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Paper Reference:	TABASC_82_0610_03
Action:	For Decision

SECMP0028 DCC Preliminary Assessment

1. Purpose

[SECMP0028 'Prioritising Over The Air Messages'](#) is currently undergoing the Refinement Process. The purpose of this paper is to seek the Technical Architecture and Business Architecture Sub-Committee's (TABASC's) feedback on the high-level solution architecture in the Data Communications Company (DCC) Preliminary Assessment response.

2. Summary of SECMP0028

This section summarises the key points of this Modification Proposal. More information is available in the Modification Report in Appendix B.

2.1 What is the issue?

In situations where there are high volumes of Over The Air (OTA) messages the DCC System could approach or exceed processing capacity. This may cause DCC Users to experience variations to service performance and delays to Target Response Times (TRTs). OTA messages received during System outages may similarly form a 'backlog' which is then cleared in the order they were received as opposed to in a specific order more appropriate to their level of urgency.

Under current arrangements, OTA messages are processed in the order in which they are received in the DCC System and there is no mechanism for prioritising specific OTA messages during high-volume periods. It has also been noted that delays to the processing of consumer-driven Service Requests could cause the User to resend the same message until the desired Response is received, which may further exacerbate the high volume of messages and cause further delays to Response times.

2.2 What is the Proposed Solution?

The Proposed Solution will ensure that urgent or time-sensitive messages are not subject to processing delays by establishing multiple tiers of priority in the Data Service Provider (DSP) aspect of the DCC Systems that can categorise OTA messages depending on the relative importance of processing them quickly. OTA messages with a 'Priority Level 1' would be fast-tracked in any queues so that they are resolved ahead of any OTA messages with lower priority levels (subsequently higher numbers denoting lower priority).

OTA messages with lower priority levels would still be processed in the order consistent with their assigned levels. The categories that determine the priority levels will be defined and agreed during discussions with the Working Group and with input from SEC Parties obtained during the Refinement Consultation. These are the prioritisation categories as suggested by the Proposer:

Priority Level	Criteria
1	OTA messages relating to the continuity of a consumer's energy supply.
2	OTA messages which are required for an engineer to complete on-site activities.
3	OTA messages with an indirect impact on a consumer's energy supply, and/or OTA messages required to comply with a consumer request.
4	None of the above criteria apply.

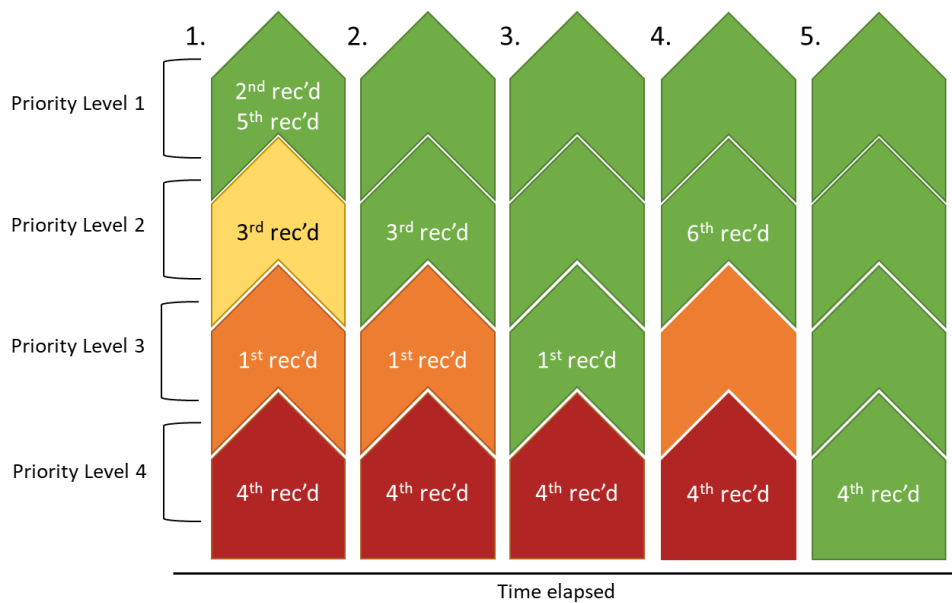


Figure 1: Proposed Solution pathway

In the event that a new process is introduced or there is a change to an existing process, certain OTA messages with a lower priority may become part of a critical pathway for an urgent process. It is therefore necessary to introduce a method by which priority levels can be reconfigured as and when appropriate. SECAS and the Proposer will engage with industry to determine which bodies or committees should have oversight for changes to the Priority Levels. This could also apply in the hypothetical instance that powers are introduced for Sub-Committees to override priority levels in an infrastructure-critical event.

It should be noted that this is a DSP-only solution and is distinct from the CSP North Scaling & Optimisation project. While DCC measures to increase System capacity may reduce the occurrence of message queueing, they will not address the specific issue of urgent and time-sensitive messages

being delayed by low priority messages covered in this modification, nor will they prevent processing backlogs from forming following DCC System outages.

3. DCC Preliminary Assessment

3.1 Summary

- Total cost to complete the Full Impact Assessment of £15,260.
- The timescales to complete the Full Impact Assessment of 40 working days.
- Rough Order of Magnitude (ROM) costs for SECMP0028, up to the end of Pre-Integration Testing (PIT) of £350,000 to 750,000.

3.2 OTA Messages definition

The term "OTA Message" or "OTA message" has been used to encompass all DCC System communications following feedback that any solution to prioritise Service Requests alone would be incomplete. The terms 'OTA' and 'Message' are defined terms but not used together. 'OTA' is usually only used in the context of firmware images in the SEC. DCC proposes that the term should be defined using GBCS terminology as follows.

OTA Messages can be:

- Alerts: Messages generated by a Device including in response to a problem or the risk of a potential problem;
- Commands: instructions to perform a function received or sent via any interface; or
- Responses: responses to a Command received or sent over any interface.

3.3 High-level solution architecture

Currently all messages are passed from Request Manager North (RMN) to Message Gateway North (MGN) irrespective of type of message or rate limiting. In this solution, all High Priority messages (Priority Level 1) will continue to be passed straight to the MGN.

The Northbound prioritisation approach is that any Service Responses with lower priorities may be queued within the DSP to ensure that the Priority Service Responses received relating to On Demand requests are not subject to processing delays.

Where large volumes of Scheduled Responses might slow down the delivery of the Priority On Demand Service Responses, the solution shall ensure that the On Demand Responses are returned to Users before the Scheduled Responses. This will also apply in instances where a DCC System outage has resulted in Responses queueing to enter MGN. To achieve this, the solution shall augment the prioritisation established in a previous change, CR1344, "DSP Buffering", such that Northbound messages are treated in one of the following ways:

1. passed straight to MGN;
2. stored in the Motorway cache-based Northbound Message Store (NMS) for priority-based retrieval; or
3. stored in the Oracle-based Service User Retry Buffer (SURB).

CR1344 also implemented a specific rate limit for each Service User (SU); if a SU has notified DCC of a required lower rate it has been implemented, otherwise a default rate is used. The first option is used only when there are no high priority messages in SURB for a specific SU, and the current usage is lower than the current SU rate defined for that SU.

Messages which are put in NMS due to the SU rate limit being exceeded will be retrieved in order of priority and sent to MGN once the rate drops below the current limit for that SU.

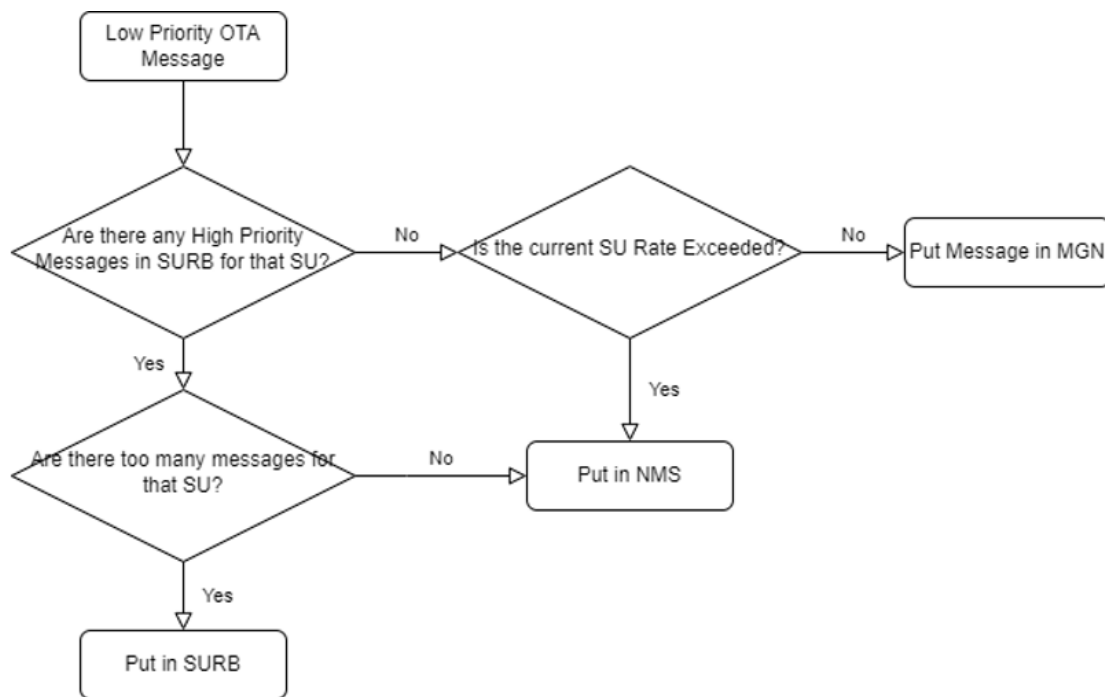


Figure 2: Northbound Prioritisation

The solution will assign a priority to all Southbound messages (based on Service Reference Variant (SRV) and mode of operation) to be used when selecting work from queues for onward transmission to the Smart Metering Wide Area Network (SM WAN) and to prioritise delivering responses to SUs. Note that the priority determined is not recalculated when handling the Northbound response (so changes to prioritisation levels will not apply to messages already in flight).

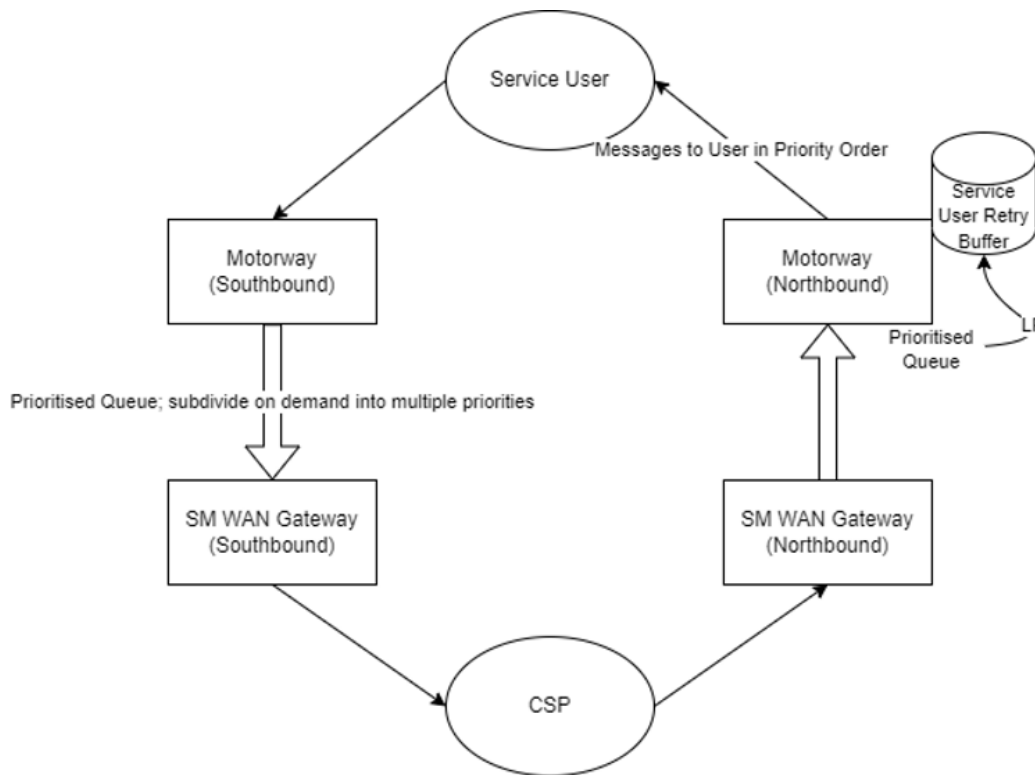


Figure 3: Northbound and Southbound Prioritisation

4. Questions for the TABASC

We seek the TABASC's views on the following questions to feed into the discussions with the Working Group and for consideration in the full DCC Impact Assessment:

- Does the high-level solution architecture satisfy the stated aims of the Proposed Solution?
- Are there any additional technical aspects to the solution that should be considered prior to the full DCC Impact Assessment?

5. Next steps

SECAS will present the DCC Preliminary Assessment to the Working Group for discussion. SECAS will request Working Group input on the suggested prioritisation categories and issue a Refinement Consultation for input from the wider industry.

6. Recommendations

The TABASC is asked to:

- **CONFIRM** that the Preliminary Assessment fulfils the Proposed Solution, and;
- **PROVIDE** views and feedback on the DCC's high-level technical solution.

Mike Fenn

SECAS Team

29 September 2022

Attachments:

- **Appendix A:** SECMP0028 DCC Preliminary Assessment
- **Appendix B:** SECMP0028 Modification Report