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MP105

‘Sending SR11.2 to Devices in Suspended State’

Modification Report

Version 0.5

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Corporate member of
Plain English Campaign
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About this document

This document is a draft Modification Report. It currently sets out the background, issue, solution, impacts, costs, implementation approach and progression timetable for this modification, along with any relevant discussions, views and conclusions. This document will be updated as this modification progresses.

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This document also has four annexes:

- **Annex A** contains the business requirements for the solution.
- **Annex B** contains the redlined changes to the Smart Energy Code (SEC) required to deliver the Proposed Solution.
- **Annex C** contains the full Data Communications Company (DCC) Preliminary Assessment response.
- **Annex D** contains the full responses received to the Refinement Consultation.

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1. Summary

This proposal has been raised by Chun Chen from the DCC.

Once a firmware entry is removed from the Central Products List (CPL), the Smart Metering Inventory (SMI) status for the impacted Devices will be set to be in a 'Suspended' state. While the Device is in a 'Suspended' state, only a Critical Service Request (SR) can be sent to those Devices, and any Non-Critical SRs will be rejected by Data Services Provider (DSP) with an E5¹ error.

As an exception, there are three Non-Critical SRs that will be allowed if the Device is 'Suspended'. However, SR 11.2 'Read Firmware Version' is not one of these and will be rejected by the DSP if it is sent while the Device is 'Suspended'.

The scenario in which this causes an issue is if the SR 11.3 'Activate Firmware' response for successful firmware activation is not received by the DSP. In this scenario the Device will remain in the 'Suspended' state even though the new firmware is now activated on the Device. Some Suppliers have an automated retry of SR 11.3 in this scenario. However, if it returns a response it will not update the status of the Device as the firmware is already activated.

The Proposed Solution is for the DCC is to design a solution to facilitate the DCC processing of SR 11.2 where a Device has a SMI Status of 'Suspended'. SR 11.2 will be added to the exception list for the E5 authorisation check. This would allow the DCC Service User to read the new firmware version on the Device and subsequently update this information in the SMI. The SMI status would then be updated based on the SR 11.2 response while the Device is in the 'Suspended' state. In addition, where a Service User implements an automated retry of SR 11.3, the response will be used to update the SMI with the new firmware version and subsequently the status of the Device.

This modification's impacts will be limited to the DCC and is expected to cost £0 – £150,000² to implement. We recommend this is a Self-Governance Modification and the targeted implementation date is 4 November 2021 (November 2021 SEC Release).

2. Issue

What are the current arrangements?

Once a firmware entry is removed from the CPL, the SMI status for the impacted Devices will be set to be in a 'Suspended' state. While the Device is in a 'Suspended' state, only a Critical SR can be sent to those Devices, and any Non-Critical SRs will be rejected by the DSP with an E5 error.

As an exception, the following Non-Critical SRs will be allowed if the Device is 'Suspended':

- SR 11.1 'Update Firmware'
- SR 6.23 'Update Security Credentials (CoS)'; and

¹ Failed Authorisation – Invalid Device Status

² Since this change only affects one Service Provider the exact costs cannot be made public, but can be obtained by named individuals from SEC Parties by contacting sec.change@gemserv.com.

- SR 2.2 'Top Up Device' with a Command Variant value of 2 (only for Smart Metering Equipment Technical Specifications (SMETS) 1 Devices).

This means SR11.2 'Read Firmware Version' will be rejected by the DSP E5 validation, when the Device is in a 'Suspended' state.

What is the issue?

The scenario in which this causes an issue is if the SR 11.3 'Activate Firmware' response for successful firmware activation is not received by the DSP. In this scenario the Device will remain in the 'Suspended' state even though the new firmware is now activated on the Device. There is no other recoverable method unless another new firmware update takes place.

How does this issue relate to the SEC?

What Service Requests a Service User can and cannot send is governed by the DCC User Interface Specification (DUIS), including for Devices which are in a 'Suspended' state. In addition, the DUIS also states how the response to SR 11.3 is handled by the DCC/DSP.

Therefore, any changes to Service Requests or DSP processing of these Service Requests will require a modification to change the DUIS and the DCC/DSP Systems.

What is the impact this is having?

What is the impact of doing nothing?

If nothing is done about this issue, there will be a small percentage of Devices that cannot be recovered from the 'Suspended' state if the SR 11.3 response is not received by the DSP. Currently the only way to resolve this is for a Service User to carry out another firmware update, which is a waste of time and effort.

What Device types are impacted?

The Smart Energy Code Administrator and Secretariat (SECAS) notes that Electricity Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), Prepayment Meter Interface Device (PPMIDs) and Home Area Network (HAN) Connected Auxiliary Load Control Switches (HCALCSs) could all be suspended on the CPL.

3. Solution

Proposed Solution

Updating the Device status using SR 11.2

The Proposed Solution is for SR 11.2 to be added to the exception list for the E5 authorisation check. This would allow the DCC Service User to read the new firmware version on the Device and

subsequently update this information in the SMI. The SMI status would then be updated based on the SR 11.2 response while the Device is in the 'Suspended' state.

If the Response to SR 11.2 from a 'Suspended' Device indicates that a new firmware has been activated, then the Device needs to be "unsuspended"; this is done by updating the status in SMI to the status it held immediately prior to its suspension. DCC Alert N29 'Device Restored from Suspension' will also be sent to the Responsible Import Supplier and to the Responsible Network Operator. This behaviour is the same as that of processing the Response to SR 11.3 'Activate Firmware' from a 'Suspended' Device.

Note the behaviour for a Gas Proxy Function (GPF) will remain unchanged and will not be impacted by this modification. The existing functionality is to send the DCC Alert N52 'GSME Firmware Version Mismatch' to the Service Users, if the received GSME firmware version, returned by the GPF, is different from the corresponding GSME's firmware version available in the SMI.

Updating the Device status using SR 11.3

Some Supplier systems have an automated retry of SR 11.3 if it does not receive the SR 11.3 response for successful firmware activation.

Currently, if the retry of SR 11.3 responds with the correct new firmware version, it does not update the SMI status for the Device. Therefore, in addition to adding SR 11.2 to the exception list when a Device is suspended, the response to the automated retry of SR 11.3 will be used to update the SMI status in the same way in which the DCC is proposing to do with SR 11.2.

4. Impacts

This section summarises the impacts that would arise from the implementation of this modification.

SEC Parties

SEC Party Categories impacted			
✓	Large Suppliers	✓	Small Suppliers
	Electricity Network Operators		Gas Network Operators
	Other SEC Parties	✓	DCC

Suppliers

Suppliers will be impacted by this modification as they will have the capability to send SR 11.2 when a Device is in a 'Suspended' state in the SMI, instead of it being rejected by the DCC E5 authorisation check.

Therefore, if upon a successful firmware update the SR 11.3 response is not received by the DSP, the Supplier can rectify the SMI status without having to attempt another firmware update.

In addition, if a Supplier has an automated retry on SR 11.3 in place and it produces a response, this response will be used to update the Device status in the SMI.

DCC

The DCC will be impacted by this modification as it will need to implement a solution that allows Service Users to send SR 11.2 whilst a Device is 'Suspended' in the SMI. The DCC will also need to ensure the SMI is updated resulting from the automated retry of SR 11.3 that some Suppliers have in place.

DCC System

Of the DCC's Service Providers, this modification is expected to impact the DSP only. The DSP will need to facilitate the processing SR 11.2 where a Device has a SMI Status of 'Suspended' as well as use the response to the automated retry of SR 11.3 to update the Device status on the SMI.

No changes are needed to the DUIS or Message Mapping Catalogue (MMC) schema. However, DUIS documentation will need to be updated to describe the change in behaviour to SR 11.2 and 11.3 processing.

This modification will require Pre-Integration Testing (PIT), Systems Integration Testing (SIT) and User Integration Testing (UIT).

The full impacts on DCC Systems and DCC's proposed testing approach can be found in the DCC Preliminary Assessment response in Annex C.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Appendix AD 'DCC User Interface Specification'

This will be a text-only change to the DUIS. No changes are required for the Extensible Markup Language (XML) Schema.

The changes to the SEC required to deliver the proposed solution can be found in Annex B.

Consumers

If nothing is done about this issue, more Devices will be wrongfully 'suspended'. Suppliers may not be able to communicate with the meter and therefore estimate consumption. In addition, if 'Suspended' in prepayment mode, the Supplier cannot send down emergency credit, set up emergency credit or send top-ups.

All eight respondents to the Refinement Consultation agreed that consumers would be positively impacted by this modification. They advised that this modification would make it easier for Suppliers to rectify Device status and restore the Device functionality for consumers to benefit from.

Other industry Codes

This modification will not have any impacts on other industry Codes.

Greenhouse gas emissions

This modification will not cause any greenhouse gas emissions.

5. Costs

DCC costs

The initial estimated DCC implementation costs to implement this modification were £75,000. This was based on the Proposed Solution only seeking to utilise SR 11.2.

However, the Proposed Solution has since increased in scope and will seek to utilise the response to the SR 11.3 retry as well. Consequently, the estimated DCC implementation costs up to the end of Pre-Integration Testing (PIT) to implement this modification is £0 – £150,000. The breakdown of these costs are as follows:

Breakdown of DCC implementation costs	
Activity	Cost
Design, Build and Pre-Integration Testing (PIT)	£0 – £150,000 ³
Systems Integration Testing (SIT)	TBC
User Integration Testing (UIT)	TBC
Implement to Live	TBC

The estimated standalone costs for SIT, UIT and Implement to Live will be assessed as part of the Impact Assessment.

More information can be found in the DCC Preliminary Assessment response in Annex C.

SECAS costs

The estimated SECAS implementation costs to implement this modification is two days of effort, amounting to approximately £1,200. The activities needed to be undertaken for this are:

- Updating the SEC and releasing the new version to the industry.

SEC Party costs

Parties did not indicate that they would incur any costs as a result of this modification during Working Group meetings.

The majority of Refinement Consultation respondents advised they would not incur any costs in implementing MP105. However, two respondents believed they would incur costs. One noted that it would incur costs if MP105 is implemented as part of a new version of the DUIS, but expected the cost of this change to be minimal.

³ Since this change only affects one Service Provider the exact costs cannot be made public, but can be obtained by certain Parties by contacting sec.change@gemserv.com.

Another Party advised its overall costs are impacted by all changes made by the DCC. However, it would not incur any direct costs in needing to change its system as it can already transmit the SRV's in question.

6. Implementation approach

Recommended implementation approach

SECAS is recommending an implementation date of:

- **4 November 2021** (November 2021 SEC Release) if a decision to approve is received on or before 4 February 2021; or
- **3 November 2022** (November 2022 SEC Release) if a decision to approve is received after 4 February 2021 but on or before 3 February 2022.

This modification will impact the DUIS and, for efficiency, should therefore be implemented in a scheduled SEC Release in which other DUIS changes will be implemented. This would minimise SEC Party costs as well. The DCC has advised that it will need a three-month lead time up to the end of PIT to implement this modification. The duration for SIT, UIT and Implement to Live will be assessed as part of the Impact Assessment and is assumed to be six months in the interim. This would provide enough lead time to implement this modification in the November 2021 SEC Release.

7. Assessment of the proposal

Observations on the issue

Views of SEC Parties

A Large Supplier expressed its support for the proposed change as this will enable better management of Devices to avoid unnecessary removal and/or inconvenience to the customer.

Views of the Change Sub-Committee

The Change Sub-Committee agreed that the issue identified under this proposal is clearly defined and understood. It had no other comments.

Solution development

What Devices are in scope?

SMETS1 Devices

Security Sub-Committee (SSC) Members queried whether the solution would be applicable to SMETS1 Devices. They noted that the need to raise another modification specific to SMETS1 Devices would cause unnecessary delay to provide a solution to the issue at hand.

The DCC confirmed that the same solution/process will apply to both SMETS1 and SMETS2 Devices so there is no need for a further modification to address SMETS1.

PPMIDs and HCALCSs

SECAS advised that only ESME and GSME are in the scope of this modification. A Supplier queried whether GSME is in scope due to the note about the GPF in the DCC's Preliminary Assessment (explained below). The DCC confirmed that GSME is in scope and the solution would work the same as it would for ESME. However, SR 11.2 must be sent directly to the GSME and not the GPF.

The solution could also be applied to PPMIDs and HCALCSs, but a separate modification is needed to extend SR 11.2 to these two Devices. This is currently proposed by [SECMP0007 'Firmware updates to IHDs and PPMIDs'](#) which is targeted for the November 2021 SEC Release. SECAS note MP105 is not dependant on SR 11.2 being expanded to include PPMIDs and HCALCSs.

SECAS confirmed IHDs are not in scope as they are not listed on the Central Products List (CPL).

Will the solution be automated?

To resolve this issue, the DCC proposed adding SR 11.2 to the exception list of Non-Critical SRs that can be used whilst a Device is 'Suspended'. This would allow the SMI status to be updated based on the SR 11.2 response while the Device is in the 'Suspended' state.

A Working Group member questioned whether the resulting update in the Device SMI status would require manual intervention from Users. The DCC confirmed that the Device status would update automatically in the SMI and that no manual intervention is required from Users.

GPF/GSME firmware version mismatches

The DCC noted that the modification does not propose changes to GPF behaviour. If there is a GSME firmware version mismatch on the GPF, the existing functionality is to send the DCC Alert N52 'GSME Firmware Version Mismatch' to the Service Users. Therefore, in order to update the state of the GSME, a User would have to send SR 11.2 directly to the GSME and not the GPF.

Working Group change to the solution

Working Group members queried whether the Proposed Solution could be expanded to utilise SR 11.3 in addition to SR 11.2.

Members noted that Supplier systems have an automated SR 11.3 retry if it does not receive the SR 11.3 response for successful firmware activation. Although the SR 11.3 retry will respond with the correct new firmware version, it does not update the SMI status for the Device. Therefore, the Working Group asked the DCC to investigate if the response to the SR 11.3 automated retry could be used to update the SMI status in the same way in which the DCC is proposing to do with SR 11.2.

Members noted that the advantage with this method is that for "lost" SR 11.3 responses, the firmware version would be aligned to the SMI not only for 'Suspended' Devices, but all Devices. A Supplier noted that around 20% of all SR 11.3 responses are "lost" and so it is a big issue for Suppliers.

The DCC subsequently investigated this and confirmed in its second Preliminary Assessment that it would be possible to update the SMI using the SR 11.3 automated retry, as well as utilising SR 11.2 as originally proposed.

DCC SMETS1 considerations

The DCC noted that for SMETS1 Devices, the firmware version may not be available in the SR 11.3 response. This is because for most SMETS1 Devices, firmware updates are not a two-step process (as with SMETS2 Devices where firmware distribution is carried out by SR 11.1 and activation by SR 11.3). Where the Device does not support two-step activation, the firmware update is triggered on SR 11.3 instead of SR 11.1. Therefore, the retry of SR 11.3 may not generate a response with the latest firmware version.

The DCC therefore advised that the requirement for updating the Device status using the SR 11.3 retry should be based on the “availability of the firmware version”.

Support for Change

Working Group views

The Working Group agreed with the benefits noted by SECAS and was supportive of this modification. Ultimately it would prevent Users’ Devices from becoming wrongfully ‘Suspended’ upon a firmware update.

SSC views

The SSC noted that this modification would be of benefit to Users as it would provide more assurance for Devices remaining in an operational state after a firmware update.

Business case assessment – Party feedback

Noting the costs and benefits of this modification, all eight respondents to the Refinement Consultation believed this modification should be approved. Respondents noted that the associated implementation costs are low and are outweighed by the benefits of this modification.

One Party added that this modification is needed in order to help Suppliers maintain meters and keep them compliant when carrying out firmware updates.

Views against the General SEC Objectives

Proposer’s views

The Proposer believes that MP105 will better facilitate SEC Objective (a). The Proposed Solution will enable Service User to recover their Devices when they are wrongfully ‘Suspended’ and bring them back into an operation state.

Industry views

All eight respondents to the Refinement Consultation agreed with the Proposer's view that this modification would better facilitate SEC Objective (a). They agreed with the Proposer's rationale with one Party adding that it could be argued that SR 11.2 should always have been classed as an exception to the Non-Critical Service Request validation.

Appendix 1: Progression timetable

Timetable	
Action	Date
Draft Proposal raised	18 Dec 2019
Presented to CSC for final comment and recommendations	2 Jan 2020
Panel converts Draft Proposal to Modification Proposal	17 Jan 2020
Business requirements developed with DCC	23 Mar 2020 – 3 Apr 2020
First Preliminary Assessment requested	6 Apr 2020
First Preliminary Assessment returned	4 May 2020
Modification discussed with Working Group	3 Jun 2020
Second Preliminary Assessment requested	17 Jul 2020
Second Preliminary Assessment returned	27 Aug 2020
Refinement Consultation	14 Sep 2020 – 5 Oct 2020
Impact Assessment costs approved by Change Board	21 Oct 2020

Appendix 2: Glossary

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

Glossary	
Acronym	Full term
CoS	Change of Supply
CPL	Central Products List
CSC	Change Sub-Committee
DCC	Data Communications Company
DSP	Data Services Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
GSME	Gas Smart Metering Equipment
GPF	Gas Proxy Function

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Glossary	
Acronym	Full term
CoS	Change of Supply
HAN	Home Area Network
HCALCS	Home Area Network Connected Auxiliary Load Control Switch
IHD	In-Home Display
MMC	Message Mapping Catalogue
PIT	Pre-Integration Testing
PPMID	Prepayment Meter Interface Device
RoM	Rough Order of Magnitude
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	System Integration Testing
SMETS	Smart Metering Equipment Technical Specifications
SMI	Smart Metering Equipment Technical Specifications
SR	Service Request
UIT	User Integration Testing
XML	Extensible Markup Language