRVs listed under Install and Commission are applicable to SMETS1, the rollout of SMETS1 Devices has ended and therefore the overall Install and Commission business process is not applicable to SMETS1.

acknowledgements and Alert processing times within the DCC Total System. The elements of RSVP are defined as follows.

Term	Definition
Rate	The sample period over which the performance is measured. The rate will be either daily or monthly. A daily measure provides the level of granularity required to capture service degradation or outages that impact a User's business process. A monthly measure will provide a higher-level executive view of service performance.
Speed	A measure of the TRT for an SRV or group of SRVs measured within the rate period. Speed should be measured as an average (mean) as well as a median, as an average can be skewed by extremely large or small values.
Volume	The total number of Service Requests or group of SRVs processed by the DCC Total System within the period.
Payload	The success or failure of the Service Request within the period. A failure is recorded when a Service Response contains an Error Response Code relating to a communications failure or timeout (E20 ³ or E21 ⁴), or a subsequent failure alert code (N12 ⁵ or N13 ⁶).

Table 4: Rate, Speed, Volume, Payload Definitions

RSVP metrics will be used as an indicator of performance for identified key User business processes as defined in the table below. The RSVP metrics will measure the relevant SRVs, service responses, acknowledgements and Alert processing times within the DCC Total System.

The performance of a business process as defined will depend on whether the SRV relates to SMETS1 or SMETS2+ devices and will be reported with SMETS1 and SMETS2 metrics separated and clearly identified. This is due to the different SLAs for each Device type as stated in the SEC.

³ Communications Failure – Unable to Communicate with Device

⁴ Communications Failure – No Response Received from Device

⁵ Failure to deliver Command to Device

⁶ Failure to receive Response from Device

4 Service Provider Solutions and Impacts

Not all the requirements listed above impact all the Service Providers as shown in the following table and sections.

Req	CR	DSP	CSP S&C	CSP N	CGI IE	Secure	DXC	Cap	CSW
1	4253	✓	✓	✓	✓	p	p	p	✓
2	4253	✓	✓	✓	✓	p	p	p	✓
3	4253	✓	✓	✓	✓	p	p	p	✓
4	4253	✓	✓	✓	✓	p	p	p	✓
5	4253	✓	✓	✓	✓	p	p	p	✓
6	4253	✓	✓	✓	✓	p	p	p	✓
7	4253	✓	✓	✓	✓	p	p	p	✓
8	4258	O	✓	✓	O	O	p	n	✓
9	4258	O	✓	✓	O	O	p	n	✓
10	4258	O	✓	✓	O	O	p	n	✓
11	4253	✓	✗	✓	✓	✗	✗	n	✓
12	4253	✓	✓	✓	✓	p	n	n	✓
13	4259	✓	✓	O	✓	p	n	n	✓
14	4259	✓	✓	O	✓	p	n	n	✓
15	4259	F	✓	O	F	p	n	n	✓
16	4259	F	✓	O	✓	p	n	n	✓

- ✓ Requirement response included
- ✗ Solution provided cannot meet this requirement
- N no response provided, incomplete
- O Options provided
- P Partial
- F Will review and respond in FIA

Table 5: Summary of Service Provider Responses

In many cases, not all Service Providers will have sight of processing times in “other” parts of the DCC Total System, and it will be necessary for the DCC Data Science and Analytics (DS&A) team to pull together submitted data from each SP to provide an overall view. For example SRVs 8.14.1, 8.14.3, 8.14.4 go from Comms Hubs to the DSP, are not listed in the CSP’s Schedule 2.2 Appendix 1 Part C, and do not have an associated TRT defined. These cannot be measured by the other SPs because they do not originate at the DSP and traverse through to the Comms Hubs as SRV messages. Therefore, measures associated to these SRVs need to be supplied by the DSP only.

As part of SECMP122A, all Service Providers were asked to produce a PIA for the equivalent of Requirement 11 (two and five WD reporting). Half of the SPs reported significant ROM and FIA Costs, while the other half indicated it is not possible to meet these requirements.

Most of the Service Providers have identified multiple Risks, Assumptions, Issues, and Dependencies (RAID) as part of their submissions, as well as several requests for clarifications and exclusions. These items, along with DCC RAID have been listed in Appendix C: RAID, Clarifications, and Exclusions at the end of this document.

4.1 DSP Analysis

For the requirements, DSP have indicated that separate measures for Northbound and Southbound traffic are achievable; these refer to Responses as well as Alerts sent from the DSP to Service Users and Service Requests sent to the CSPs respectively.

4.1.1 CR4253 DSP RSVP Report

This report will use the data available in the existing Service Audit Trail (SAT) records as the input towards creating this report, and the existing approach used for producing the reports for Billing and SLA Reporting will be used for creating this new report. The approach involves summarising and correlating the data based on the required metrics and then storing the summarised or aggregated data in the Reporting Database for retrieval by other components. The SAT logs are delivered to the data warehouse at 15 minute intervals (or earlier if logs exceed threshold size) and the aggregation process is scheduled to run at the same intervals.

Currently, the Timing Points ts1, ts2, tn1 and tn2 as shown in Figure 1 following are recorded within the SAT log using dedicated field names. The Timing Points ts3, ts4 and tn3 are not explicitly recorded in the SAT logs.

The DSP Segment Southbound time in Requirement 2 will be calculated based on Timing Points ts1 and ts2. It may be possible to create an additional entry for Timing Point ts3 for CSP North and the SMETS1 Service Providers (S1SPs) but this is not included in the scope of this PIA response, and should be discussed prior to the issue of the FIA. The DSP believes that the time taken to receive an Acknowledgement from the CSP or S1SP should not be included in the definition of the Target Response Time for the DSP, since this time is outside of the control of the DCC.

To meet the stated requirement in Requirement 3, the DSP Segment Northbound time would be calculated based on Timing Points tn1 and tn3. The Timing Point tn3 would be taken from the time at which the corresponding “delivered” Transaction Status is recorded in the SAT log. However similar to the Northbound time, the DSP believes that the time taken to receive an Acknowledgement from the Service User should not be included in the definition of the Target Response Time, since this time is outside of the control of the DCC. DSP therefore proposes to calculate the DSP Segment Northbound time based on Timing Points tn1 and tn2.

The Timing Point ts4 is required to calculate the Southbound Waiting Time within DSP and this will be used to report a “failed” response, i.e. where no response is received. Timing Point ts4 will be taken from the time at which the corresponding “timed out” Transaction Status is recorded in the SAT log.

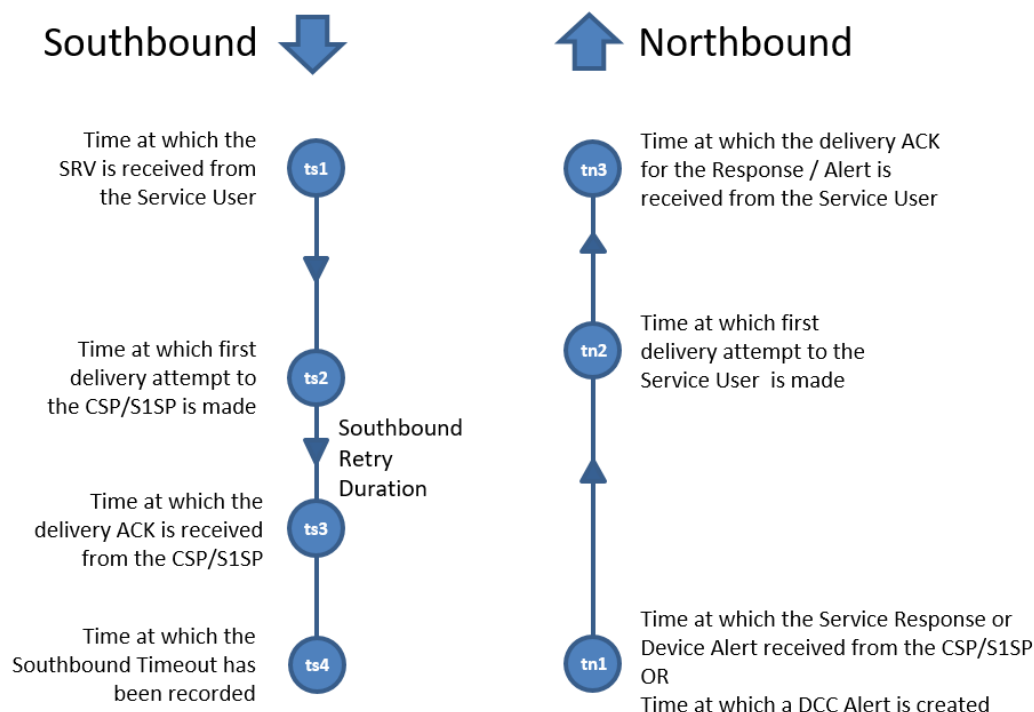


Figure 2: Northbound and Southbound Timing Points within the DSP

Note that whilst the DSP may have similar measures in the existing Agreement for measuring Target Response Times, the revised Requirement 7 asks for more granular reporting with SRVs grouped by business process and hence the reports will not have the benefit of smoothing any anomalies across SRVs.

SAT data will be loaded in the Aggregation Database where it will be separated by the criteria stated as derived according to the notes above. Reports will be selected from the aggregated data to the granularity required.

Measuring SRV Responses and Alerts will result in additional processing and require additional storage. The ESI reporting server is very close to capacity and the addition of this new functionality may mean that a server uplift is required.

4.1.2 CR4258 System Availability

Two options are available within the DSP.

Option 1: Based on live network and systems monitoring

The DSP is a complex solution, with multiple components and an N+1 architecture. As a result, the failure of a single component will not necessarily result in the failure of any of the DSP system Services. In addition, different parts of the service require different rules.

The current Elasticsearch Stack (ELK) monitoring solution can be enhanced to be highly available and to include rules determining when the following DCC Services are unavailable:

- DUIS (including TCOS), split by CSP Region
- Registration Data Interface
- SMKI Repository
- SSI

These rules will need significant testing to validate that they produce the correct results.

The ELK monitoring solution will provide real time monitoring of availability and, using text messaging, will alert the Service Team in the event of an issue. System Availability can be defined using a 'top-down' approach, measuring the time for which it would be possible for an external user (Service User or Registration Data Provider) to access the corresponding DCC Services. External sources will be used as follows:

DUIS	The availability of the DUIS Interface will be measured using heartbeat SRs. DSP will agree with an Other User to send a pre-defined set of SRs with an agreed frequency to a specified set of devices covering each Region. As long as the SRs are successful, the service will be deemed to be available. If the Service Requests are not successful due to issues beyond the control of the DSP, such as issues with the sending party, the CSPs or the devices, the DSP will use other relevant data, such as the success of other Service Requests, to provide evidence for service availability.
Registration Data Interface	Central Switching System (CSS) will send a set of agreed requests with a fixed frequency
SMKI Repository	An Other User will send a pre-defined set of certificate requests with an agreed frequency
SSI Interface	A software robot to login to the SSI on behalf of an Other User and make a set of simple queries with an agreed frequency.

A manual data feed containing information about 'Planned Maintenance' and 'Unplanned Maintenance' would be required, as well as manual updates where other Service Provider outages impact the DSP.

If this option were selected, additional security testing and infrastructure capacity would be required to support it.

Option 2: An alternative method

System unavailability should be a rare occurrence and is managed by the major incident team, which reports on impact and system availability. The alternative method will be to keep a record of unavailability of DCC Services in a spreadsheet, recorded with the appropriate metadata to create a report against the defined criteria. A macro within the spreadsheet will be manually run to generate the ESI format report requested by the DCC.

Similar manual updates to Option 1 would be required.

For both options, it will not be possible to deliver a monthly view of end-to-end Service availability as a line graph. However, the data from the report could be used by DCC DS&A team to plot a graph.

4.1.3 CR4259 Meeting Target Performance Levels

DSP will:

- Determine for each SR whether the total time taken within DSP was within the TRT
- Exclude Service Requests which return an E20 or E21 error

- Group results by Business Process and by Day, noting that SRs that relate to multiple Business Processes will form part of the calculations for multiple groups

There will be occasions when the level of Service Requests are too low to provide a sensible Performance Measure. Where the number of monthly SRs is below 1,000, the DSP will still calculate the Performance Measure but the Target and Minimum Service Levels will be excluded from any Service Level expectations/contractual requirements (i.e. they will not need to be achieved).

To apply these new performance standards to the DSP Contracts will require the addition of ten new Performance Measures to Contract Schedule 2.2 to mirror the ten Business Processes defined in Requirement 7. DSP considers this to be a large change to the Agreement.

To determine the full impact of Requirements 15 and 16, DSP will need to perform an investigation to progress the change further, and determine its levels of compliance with the new or amended measures. The charges for this investigation have been included in the FIA preparation price. At the conclusion of the investigation, DSP would be able to provide Rough Order of Magnitude (ROM) prices to correct any issues, which would then be included in the FIA response.⁷

The requirements for CR4888 request options for meeting the new performance standards with the parameters:

- Maximum message size
- Minimum message size
- Typical message size based on service user behaviours (This option is subject to discussion with DCC).

The DSP's achievement of performance SLAs is not strongly influenced by message size and, with regard to having the ability to meet the defined performance standards, there is no difference between the maximum and minimum message sizes. Therefore, no options have been provided.

4.2 CSP South and Central Solution

As part of the solution for these changes, CSP South and Central (CSP S&C) will:

- Design, build and system test modifications to their Comms Hub firmware, covering all Comms Hub variants, to support the generation of alerts to the DSP. These alerts will be triggered by the Comms Hub receiving SRV requests in scope for this Modification
- The Alerts will be in the form of acknowledgement messages from the Comms Hub to the DSP which will contain the time when the Comms Hub to HAN device message handover occurred. The acknowledgement messages generated will be in line with the specifications of the 'SD4.4.2 - SMWAN Gateway' specification
- Design, build and system test modifications to the CSP S&C reporting platform to ingest and process the additional content provided by the DSP via the SMWAN usage file on a monthly basis
- Management of the additional and significantly larger SMWAN usage file data provided by DSP on a monthly basis, including retrieval, storage, processing and archival of the content

⁷ DCC, and hence this Modification, would need to raise separate CRs and PRs to enable the Service Provider to align with the Service Level Agreement (SLA).

4.2.1 Firmware Release

There are two options for the release of the Comms Hub firmware update.

- Option 1 Firmware release under a standard Firmware Management Policy (FMP) release. This is the recommended option as it is the less costly and less risky option for releasing firmware.
- Option 2 Firmware release under a standalone release. This adds significant delivery risks, costs and timelines to the rollout of the functionality required and is not recommended.

For pricing and timing purposes, Option 1 is considered in this PIA.

4.2.2 Testing

Changes related to reporting performance measures are not normally regression tested in the System Integration Testing (SIT) phase and are expected to be verified by the CSPs in the PIT environment before being progressed to Live. Changes as described above will be deployed and tested in the CSP South and Central PIT environment.

For option 2, the standalone release, there is additional regression testing for all Single Band and Dual Band CH device variants. In addition, the Comms Hub code to support the changes for this Modification will be developed and delivered separately outside of the FMP delivery stream (i.e. FMP delivery). Upon successful completion of the integration testing (both SIT and UIT), the Comms Hub firmware changes maintained separately for this CR will then require integration to the FMP delivery code stream such that the code changes are included in the next FMP release.

Based on testing considerations alone, DCC recommend the Option 1, FMP route.

4.2.3 Other Impacts

CSP S&C will need to undertake monthly monitoring of the source data, service management support to address any deviations from expected performance behaviours and validate the reports generated in readiness for monthly submission to DCC.

- For performance measure 6B, this covers the following:
 - Establish a new PMx performance measure for: 'Percentage of Communication Hub firmware images successfully delivered to the Communications Hub'.
- For performance measure 6C, this covers the following:
 - Establish a new PMx performance measure for: 'Percentage of Communication Hub firmware image activations successfully implemented on the Communications Hub'.
- Updates to the Performance Measure Methodology (PMM) document which provides the key definitions against each of these performance measures.

Changes to the DSP will be required, which are not included in this PIA.

4.3 CSP North

For all three sets of changes, impacts to the CSP North (CSP N) solution include:

- The impact to the logging within the RNI
- Changes to infrastructure capacity for the BSS and OSS systems
- Changes to changes to Operational and Service processes
- Changes to performance reporting and service processes

4.3.1 Meeting Target Performance Levels

CSP N have identified three potential options:

- | | |
|----------|--|
| Option 1 | Only consider messages of limited size for inclusion in the measure, in line with current RTT test messaging. On a packet basis, this is three downlink (DL) and one uplink (UL). This configuration was chosen in response to the original ISFT5 ⁸ requirement as the majority of messages fell within this sizing. It is possible this could be increased to 5 DL and 2 UL, but without deeper analysis a conservative measure is proposed. This would be the maximum performance for the current solution without further changes, regarding the current 30 second RTT requirement. |
| Option 2 | Modifications to the radio plan to ensure eight bulk messaging channels across the whole network in an effort to reduce the number of CH's each channel supports. Reducing contention would help ensure the channel could service a CH at its fastest possible rate. |
| Option 3 | As per option 2, but with additional work to be performed on the CH, RNI, and RAN estate. Investigation into compression of larger SRs in both downlink and uplink to limit packet counts would be undertaken, which would be necessary to reduce airtime on multi packet streams. Modifications to the Comms Hubs and RNI would be required to achieve this. This option will again have an upper limit on SR sizing for consideration within the measure, although less restrictive again. Quantification would require more in depth analysis, but should CSP N achieve a 2:1 compression ratio this will extrapolate the increased message size within each timeslot accordingly. With option 3 the Arqiva network may be able to achieve a 30 second TRT with a maximum message size of 1 GBT block north and southbound. |

The options have been listed in an ascending order of cost and complexity.

⁸ Submit Final Tender, refers to expected traffic levels when the Smart Metering System was defined

4.4 CGI Instant Energy

As a result of this change a number of the CGI Instant Energy (CGI IE) design documents and Contract Schedules will need to be updated. This will be further assessed during the FIA stage.

4.4.1 Measuring SRV Responses and Alerts

Each Service Request received by CGI IE may result in multiple external interactions with the devices and the DCO. For example, processing a single 4.6.1 may require over 100 external interactions. The concept of distinct single Southbound and Northbound measurements does not therefore apply. DCC recommends proposes that for each Service Request the total time taken within CGI IE is measured, with the time for external interactions excluded.

The processing of each SMETS1 Alert similarly involves multiple external interactions, so the same approach is proposed.

CGI IE will create six new monthly reports:

1. Service Request RSVP by day
2. Service Request RSVP month summary
3. Business Process RSVP by day
4. Business Process RSVP month summary
5. SMETS1 Alert RSVP by day
6. SMETS1 Alert RSVP month summary

Note DCC recommends the Working Group consider the necessity of a daily report, whilst noting that tracking performance by business processes is extremely difficult for CGI IE and will most likely provide unreliable results.

Service Request RSVP by day Report includes daily summary figures for each in-scope SRV for each calendar day; the timing for each service request is included in a particular daily summary based on the service request's completion time. The following fields would be included:

- Date – the date of the measurement day.
- SRV – the Service Reference Variant.
- Volume – the number of Service Requests processed.
- Device type – the type of device: CHF, ESME, GSME, GPF, IHD, PPMID (noting that not all SRVs interact with devices)
- Mean processing time – the mean of the processing times for each Service Request. The *processing time* is the time taken within the IE S1SP to process the service request starting from receipt of the request from the DSP and ending at the final attempt to send a response to the DSP. The processing time excludes appropriate external interactions and other factors, as detailed below.
- Median processing time – the median of the processing times of service requests this day.
- Payload – indicator of the success of the service request, details of this field are to be determined during the FIA.

Time elapsed during the following activities is excluded from the processing time:

- a. API calls to external systems including the DCO, CSPs and the DSP
- b. Waiting for 'wake up' devices to wake up
- c. Communicating with devices

Note that the following activities, which would be excluded from Performance Measures, are included in the processing times used here on the basis that the purpose is to provide elapsed times covering the period that the system holds responsibility for the request:

- a. Processing other service requests and alarms for the same site
- b. Waiting for network capacity
- c. Functional pauses – deliberate pauses for functional reasons such as allowing time for device operations to complete, or waiting for retries to be due.

The measurements used will be taken by the CGI IE software application components as close as practicable to the network API calls. If no instances of a particular SRV are processed during the reporting period then there will be no entry for that SRV in the report.

Business Process RSVP by day Report includes daily summary figures for each in-scope SRV grouped by Business Process for each calendar day; the timing for each service request is included in a particular daily summary based on the service request's completion time. The following fields would be included:

- Date – the date of the measurement day.
- SRV – the Service Reference Variant.
- Business Process – the Business Process group that a Service Request Variant relates to.
- Volume – the number of Service Requests processed.
- Device type – the type of device: CHF, ESME, GSME, GPF, IHD, PPMID (noting that not all SRVs interact with devices)
- Mean processing time – the mean of the processing times for each Service Request. The *processing time* is the time taken within the IE S1SP to process the service request starting from receipt of the request from the DSP and ending at the final attempt to send a response to the DSP. The processing time excludes appropriate external interactions and other factors, as detailed for the Service Request RSVP by day report.
- Median processing time – the median of the processing times of service requests this day.
- Payload – indicator of the success of the service request, details of this field are to be determined during the FIA.

SMETS1 Alert RSVP by day Report includes daily summary figures for SMETS1 Alerts for each calendar day; the timing for each SMETS1 Alert is included in a particular daily summary based its arrival time. The following fields are included in each summary:

- Date – the date of the measurement day.
- Volume – the number of SMETS1 Alerts processed.
- Device type – the type of device: CHF, ESME, GSME, GPF, IHD, PPMID (noting that not all SRVs interact with devices)
- Mean processing time – the mean of the alert processing times for each SMETS1 Alert. The *alert processing time* is the time spent within the IE S1SP processing the alert starting from receipt of the push packet from the device and ending at the final attempt to send the SMETS1 Alert to the DSP. The time excludes the same external interactions and other factors detailed for the Service Request RSVP by day report.
- Median processing time – the median of the alert processing times included in this day.

Service Request RSVP month summary and SMETS1 Alert month summary Reports contain a RSVP month summary report and the SMETS1 Alert month summary report contain an aggregation of the daily figures for each SRV. Totals are summed, for peak values the greatest daily value is used, the mean processing time over the entire month is provided (based on

aggregated daily total volumes and TRTs), and for median values the mean of the daily medians is used.

Business Process RSVP Month Summary Report contains an aggregation of the daily figures for each SRV grouped by the Business Process that the SRV's belong to. Totals are summed, for peak values the greatest daily value is used, the mean processing time over the entire month is provided (based on aggregated daily total volumes and TRTs), and for median values the mean of the daily medians is used.

For all Reports there are some common changes: New measuring points and additional logging will be implemented in order to feed into the Reporting Engine component (ELK based) which will be enhanced to provide the new reports.

The reports will be sent to the DCC in a simple CSV or ESI file format, the details are to be agreed. It is assumed that sftp will be used to transfer the files over the Gamma network to an endpoint provided by the DCC.

Items out of scope

- Quarantining of SRVs does not occur in CGI IE for ADA/ADT purposes, as any SRVs which do not pass Anomaly Detection are rejected and returned to the user.
- The processing of SRVs 11.1 and 11.3 follow a different pattern to other Service Requests.

4.4.2 System Availability

Option 1: Based on live network and systems monitoring

The CGI E system is complex, with multiple components, an N+1 architecture, such that the failure of a single component will not normally result in the failure of any of the CGI IE Services. For example there are currently eight components that all service the interface to the DCO and the failure of any one will not result in an outage or any downtime. CGI IE records the status of each major component of the system in the ELK based Reporting Engine component, but it does not currently have any aggregated level of data to record system availability.

The Reporting Engine component will be enhanced to include business rules determining when the IE S1SP is unavailable. These rules will need significant testing to validate that they produce the necessary results. Availability will be defined using a 'top-down' approach, measuring the time for which it would be possible for a Service User to access the corresponding DCC Services.

DUIS

The availability of the DUIS to S1SP Interface will be measured using heartbeat SRs. The DCC will agree with the DCC Adaptor Service Provider to send a pre-defined set of SRs with an agreed frequency to a specified set of devices. As long as the Service Requests are successful, the service will be deemed to be available.

If the Service Requests are not successful due to issues beyond the control of the DSP such as issues with the sending party or the DSP or the S1CSPs or the devices themselves, the DSP will use other relevant data, such as the success of other Service Requests, to provide evidence for service availability, and where such evidence is provided CGI IE will be reported as available.

Whilst the Reporting Engine component would be able to calculate the unavailable system minutes, it will not know about planned outages and hence will require a manual data feed containing information about 'Planned Maintenance' and 'Unplanned Maintenance'. Manual correction of the reported values will be required in certain failure scenarios, for example, those affecting the monitoring itself rather than core system functionality.

Option 2: An alternative method

System unavailability should be a rare occurrence and is also always managed by the major incident team who report on impact and system availability. The alternative method proposed is to keep a manual record of unavailability in a spreadsheet, recorded with the appropriate metadata to report against the criteria requests. The spreadsheet will include a macro to generate the report in the agreed format.

The spreadsheet will also contain the Planned and Unplanned Maintenance details to allow that information to be excluded from the report. Whilst the spreadsheet requires manual input, updates due to outages should be part of the major incident itself, however the running of the monthly report will require a small amount of effort each month.

For Both Options, it is assumed that 'Planned Maintenance' will include DCC maintenance slots notified to Industry in advance.

The reports will be sent to the DCC in a simple CSV or ESI file format, the details are to be agreed. it is assumed that the report will be delivered in the same way as the existing service reports.

4.4.3 Meeting Target Performance Levels

Req	Description	Actions to take to meet requirements, including Exclusions
H13.1 6A	Business Process TRT	CGI IE already calculates the TRT for each Service Request as a part of the existing PM1.1 performance measure. This will be enhanced to group results by Business Process and by Day. Note that some SRVs relate to multiple Business Processes. - This requirement is significantly impacted by the issue described in DP230. Therefore this Business Process is currently out of scope of this Modification There will be occasions when the level of Service Requests is too low to provide a sensible Code Performance Measure (CPM). Where the number of monthly Service Requests within a business process is below 1,000, CGI IE will calculate the Code Performance Measure but the Target and Minimum Service Levels will be excluded from any Service Level expectations/contractual requirements (i.e. they will not need to be achieved). When measuring the TRT for each Service Request, the same method used for PM1.1 will be used. The percentage of each Business Process which is delivered within the Target Response Time shall be measured and calculated by reference to whether the messages that together comprise that Business Process were sent and received within the required Target Response Time. For the purpose of TRT calculations, a Service Response will not be considered to have been received if the Service Response contains an error Response Code relating to a communications failure or timeout (E20 or E21). In terms of the ROM and FIA charges, whilst the CGI IE may have similar measures in the existing contract for 6A, this Mod asks for more granular reporting with SRVs grouped by business process and hence the DCC will not have the benefit of smoothing any spikes across SRVs. To determine the full impact of Requirement No. 6A, CGI IE would need to perform an investigation to progress the change further. As an outcome of that investigation, CGI IE would determine its levels of compliance with the new/amended measures. The charges for this investigation have been included in the FIA preparation price⁹.

⁹ At the conclusion of an investigation, CGI IE would be able to provide ROM prices to correct any issues, which would then be included in the FIA response. DCC would need to raise separate CRs and PRs to enable CGI IE to align with the SLAs.

Requirement 15 requests options for meeting the new performance standards with the following parameters:

- Maximum message size
- Minimum message size
- Typical message size based on service user behaviours

For CGI IE, the achievement of performance SLAs may be strongly driven by message size or complexity or the volume of device interactions, and any impact on performance measures will be assessed and described during the FIA and, if necessary, a proposal included in the FIA for exclusions from or changes to the performance measures to take into account large or complex messages.

4.5 Secure

With regard to the Speed element of the reporting requirement, it is not possible for Secure to:

- Measure or exclude the HAN timing
- Use a CSP test message to determine the average response time

Secure considers it will have to ingest additional data from its CORE systems into the separate offline Reporting systems. Without this enhancement, there is a risk that other components may be impacted and start to underperform when more and more devices are migrated and operating under the DCC regime. DCC notes that this risk cannot be proven, and has challenged Secure over their system design.

The Reporting system is used to serve various DCC reports including the Service level management report, Performance reports, Incident summary and Migration summary reports etc. Hence, it is important that this engine remains operational to serve the requirements consistently and appropriately.

Currently, Secure cannot capture the time stamps of the HAN border.

The Secure application system has internal sub components which interact with each other to serve the DCC Service Users. Hence, Secure monitors the individual sub-components to ensure that overall services are running. Secure can produce a graphical view of the individual sub-components which is currently available through its monitoring systems. The important point to note here is that even if in some cases independent sub-components indicates that sub-component was unavailable that does not directly signify that the system or services are unavailable.

Secure has an obligation that if its services are unavailable than it has to notify DCC and log a fault ticket. Secure assumes that the data extracted manually from Remedy in conjunction with the above graphical status could provide better insights.

Planned maintenance and unplanned downtime will be determined from the data available from Remedy. Hence, Secure will deliver the data from its monitoring system in the graphical forms and Remedy data (especially Sev-1 and Sev-2 incidents) which may be indicative that Services are unavailable. Both of these data sources will be compiled into a single report for DCC. DCC notes the graphical formats are not an acceptable route to integrating and collating content from other Service Providers. DCC are challenging this solution. Note that there will be no charge for Secure to carry out their FIA, so this does not impact costs for producing the FIA

The requirement is to produce a monthly report to DCC which outlines the system monitoring and availability as follows:

- Monthly view of end-to-end Service availability: *Secure will produce the graphical data from its existing monitoring system and Remedy data.*

- Reporting Service Availability by time of day: *Secure can produce the time charts from its monitoring systems. Secure in this Preliminary Assessment cannot identify if it can extract and produce the underlying raw data from its monitoring system. Secure can evaluate this only at the stage of Full Impact Assessment. The time charts from monitoring systems will not signify if the business processes are impacted or not.*
- Measuring Service Downtime: *Secure will extract data manually and produce Remedy data which shall be treated as truth to measure the downtime. Remedy Sev-1 and Sev-2 incidents would be considered in this measurement category.*
- Planned Maintenance: *Secure will extract data manually and produce the planned maintenance activities from the Remedy tickets.*

The estimated effort produced in this Preliminary Assessment does not include the provisioning or implementation of a full reporting solution, it only includes the effort required to provide the collection and reporting of the disaggregated data. Note that this may also reduce the estimated Business as Usual monthly operational services effort.

4.5.1 RSVP Reporting

As with all the SPs, Secure does not have any visibility, if an SRV is a part of business process or not and even if a SRV is part of a business process, Secure cannot determine under which business process an SRV was executed. For Example: SRV 1.1.1 comes under business processes Install and Commission, Change of Supplier and Tariff Updates. Secure is unable to view if SRV 1.1.1 is executed under which business process.

Note that for the SMETS1 systems, SRV 11.1 (Update Firmware) does not send any firmware image to the devices. Using SRV 11.3 (Activate Firmware), Secure and the other S1SPs send the image to the device with two actions; firmware image download to device and firmware image activation by the device.

4.6 Capgemini (Dual Control Organisation)

For the Capgemini components of the solution, Capgemini will use existing Amazon Web Services (AWS) capability to host the solution as a serverless model. This solution uses a suite of AWS services paid via a consumption model based on a data lake, taking a feed of data pushed from Critical Software and storing it in the AWS S3 data lake. The AWS Glue capability will be utilised as part of the serverless integration service, supporting the discovery, preparation and combination of data for analytics. The data in the S3 bucket will be staged and then published via cubes, which will be derived to meet the requirements. Once published, the Amazon Athena service will be used to interactively query data and analyse big data using standard SQL. Data can be reviewed with the Amazon QuickSight GUI-Dashboard, and shared as automated email-based reports.

The Capgemini solution is dependent on data fed from the Critical Software solution defined in section 4.7 above.

Whilst Capgemini proposes building three environments, DCC will recommend one environment to handle data from the Production environment only.

Capgemini have proposed using existing monitoring for system availability. DCC is challenging the level of detail provided for this solution, which will be supplied before the FIA is requested.

4.7 Critical Software (SMETS1 Impacts)

To fulfil the requirement of measuring TRTs at an individual SRV level and in real-time, Capgemini will process the raw Dual Control Organisation (DCO) application logs. To make the ingestion simpler and more effective some fields need to be added to the lines where the elapsed times are logged.

To achieve this Critical Software (CSW) will update these DCO components:

Request Manager	Add the SRV type and the request id to the same log line where the component and request elapsed times are logged after processing a new DUIS request.
Command Manager	When creating a new session, add the session id and request id to the same row that has the elapsed time.
	Add the session id, sub- session id and request id to the log with the elapsed time when creating a new sub- session
	Add the request id to the logs where the request and component elapsed times are logged on specific SRV commands:

Making these changes should mean that Capgemini would only need to extract the rows in the application logs that have the request and component elapsed time and wouldn't need to navigate between rows and correlate them to aggregate all the elapsed time for a specific DUIS request.

4.7.1 Support and Implementation

CSW will also be required to support Capgemini during the AWS Glue configuration described in section Capgemini (Dual Control Organisation)4.6, Capgemini (Dual Control Organisation), identifying the log fields that need to be processed and stored and defining the calculations to be applied to the ingested data.

The following items have been identified as requiring change and implementation in this release.

Deliverables	Affected Components
DCO Software Package	DCO Request Manager
DCO Deployment Manual	DCO Command Manager IE
DCO PIT Test Completion Report	DCO Command Manager Trilliant
DCO Release Notes	DCO Command Manager Secure
DCO Changelog	

As part of the design, it is assumed that:

1. The Application, Network, and Security Operations (ANSO) will process the raw DCO application logs on the AWS Glue.

2. There's no need to process the Crypto logs since the elapsed time is already contemplated on the Command Manager logs.
3. All the NoSRV commands are out of scope. This means that any Alerts are out of scope.
4. The ANSO has an implementation period of one (1) month during which they would require support from CSW.

4.8 DXC-Trilliant

DXC are responsible for the reporting changes to fulfil DCC's requirements for this Modification, while Trilliant provide support to DXC during their development and testing phases.

For this SMETS1 cohort, the Service Providers have confirmed that the SRV ID parameter is already present in their logging files, and this will be used as the basis of the required reporting.

DXC have provided neither details on RSVP reporting nor any information on Meeting Performance Levels for their system components. DCC have challenged, and it will be provided in the FIA. Both Service Providers anticipate substantial impacts on their contracts for the Meeting Performance Levels parts of this Modification. As with all the Service Providers, anticipated costs would be established in the FIA.

4.9 DCC Data Science and Analytics

The DCC Data Science and Analytics (DS&A) team will take the information for all the changes provided by the DSP in ESI files, and will provide reporting to the SEC Operations Group and all interested parties. The design for these reports will be established in the FIA, and will be expected to follow the format of the existing SECMP0122A reporting with information broken down into the business processes and across the Service Providers as defined in the requirements.

4.10 Exceptions and Exclusions

Service Providers have recommended the following be excluded from definitions, measures, and reporting. These should be considered for inclusion in an Exception List, to be presented as part of the development of the FIA. Some mitigations are provided in the below list which could be accepted.

This list is separate from Appendix C.6: Exclusions, which relates to information not provided by the Service Providers at PIA stage.

SP	Exclusion
DSP	The time taken to receive an Acknowledgement from the Service User should not be included in the definition of the Target Response Time, since this time is outside of the control of the DCC.
DSP	DSP Segment Southbound and Northbound Time calculations, exclude the time that have been excluded from the SLA calculations, such as the time SRVs have been quarantined by the ADA or ADT processes, the Sequence hold duration, Future Dated hold duration, time spent etc

DSP	Because the aggregation process is carried out in batches across a day, it will not be possible to determine the median of the RSVP metrics. However, the mean can be calculated and other statistics may also be provided. We expect this to be discussed and agreed as part of the FIA.
DSP	Assume that RSVP metrics calculations will apply the following exclusions: - time spent in quarantine; - waiting time for future dated SRVs; - sequence hold; and - time spent within Enduring Change of Supplier (ECoS) Party systems
DSP	The SMETS Version of a Device is not recorded within SAT logs. However, whether a Device is SMETS1 or SMETS2 can be inferred from the value of the CSP/S1SP field.
DSP	The Meter Type (ESME or GSME) is not recorded in the SAT logs. However, this can be inferred by checking whether the Device is associated to a MPRN or MPAN for those SAT records where the MPxN is populated.
DSP	Exclude Service Requests which return an E20 or E21 error
DSP	There will be occasions when the level of Service Requests are too low to provide a sensible Performance Measure. Where the number of monthly Service Requests is below 1,000, the DSP will still calculate the Performance Measure but the Target and Minimum Service Levels will be excluded from any Service Level expectations/contractual requirements (i.e. they will not need to be achieved).
CSP S&C	Assume that for performance measures 6B and 6C, (relating to CH firmware updates) as well as performance measure 6A (relating to SRV messages) that exceptions will be applied similar to those used for meter firmware updates, to exclude any known issues with the CHs and/or meters (e.g. CHIPSM non-compliant installations). Details of such exceptions will be included within a revised Performance Management Approach.
S1SPs	Quarantining of SRVs does not occur in S1SP for ADA/ADT purposes as any SRV's that are received which do not pass Anomaly Detection are rejected and returned to the user.
CSP N	SR requiring large responses (such as SR4.8, SR4.10 and SR4.11) will be excluded, as these are technically unfeasible to achieve in 30seconds.
CSP N	SR requiring large GBT downlink will be excluded, limits will be defined after further analysis of the benefits of the options listed above.
CGI IE	Firmware Activation: The successful activation of firmware images is not within the sole gift of CGI IE as it is dependent on the successful processing of the corresponding Service Requests by DCO, the delivery of those requests by S1CSPs, and the successful operation of the Comms Hub itself, which is the responsibility of the Supplier. Whilst CGI IE could provide statistics on the successes, CGI IE is effectively passing through the data to the CHF and hence cannot be held responsible for firmware images not successfully activated.
Secure	Can neither exclude HAN timing nor use a CSP test message to determine the average response time.
Secure	Assumes that H13.1 6 and H13.1 6A do not apply because: - H13.1 6 mentions of DCC SSI/SSMI Interface which is not managed by Secure. - H13.1 6A mentions of business processes TRTs which Secure does not have visibility to measure.

5 Testing Considerations

This Full Impact Assessment includes the cost to develop, fully test and deliver the DSP components of this SEC Modification.

5.1 DSP

Functional testing of the Change will be performed in PIT. It is assumed that testing in SIT will be limited to validation of basic integration of the new report with the DS&A rather than repeating functional testing.

5.2 Other Service Providers

Testing of the solutions for all Service Providers will take place in their environments. However the collation of the reporting results from each Service Provider by the DSP will be a manual-based process for PIT with the required interfaces being tested in the integration testing phases.

5.3 System Integration and User Integration Testing

There is expected to a requirement for substantial System Integration Testing (SIT) and User Integration Testing (UIT) associated with this Modification. These testing estimates are not typically provided in a PIA, and most likely would be calculated on the basis of a combination of other Modifications and Changes Requests in a SEC Release.

CGI Systems Integrator activity is assumed to be part of the SEC Release costs and as such is not included in this Impact Assessment.

5.4 Change Lead Times and Timelines

From the date of approval to the point of PIT complete, to implement all the changes proposed DSP and most of the Service Providers will require a lead time of a minimum of **eight** months.

CSP N have proposed the following:

Measuring SRV Responses and Alerts	12 – 15 months
System Availability	8 months
Meeting Target Performance Levels	9 – 12 months

Depending on which functionality is approved, DCC will challenge the CSP North proposed durations.

5.5 Costs and Charges

This section indicates the quotes for the three technical areas of change identified for this Modification. Note these costs assume a release of just this SEC Modification without any other Modifications or Change Requests in the release, which is not truly reflective of what the post-PIT test costs or programme duration will look like. A calculation of those costs will be carried out when the contents of the future Release are finalised, and the post-PIT costs determined through a "Grouping CR" also referred to as a "Release CR".

The three technical areas are quite separate and one can be carried out as a standalone change, or without the other changes shown following.

Change	Design, Build and PIT	Costs for FIA
Measuring SRV Responses and Alerts	£3.69million - £3.94million	£270,421
System Availability	£1.17m - £1.54m	£215,077
Meeting Target Performance Levels	£3m-£3.42m ¹⁰¹¹	£515,000

Design The production of detailed System and Service designs to deliver all new requirements.

Build The development of the designed Systems and Services to create a solution (e.g., code, systems, or products) that can be tested and implemented.

Pre-Integration Testing (PIT) Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC.

CSP North have requested 60 days to complete the SRV Response and Alert work, 45 days to complete the System Availability study, and 30, 60, or 90 days for the Meeting Target Performance Levels functionality based on the chosen option. All other Service providers have quoted 30 days to complete any Full Impact Assessment

5.5.1 Changes to Performance Measures and Contracts

The contract updates will be detailed within the FIA and will impact some or all of the following schedules for most of the SMETS2 Service Providers (DSP and CSP):

- Schedule 2.1 (DCC Requirements): update to reflect the addition of new Requirements to enable achievement of the activities and / or deliverables under this Modification

¹⁰ Does not include one S1SP who declined to give price

¹¹ For both CSPs only include lower priced option

- Schedule 2.2 Performance Measures
- Schedule 3 (DCC Responsibilities): update to reflect the addition of new DCC Responsibilities to enable achievement of the activities and / or deliverables under this Modification
- Schedule 4.1: Solution Design documents will need to be updated
- Schedule 6.1 (Implementation Planning): addition of new milestones
- Schedule 7.1 (Charges and Payment): revisions to incorporate the charges and payment applicable for Modification

For CSP South and Central, the following Performance Measures were identified:

- For performance measure 6B:
 - Establish a new PMx performance measure for: 'Percentage of Communication Hub firmware images successfully delivered to the Communications Hub'.
- For performance measure 6C:
 - Establish a new PMx performance measure for: 'Percentage of Communication Hub firmware image activations successfully implemented on the Communications Hub'.
- Updates to the Performance Measure Methodology (PMM) document which provides the key definitions against each of these performance measures.

CGI IE did not perform any analysis of the expected changes to contracts stating: *"Provision of a price to align the solution with the proposed SRVs would require additional, more detailed investigation, since the solution could be complex, ranging from database query plan refinement to completely redesigning and rebuilding software/hardware components."*

On the basis of the above, CGI IE is unable to provide pricing for alignment with the revised SRVs as part of this PIA. To allow DCC to move forward the investigation, it is proposed that CGI IE performs the investigation as part of the CR4888 FIA preparation stage." They provided an indication of "Substantial" changes to the contracts and a separate FIA price to complete the FIA for that section, and to complete the FIA.

The SMETS1 Service Providers would all need to review their contracts with DCC. In general the higher cost given by the S1SP, the higher the (additional) impact on their work.

Appendix A: Glossary

The table below provides definitions of terms in this document.

Acronym	Definition		
ADA	Anomaly Detection Attributes	OMR	Operational Metrics Review
ADT	Anomaly Detection Threshold	OPR	Operational Performance Regime
ANSO	Application, Network, and Security Operations	PIA	Preliminary Impact Assessment
AST	Alert Supplementary Timing log	PIT	Pre-Integration Testing
CH, Comms Hub	Communication Hub	PMM	Performance Measure Methodology
CHF	Communications Hub Function	PMR	Performance Measurement Report
CoS	Change of Supplier	PPMID	PrePayment Meter user Interface Device
CPM	Code Performance Measure	RAID	Risks, Assumptions, Issues, and Dependencies
CR	(DCC) Change Request	ROM	Rough Order of Magnitude
CSP	Communications Service Provider	RSVP	Rate, Speed, Volume, Payload
CSP S&C	CSP South and Central	RTT	Round Trip Time
CSP N	CSP North	SAT	Service Audit Trail
CSW	Critical Software	SBCH	Single Band Comms Hub
DCC	Data Communications Company	SEC	Smart Energy Code
DCO	Dual Control Organisation	SECAS	Smart Energy Code Administrator and Secretariat
DL	Downlink	SIT	Systems Integration Testing
DS&A	Data Science and Analytics team	SLA	Service Level Agreement
DSP	Data Service Provider	SMETS	Smart Metering Equipment Technical Specification
DUIS	DCC User Interface Specification	SMKI	Smart Metering Key Infrastructure
ECoS	Enduring Change of Supplier	SM WAN, SMWAN	Smart Metering Wide Area Network
ESI	Enterprise Systems Interface, a file format	SR	Service Request
ESME	Electricity Smart Metering Equipment	SRV	Service Request Variant
FIA	Full Impact Assessment	SU	Service User
GBCS	Great Britain Companion Specification	SSI	Self Service Interface
GSME	Gas Smart Metering Equipment	SSMI	Self Service Management Interface
GUID	Global Unique Identifier	S1SP	SMETS1 Service Provider
HAN	Home Area Network	TCOS	Transitional Change of Supplier
I&C	Install and Commission	TOC	Technical Operations Centre
		TRT	Target Response Time
		TTO	Transition to Operations
		UIT	User Integration Testing
		UL	Uplink
		WD	Working Day

Appendix B: Reporting Metrics

Reporting should be based on the following Service Availability metrics:

- **Monthly view of end-to-end Service availability:** This view for each of the Services above is reported as a single percentage figure, as well as depicted as a line graph across the days of the month. This will enable a higher level of granularity and easier identification of potential issues that might have impacted Users throughout the reported period. This measure for end-to-end availability should include sub-systems linked to each individual interface. If a particular sub-system (i.e. server) is responsible for supporting multiple interfaces, and this sub-system experiences an outage, then the availability measure for each of the affected Services should be impacted and reflected in the monthly measure.
- **End-to-end Service availability by CSP Region:** The view for service availability, where relevant, is split by CSP Regions, for better correlation with the User's operational experience. Service availability contains some services that are not regionally based, for example, SSI availability has no reliance on CSP region and would not need to be split by regional availability. SMETS1 is not broken down by region.
- **Reporting Service availability by time of day:** Time of day is considered when measuring and reporting on Service availability for any particular Service, as this can have a direct impact on User's operations. The Operational Metrics Review (OMR) identifies a split (Monday to Friday) between hours where installations are more prominent (08:00-20:00) and hours where other business processes (for example, Change of Supplier (CoS)) take place (20:00-08:00). With regards to weekends, the OMR recommends Saturdays to be split between 08:00-12:00 (on-site activities are still performed, such as installations) and 12:00-08:00. Sundays are generally considered as days of on-site operations inactivity.
- **Measuring Service downtime:** Service downtime for each interface and its supporting system components is measured in minutes, and then expressed in hours over the reporting period (e.g., 235 minutes of unavailability in a month would equate to a total of 3.91 hours). The measure of service downtime should not be given as an average as this could skew results. The OMR recommends that from the total time of service unavailability (expressed in the formula as the *Unplanned Downtime*), the percentage of overall availability for a particular Service is calculated as follows:

$$\text{Service Availability} = \frac{\text{Uptime} - \text{Unplanned Downtime}}{\text{Uptime}} [\%],$$

where Uptime = Planned Uptime (total time in the month) – Planned Maintenance

Additionally, as each Service provided by the DCC is made up of an interface and multiple supporting sub-systems, a particular Service is to be considered available (therefore contributing to the argument 'Uptime' in the formula) only when all of its supporting sub-systems are available, and is to be considered unavailable (and therefore contributing to the argument 'Unplanned Downtime' in the formula) otherwise.

- **Planned Maintenance:** Planned Maintenance, complying with Section H8.4 of the SEC, should be excluded from, and not impact, the calculation for Service Availability defined in the formula above.

Appendix C: RAID, Clarifications, and Exclusions

In the following section, Risks, Assumptions, Issues, and Dependencies are listed, as well as requests for Clarifications, and specific Exclusions. Most of these items were raised by the Service Providers during preparation of the PIA.

C.1: Risks

SP	Description	Status
DSP	Additional storage may be required for the DSP ELK monitoring solution as a result of the changes specified in CR4258. Storage requirements will need to be assessed during the preparation of the FIA. Should this risk materialise, then additional costs beyond those shown in the PIA may be incurred	Accepted
DSP	In adopting more granular reporting and measurement with SRVs grouped by business process and or region, the DCC will not have the benefit of smoothing any spikes across SRVs and, as a consequence, performance statistics will be adversely impacted.	Accepted
CSP S&C	For SRV 1.1.1, under certain conditions, performance targets cannot be met. This is because SRV 1.1.1 has the biggest range in message size ranging from 1,351 up to 17,642 bytes. For larger messages, these are split and transmitted to the CHs in message blocks which are then assembled together to form the message. CSP S&C would wish to undertake some further analysis and testing to assess if this particular service measure can be achieved within the target time of 25 seconds (as listed under schedule 2.2) and under what circumstances (based on message size) this can be achieved. There may be further discussion required with DCC on whether the TRT for this message (schedule 2.2) needs to be updated based on certain scenarios as this target time is the same as other much smaller SRVs.	Accepted

C.2: Assumptions

SP	Description	Status
DSP	Data will be sourced from SAT logs. It is assumed that there will be no change to structure or content of these logs and the solution will only provide what is possible within the constraints of the current logs.	Accepted
DSP	Motorway Timing points will be taken from existing recording points in the SAT log. It is assumed that there will be no change to these recording points and the solution will only provide what is possible within the constraints of the current logs	
DSP	Support for other Service Providers' solutions – This PIA response covers only the changes to the DSP solution to support the DSP reporting requirements. Other Service Providers (particularly CSP S&C) may require changes to the DSP system in order to provide data to support their solution. Any such changes are excluded from the ROM estimates for this PIA response	
DSP	to provide a ROM price for the effort required to define and agree the business rules to determine availability, it is assumed that availability calculations will be based on the presence of successful business transactions only	Accepted

All	'Planned Maintenance' will include DCC maintenance slots notified to Industry in advance	
All	Data will need to be stored for three elapsed months Note some SPs have stated longer requiring additional storage. Should be investigated in FIA	Accepted
All	Availability calculations will need to be performed every thirty minutes	
DSP	DSP Security and DCC Security will permit ELK Heartbeats to access DSP component endpoints	
DSP	The ELK Production Cluster will need to be migrated on to new dedicated hosting infrastructure to be able to ensure: - o Resilience (host level); - o DR Failover capability; * Compute resource for additional VMs (e.g. For Logstash cluster)	
All	Assume that CR4253-related requirements will be updated prior to any request for an FIA for CR4253/CR4888, in order to clarify and update the reporting requirements to those needed to provide the reporting against which CR4259-related SLA compliance will be determined	Accepted
DSP	Assume ALL reporting against which the CR4259 SLA compliance will be determined will be delivered by CR4253. It is assumed that all the aggregated reporting required for the assessment of SLA compliance in CR4259 is included in the scope of CR4253	
DSP	This PIA response only covers the changes to the DSP solution to support the DSP reporting requirements for CR4253. Note that other Service Providers (particularly VMO2) may require changes to the DSP system to provide data to support their solution for CR4253. Such changes will be elaborated as part of the FIA, but any such changes are excluded from the ROM estimates for this PIA.	
DS&A	To support the Operational Performance Regime (OPR) the DCC require Service Providers to provide additional monthly reports to the DS&A around Service availability	
CSP S&C	assume for performance measures 6B and 6C, relating to CH firmware updates, the measures will take into account any retry attempts to download and activate the firmware if it is not successful in the first attempt.	
CSP S&C	assume for performance measures 6B and 6C, relating to CH firmware updates, in the event that a CH requires several firmware updates to get to the latest version ("multi-hop firmware update"), the performance measure will be assessed based on each interim step of firmware version updates (i.e. multi-hop firmware updates will not be treated as a single action in the performance measure).	
CSP S&C	assume that for performance measures 6B and 6C, (relating to CH firmware updates) as well as performance measure 6A (relating to SRV messages) that exceptions will be applied similar to what is used for meter firmware updates, to exclude any known issues with the CHs and/or meters (e.g. CHIPSM non-compliant installations). Details of such exceptions will be included within a revised Performance Management Approach	

CSP S&C	assume that for performance measures 6B and 6C, relating to CH firmware updates, there will need to be a cut-off date defined and agreed, prior to the end of the month, to determine which CH firmware update jobs are included in the performance measure for that month. Any jobs that are run after that cut-off date, will be included in the following month's performance measure. This is required to ensure that the performance measure reports are delivered on time to DCC-L according to agreed timelines.	
CSP S&C	assume that for performance measures 6B and 6C, relating to CH firmware updates, the monthly performance measure will cover CH firmware updates delivered to the CHs and activated on the CHs within that month.	
CSP N	assumed that SRs failing to generate a valid GBCS response due to HAN issues will not be counted towards the OPR measure.	
CSP N	adherence to the measure will be driven by the number of packets within an SR and associated response, coupled with channel loading. It will always be possible to craft a traffic profile that will breach these limits if so desired, ergo a greater control of traffic in-flow must be applied, or exceptions allowed. The exceptions process would require more in-depth reporting capability than delivered in CR4253 and it is assumed this would be delivered as part of this CR4259 if that route is chosen. Geographic density of SR volume may form part of the exclusions process, this will be established during the FIA.	
CSP N	assumes that future traffic profiling will be made available for sizing and performance analysis by the DCC, and that future traffic profiling should not be subject to change without revisit of these measures	
CGI IE	will not provide additional data to any 3rd parties for their own reporting purpose, e.g., to the DCO	
CGI IE	Secure FTP (Sftp) will be used to transfer the report files over the existing Gamma network to an endpoint provided by the DCC, over network routes facilitated by the DCC	
CGI IE	assume that the TRT for each in scope SRV will be consistent with the existing mechanism used for calculating PM1.1.	
Secure	assume they will only provide the SRVs where the status is success. The following messages are not considered during TRT measurement and this will not be part of this report: - Failed SRVs. - SRVs flowing or in system during a planned outage of any relevant part of the DCC Total System.	

C.3: Issues

SP	Description	Status
DSP	Additional storage may be required for the DSP ELK monitoring solution as a result of the changes specified in CR4258. The storage requirements will need to be assessed during the preparation of the FIA. Should this concern materialise, then additional costs beyond those shown in this PIA may be incurred	Accepted
CSP S&C	CSP S&C will only be able to deliver the reports based on current agreed timelines of 10 Working Days from month end. If this option needs to be pursued, then information provided in SECMP0122A can be extracted and reviewed	
CSP S&C and CSP N	SRVs 8.14.1, 8.14.3, 8.14.4 are SRVs that are not listed in Schedule 2.2 Appendix 1 Part C and do not have associated TRTs defined	
CSP N	Ingested traffic is effectively unmetered and peak ingestion rate will scale as DSP does. This requires management either through agreed traffic limits or exclusions to the measures	
Cap	Have not provided an interface to supply reports to DCC, instead relying on an automated email. This will need to be addressed in the FIA	
Cap	Have not provided any definition of how system availability will be measured.	Is being challenged by DCC, and must be resolved before the FIA

C.4: Dependencies

SP	Description	Status
DSP	In the event that the chosen solution is Option 1, there is a dependency on ELK being moved to a resilient architecture	Accepted
DSP	the business rules for SSI availability must be defined	
DSP	the Service Credit regime that shall apply for the performance measures in H13.1 6A must be defined	
DSP	the set of heartbeat Service Requests to use and the frequency of requests will need to be agreed	
All	details of the report fields and the format need to be agreed for the reports delivered as part of reporting on System Availability	
All	The target performance levels for the Firmware Delivery Business Process defined in H13.1 6A must be defined	
Cap	Viability of the Capgemini solution is dependent on Critical Software delivering their solution as detailed in section 4.4	

C.5: Clarifications

SP	Description	Status
DSP	The Payload represents success or failure in delivering a message to the Service User. It will be used to group the metrics using Response Codes (e.g. I0, E20, E21) and Alert Codes. The definition of Payload needs to be elaborated to make it contextually relevant based on the outcome of the message and Mode of Operation	
DSP	what level of granularity is expected from the new report in terms of the categorisation of the RSVP data? For example, if one DCC Service User is unavailable for a long duration, it can impact the reported values, as the report contains average values of each category reported. This could present an unrealistic view of the performance of the DCC Data Systems and therefore it may be useful to slice the report further by criteria like DCC Service User, Mode of Operation, Transaction Status, Delivery Status etc. Higher granularity will result in collection and reporting of more records and requires more storage	
CSP S&C	assume that the existing limit of 1,000 Service Credits will stand (i.e. there will be a redistribution of points as a result of the introduction of these new measures). CSP S&C requires the detail of the redistribution of these Service Credits prior to the FIA.	Accepted, but this will be developed as part of the FIA

C.6: Exclusions and Omissions

This section contains both functionality that the Service Providers cannot meet, as well as functionality or changes for which they have not provided information in their PIA.

SP	Description	Status
DSP	Any additional storage required for the DSP ELK monitoring solution (Requirement 8) is excluded from this PIA but may be included in the FIA following further analysis.	
DSP	Scope is limited to Production/DR Services only. Reporting on the availability of any and all non-Production environments are excluded from scope.	Accepted
DSP	Any changes to the DSP to meet the new performance measures are excluded from the scope, as additional work is required to assess the impact of the new requirements; and the Service Credits that would apply are yet to be defined. The extent of any changes and their related Charges will be assessed during the construction of the FIA and are therefore excluded from the ROM pricing presented with this PIA.	
CGI IE	Omitted the new performance measures in 6A from the scope of this PIA, as additional work is required to assess the impact of the new requirements, and the Service Credits that would apply are yet to be defined.	
CGI IE	requirement for H13.1 6C is excluded from the scope of this PIA since it is assumed not to apply to IE S1SP.	
CGI IE	Service Credits will not be applied to a particular Service Reference Variant until a period of time (to be agreed) after the contract is updated and a volume of the corresponding Service Requests (to be agreed) have been processed by CGI IE.	Accepted

	Note that there are some Service Reference Variants that have not yet been processed at scale by IE S1SP. The performance measure for SRV11.1 and 11.3 is excluded from the scope of this PIA as currently there is no viable PM1.1 performance measure for SRV11.1 and 11.3.	
Secure	have no mechanism where test messages can be used on the system	
Cap	have provided no information on monitoring System Availability for their system components. This will be provided in the FIA.	
DXC	have provided no information on Meeting Performance Levels for their system components. This will be provided in the FIA.	