

MP217 ‘Obtaining Timestamps to allow Target Response Time Measurements’ Business requirements – version 0.7

About this document

This document contains the business requirements that support the solution(s) for this Modification Proposal. It sets out the requirements along with any assumptions and considerations. The Data Communications Company (DCC) will use this information to provide an assessment of the requirements that help shape the complete solution.

1. Business requirements

This section contains the functional business requirements. Based on these requirements a full solution will be developed.

Business Requirements	
Ref.	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.
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
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

Business Requirements	
Ref.	Requirement
	• End-to-end Service availability by CSP Region • Reporting Service availability by time of day • Measuring Service downtime • Planned Maintenance • Measuring Service Reliability
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
10	Trusted Service Provider (TSP) to report for SMKI Services Interface. 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
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.

2. Considerations and assumptions

This section contains the considerations and assumptions for each business requirement.

2.1 General

This solution will be applied to Smart Metering Equipment Technical Specifications (SMETS)1 and SMETS2 Devices.

2.1.1 Operational Performance Regime

Issues with transparency of reporting and relevance of the measures contained within the DCC Performance Measurement Report (PMR) have arisen. In its monthly review of the PMR, the Operations Group (OPSG) 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 OPSG, the Operational Metrics Review (OMR) was undertaken to better understand the PMR measures, consider amendments and recommendations of new performance indicators.

A series of ten business processes and associated SRVs (as seen in the table in 2.1.3) were identified in the Ofgem's DCC Operational Performance Regime (OPR) Review seeking improved metrics for reporting. As part of SEC Modification [MP122A 'Operational Metrics'](#), the DCC delivered Round Trip Time (RTT) reporting rather than the TRT requested by Ofgem.

The intention of this modification is that Service Providers will provide this reporting capability separately from the DCC; the DCC will be able to challenge the SPs if their reports do not match those from the DCC. The DCC Data Science and Analytics (DS&A) team will then join the reports together.

2.1.2 DCC Change Requests

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. Service Providers will be able to use their responses for the three CRs as the basis for the new CRs.

The proposed business requirements have been drafted in reference to the three DCC CRs: CR4253 'Measuring SRV Responses and Alerts', CR4258 'System Availability', and CR4259 'Meeting Target Performance Levels'. The Proposed Solution business requirements can be categorised as follows:

- CR4253 'Measuring SRV Responses and Alerts'
 - Business requirement 1
 - Business requirement 2
 - Business requirement 3
 - Business requirement 4
 - Business requirement 5
 - Business requirement 6
 - Business requirement 7
 - Business requirement 11

- Business requirement 12
- CR4258 'System Availability'
 - Business requirement 8
 - Business requirement 9
 - Business requirement 10
- CR4259 'Meeting Target Performance Levels'
 - Business requirement 13
 - Business requirement 14
 - Business requirement 15
 - Business requirement 16

2.1.3 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 Commission ¹	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 <i>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.</i>	Yes
	11.3	Activate Firmware (Individual SR for each GUID for firmware activation) <i>Note: SMETS1 five-day Target Response Time.</i>	Yes
	8.14.3	Communications Hub Status Update – Fault Return	No

¹ 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.

Business Process	SRV	Description	SMETS1 Applicable
Logistics CH Ordering and Returns	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 1: Business Processes and SRVs for Reporting

2.1.4 Rate, Speed, Volume, Payload Definitions

Rate, Speed, Volume, Payload (RSVP) as described in this section and following, will be used as an indicator of performance for identified key User business processes. The RSVP metric will measure the relevant SRVs, service responses, acknowledgements, and Alert processing times within the DCC Total Systems. Each element of RSVP is 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 RTT Target Response Time (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 ² or E21 ³), or a subsequent failure alert code (N12 ⁴ or N13 ⁵).

Table 2: Rate, Speed, Volume, Payload Definitions

2.2 Requirement 1: The DCC will measure the TRT of 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 the S1SP equivalent and from the Communications Hub / HAN border or S1SP equivalent to the time the SRV response or Alert reaches the DSP.

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.

² Communications Failure – Unable to Communicate with Device

³ Communications Failure – No Response Received from Device

⁴ Failure to deliver Command to Device

⁵ Failure to receive Response from Device

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.

2.3 Requirement 2: The DSP will measure the time taken for SRVs to reach the 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.

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.

2.4 Requirement 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.

The DSP is responsible 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.

2.5 Requirement 4: The CSP and / or S1SP will measure the time taken for SRVs to reach the Communications Hub / 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).

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.

2.6 Requirement 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.

The CSP / S1SP is responsible for the SRV response / Alert once it reaches the Communications Hub / HAN border, to the time it passes through its system and reaches the DSP. 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.

2.7 Requirement 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.

Breaking down the data into these data fields will allow the DCC to process the data received and identify trends and potential errors more easily.

2.8 Requirement 7: Reporting will contain the performance of each SRV-type in the production system, dimensioned by region, meter type (ESME / 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**

Breaking down the data to this granularity will enable the DCC to carry out detailed analysis of the monthly performance of each SRV. The SRVs that relate to the above ten Business Processes can be found in section 2.1.3 and table 1 of this document.

2.9 Requirement 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:

This requirement relates to System Availability. 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.

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 the following options:

Option 1: based on live network and systems monitoring

Option 2: By any alternate method that the Service Provider identifies – to be outlined in PIA response

The overall output will be an ESI file (format to be agreed).

Explanations of the different reporting metrics can be found in Appendix A of this document.

2.10 Requirement 9: DSP will provide further reporting for parts of the system that it has responsibility: the Registration Data Interface, the SMKI Repository Interface, and the SSI. The reporting shall include:

This requirement relates to System Availability. Service Provider reporting on the attributes will provide further visibility of service availability to the DCC and its Users.

2.11 Requirement 10: Trusted Service Provider (TSP) to report for SMKI Services Interface. The reporting shall include:

This requirement relates to System Availability. Service Provider reporting on the attributes will provide further visibility of service availability to the DCC and its Users.

2.12 Requirement 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.

These timescales will provide sufficient time for the DCC to analyse the reports and prepare them for presentation to the Operations Group (OPSG).

2.13 Requirement 12: Regarding reporting, each Service Provider will exclude the time for any SRVs quarantined by the ADA or ADT processes.

Where there is an ADT quarantine, the SEC Party can release any impacted SRVs 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.

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

2.14 Requirement 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.

The DCC providing amalgamated end to end TRT reporting to DCC Users will allow Users to understand TRT performance at a wholistic view. This will also result in the DCC complying with the MP122A legal text and their Performance Measurement Report obligations.

2.15 Requirement 14: The target levels for each Target Response Time (TRT) will be aligned to the targets in SEC Section H13.1.

Aligning to what is currently stated within SEC Section H 'DCC Services' 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.

2.16 Requirement 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.

This will ensure that the DCC's Service Providers are under contract to deliver an agreed level of performance. Please note that while completing the Preliminary Assessment, Service Providers will 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 Impact Assessment.

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 Full Impact Assessment.

2.17 Requirement 16: The DCC's service performance is to be compliant against these new performance standards.

The DCC being compliant with the agreed new performance standards will mean that the DCC and its Service Providers are delivering an agreed level of service to Users.

3. Solution development

This section contains a must-have, should-have, could-have, won't-have (MoSCoW) analysis for the different requirement components to be considered as part of the solution.

MoSCoW Analysis		
Requirement Ref.	Description	MoSCoW
1.1	The timestamps taking place at the checkpoints stated in Requirement 1.	M
2.1	The timestamps taking place at the checkpoints stated in Requirement 2.	M
3.1	The timestamps taking place at the checkpoints stated in Requirement 3.	M
4.1	The timestamps taking place at the checkpoints stated in Requirement 4.	M
5.1	The timestamps taking place at the checkpoints stated in Requirement 5.	M
6.1	Reporting at an individual SRV level to allow for detailed analysis.	S
7.1	Reporting at an individual SRV level to allow for detailed analysis.	S
8.1	Reporting at an individual SRV level to allow for detailed analysis.	S
9.1	Reporting at an individual SRV level to allow for detailed analysis.	S
10.1	Reporting at an individual SRV level to allow for detailed analysis.	S
11.1	Delivering the reports in the time stated in Requirement 11 to allow for sufficient reviewing time.	S
12.1	Discarding SRVs that have been quarantined by ADA or ADT processes to prevent skewed data.	M
13.1	Producing reports of the amalgamated timestamps that will be of use to the End User.	M
14.1	Aligning TRTs to what is currently stated within SEC Section H 'DCC Services'.	S
15.1	Alignment of contracts with the SEC to ensure performance levels are delivered to Users.	S
16.1	Performance to be within the agreed percentage thresholds to prevent noncompliance.	S

Key

- M = Must have
- S = Should have
- C = Could have
- W = Won't have

4. Glossary

This table lists all the acronyms used in this document and the full term they are an abbreviation for.

Glossary	
Acronym	Full term
ADA	Anomaly Detection Attributes
ADT	Anomaly Detection Threshold
CoS	Change of Supplier
CSP	Communication Service Provider
DCC	Data Communications Company
DSP	Data Service Provider
GUID	Global Unique Identifier
OMS	Operational Metrics Review
OPSG	Operations Group
PIA	Preliminary Impact Assessment
RSVP	Rate, Speed, Volume, Payload
RTT	Round Trip Time
S1SP	SMETS 1 Service Provider
SMETS	Smart Metering Equipment Technical Specifications
SRV	Service Reference Variant
TRT	Target Response time

Appendix A – 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 a 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.