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MP178

‘Removing DSP validation against the SMI join status for SR8.8.x’

Modification Report

Version 0.7

8 November 2022



About this document

This document is a draft Modification Report. It currently sets out the background, issue, 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 full responses received to the request for information (RFI).
- **Annex B** contains the business requirements for the solution.
- **Annex C** contains the full Data Communications Company Preliminary Assessment response.
- **Annex D** contains the process flow diagrams relating to this modification.

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1. Summary

This proposal has been raised by David Walsh on behalf of the Data Communications Company (DCC).

Installation and Commissioning (I&C) of Smart metering systems (SMS) or exchange of Devices within a SMS are failing due to on site installers being unable to 'unjoin' Devices.

There are occasions when the initial join is unsuccessful or there was an issue with the Devices being joined, and therefore the engineer will need to unjoin the Devices before attempting to re-join the again. Alternatively, when a Device is being exchanged it needs to be un-joined before the new Device can be joined.

The unjoin is unsuccessful because it requires validation of the initial join. However, where the join has not been processed properly, the unjoin command will fail.

The Proposed Solution aims to remove Data Service Provider (DSP) validation of Join status in the SMI when sending an Unjoin Service Request. This will allow the sending of unjoin commands irrespective of the join status held in the SMI. This solution would prevent the Response Code E080801 from being created in association with an unjoin command.

This modification does not intend to alter current Security elements of the process.

This modification will impact Large Suppliers, Small Suppliers, Other SEC Parties and the DCC. The estimated cost of the DCC System changes is between £10,000 and £75,000. This modification is targeted for the November 2023 SEC Release. This will be progressed as a Self-Governance Modification.

2. Issue

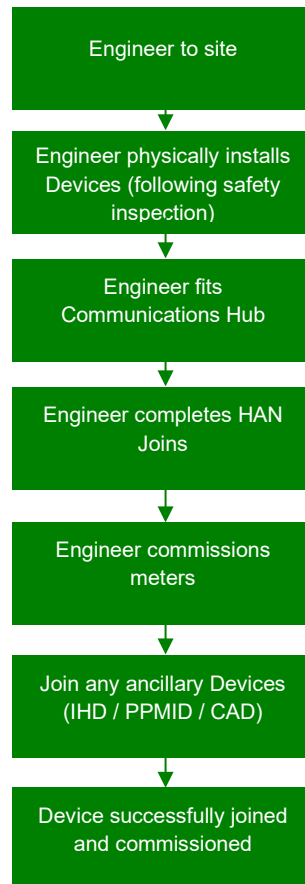
What are the current arrangements?

During the Install and Commissioning (I&C) process, an engineer is on site and installs the Devices, and Communications Hub Commissioning of the meter is done by the Service User sending a series of Join Commands (SRVs 8.7.x) to connect the Devices to the Communications Hub, thereby completing the install and commission (I&C) process.

There are occasions when the initial join is unsuccessful or there was an issue with the Devices being joined, and therefore the engineer will need to unjoin the Devices before attempting to re-join the again. Alternatively, when a Device is being exchanged it needs to be un-joined before the new Device can be joined.

An issue has been brought to the DCC's attention whereby the on-site Device I&C process fails because the Data Service Provider (DSP) does not receive successful messages for joins of Service Reference Variants (SRVs) 8.7.x. Because the validation on the SRV 8.8.1 'Unjoin Service (Critical)' or 8.8.2 'Unjoin Service (Non-Critical)' commands check that a Device is joined to the Smart Metering Inventory (SMI), if this has not completed properly the Service User cannot send an Unjoin command. This results in Devices failing the I&C process. The current 'work-around' is to manually update the SMI database.

The flow diagram below sets out the current step-by-step procedure of the on-site Device I&C process:



What is the issue?

It has been reported by Suppliers that the on-site I&C process for Devices can fail where the DSP does not receive successful messages for joins of SRVs 8.7.x. For example, there may be problems joining a Consumer Access Device (CAD) to Electricity Smart Metering Equipment (ESME).

When this occurs, currently, the only way to complete the I&C process is a manual update of the SMI database. This is completed by the DCC at a cost of £2,000 per update. This is because:

- it is not possible to continue the I&C process by retrying the Join; and/or
- there have been instances where the Device will reject the retry of the Join command (SR8.7.x) if a previous Join was already successfully completed.

Between August 2020 and July 2022 there have been five cases (across different Suppliers) where the response to the SRV 8.7.2 'Join Service (Non-Critical)' is not received by the DSP despite the join working within the ESME. Hence, the Service User is unable to send an Unjoin command as the business validation on the SRV 8.8.1 'Unjoin Service (Critical)' or 8.8.2 'Unjoin Service (Non-Critical)' commands check that only Devices joined in the SMI may be un-joined. Note that SRV 8.8.1 is used with Critical commands, while SRV 8.8.2 is used with non-Critical commands.

There are instances where if the Service User sends SR 8.7.2 again to the ESME then this will pass through the DSP, but it is then rejected at the ESME as it is already joined.

Smart Energy Code (SEC) Schedule 8 ‘GB Companion Specification’ (GBCS) mandates that Devices should accept a re-send of the SR 8.7.x ‘Join Service’ command, even if the Device is already joined (for example, it is already in the Device Log).

The DSP currently updates the SMI and sets up the join relationship depending on the response to the Join command. As part of the Unjoin command, SRV 8.8.2 validates the SMI join relationship. For example, the system only allows the Unjoin command (SR 8.8.x) if Devices are already joined to each other, otherwise the DSP will reject the Service Request with the following error code:

DCC User Interface Specification	
Response Code	Response Code Description
E080801	According to the DCC Systems Smart Metering Inventory the ‘Other Device’ is not joined to the Business TargetID Device

It should be noted that there are no Smart Metering Technical Specifications (SMETS), GBCS, Security or any other SEC requirement mandating that the DSP must apply such validation other than what is defined in the DCC User Interface Specification (DUIS).

What is the impact this is having?

If the issue identified under this proposal is not addressed, there will be:

- Further I&C failures; and
- an ongoing cost to manually correct the SMI database to allow Users to reuse any Devices.

Each manual database correction is charged to the DCC at an average of £2,000. Any firmware fixes of meter defects normally take more than 12 months to deploy.

Up to July 2022 there has been five known incidences, and further incidents are expected.

Impact on consumers

If the issue is left unresolved, more Devices will not have been commissioned and will therefore not providing smart functionality and benefits of smart features to consumers.

3. Solution

Proposed Solution

The Proposed Solution aims to remove DSP validation of Join status in the SMI when sending an Unjoin Service Request. This will allow the sending of unjoin commands irrespective of the join status held in the SMI. This solution would prevent the Response Code E080801 from being created in association with an unjoin command.

This modification does not intend to alter current Security elements of the process.

The full business requirements are in Annex B.

The validation of SRV8.8.1 Unjoin Service (Critical) and SRV8.8.2 Unjoin Service (Non-Critical) in DCC Request Manager will be modified to remove the check that the OtherDeviceID from the SRV is flagged in the SMI as being joined to the target Device of the SRV. The validation is contained in the strategy classes UnjoinCritical and UnjoinNonCritical. Any other validation in these strategy classes will remain unchanged.

The change will apply to SMETS1 and SMETS2, and to all versions of DUIS.

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

Breakdown of Other SEC Party types impacted			
✓	Shared Resource Providers	✓	Meter Installers
	Device Manufacturers		Flexibility Providers

As only Suppliers and Other Users are able to send SRVs 8.8.1 and 8.8.2, therefore it is believed they will be impacted; however more Industry views will be sought as part of the Refinement Consultation.

Shared Resource Providers (SRPs) and Meter Installers work on behalf of Suppliers to install and send SRVs during the I&C process, therefore would be impacted.

The DCC will have to make system and internal process changes, therefore would also be impacted.

DCC System

Security Impact

This change impacts on the conduct of DCC Access Control Broker (ACB) validation checks, de-activating a current check. It does not impact the security posture of the service or its infrastructure, but, as with any change to security related code, its implementation will be security assured throughout. This assurance includes reviewing designs, test artefacts and providing consultancy to the implementation and test teams. A more detailed assessment of Security impact will be carried out as part of the Full Impact Assessment. This change does not impact protective monitoring logging or configuration. As it does not impact any interfaces, a penetration test is not deemed necessary. An independent code review is not deemed necessary for this level of change.

Technical Specifications

This change will require a DUIS uplift. Note that the removal of this validation check will require a change to the DUIS documentation, but it is assumed that the related error code will remain in the DUIS schema. Therefore, this change on its own does not require a DUIS schema uplift.

Integration Impact

The Modification does not introduce any changes to system integrations within the DCC Total System, as the changes to the functionality are encapsulated within the DSP component. As such, any testing executed by System Integration Testing (SIT) would be a repeat of a subset of the testing executed by Pre-Integration Testing (PIT). Therefore, no SIT execution is proposed for this Modification. It is not thought that this Modification will require User Integration Testing (UIT). An element of regression testing will be carried out as part of the SEC Release that includes this change.

Infrastructure Impact

No infrastructure impact is expected from this Modification. It should be noted that the aggregated impact of many such changes to the DSP solution will ultimately result in a reduction of the available processing headroom assumed as part of the original Agreement. As such, it may be necessary for DSP to raise a Business as Usual (BAU) Change Request (CR) for the provision of additional infrastructure to ensure the DCC Total System does not experience performance problems that are the direct result of the accumulation of such changes. The change does not impact the DSP resilience or Disaster Recovery implementation.

Service Impact

The changes noted above are not expected to alter traffic volumes significantly, nor to add to message processing time. No changes to Service Level Agreements (SLAs), particularly to Schedule 2.2 (Performance Measures and Reporting), or reporting are expected as a result of this change.

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

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Appendix AD 'DCC User Interface Specification'

The changes to the SEC required to deliver the Proposed Solution will be provided with the DCC Impact Assessment.

Technical specification versions

This Modification will impact Appendix AD 'DCC User Interface Specification'. The Business Architecture Document (BAD) & Business Architecture Model (BAM) will need to be updated following SECAS articulating the as- is and to-be processes in Annex D. The proposed changes will be made clear after the Impact Assessment is returned by the DCC; Parties will need to check how their business processes will be impacted.

Devices

Devices impacted			
✓	Electricity Smart Metering Equipment	✓	Gas Smart Metering Equipment
	Communications Hubs	✓	Gas Proxy Functions
✓	In-Home Displays	✓	Prepayment Meter Interface Devices
	Standalone Auxiliary Proportional Controllers	✓	Home Area Network Connected Auxiliary Load Control Switches
✓	Consumer Access Devices	✓	Alternative Home Area Network Devices

This would impact all variations of ESME, Gas Smart Metering Equipment (GSME), Gas Proxy Functions (GPF), In-Home Displays (IHD), Prepayment Meter Interface Devices (PPMID), Home Area Network Connected Auxiliary Load Control Switches (HCALCS), Consumer Access Devices (CAD) and Alternative Home Area Network (HAN) Devices, as it is set out in DUIS that these Device types are applicable for SRV 8.8.1 and SRV 8.8.2.

Consumers

Consumers will directly benefit from this modification. The improved I&C success rate would ensure Devices are able to be commissioned, provide smart functionality and benefits of smart features to consumers.

Other industry Codes

There will be no impact on other Codes from this modification.

Greenhouse gas emissions

There is believed to be a minor decrease greenhouse gas emissions due to Devices will not need to be replaced if they are unable to be fully commissioned.

5. Costs

DCC costs

The DCC's Service Providers have provided a rough order of magnitude (ROM) cost shown below, which describes the indicative costs to implement the functional and non-functional requirements as assumed above. The scope of supply under the DCC Preliminary Assessment includes design, development (build), system testing, and performance testing within the PIT environments.

The breakdown of these costs are as follows:

Breakdown of DCC implementation costs	
Activity	Cost
Design, Build and Pre-Integration Testing (PIT)	£10,000 - £75,000
Systems Integration Testing (SIT)	£0
User Integration Testing (UIT)	£0
Implement to Live	TBC
Application Support	TBC

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

SECAS costs

The estimated SECAS implementation cost to implement this as a stand-alone modification is one day of effort, amounting to approximately £600. This cost will be reassessed when combining this modification in a scheduled SEC Release. The activities needed to be undertaken for this are:

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

SEC Party costs

SEC Party costs will be sought as part of this Refinement Consultation.

6. Implementation approach

Recommended implementation approach

SECAS is recommending an implementation date of:

- **2 November 2023** (November 2023 SEC Release) if a decision to approve is received on or before 2 February 2023; or
- **27 June 2024** (June 2024 SEC Release) if a decision to approve is received after 2 February 2023 but on or before 27 September 2023.

The DCC has suggested this should be included in the November 2023 SEC Release, currently this will be a challenging timescale to get a decision, but SECAS will endeavour to meet this deadline in collaboration with the DCC.

7. Assessment of the proposal

Observations on the issue

During the Development Stage, this proposal was presented to the Panel Sub-Committees and had no initial comment, however the Proposed Solution will be presented to Technical Architecture and Business Architecture Sub-Committee for their comments.

SECAS's views

During the Development Stage, the Smart Energy Code Administrator and Secretariat (SECAS) advised that removing any form of validation may cause potential security risks and the proposal should instead focus on the root cause of the issue and understand why the DSP has not received the response to the Join SRV.

SECAS investigated this with the Proposer during the Development Stage. The DCC commented that it is difficult to understand why the SRVs do not reach the DSP as the Suppliers are responsible for sending them rather than the DCC / DSP. The DCC further advised that if the DSP is not aware the SRV has or hasn't been sent, it will be extremely difficult for the DSP to investigate any further.

Views of the Change Sub-Committee

The proposal was presented to the Change Sub-Committee (CSC) for initial comment. SECAS informed the CSC that an RFI would be issued to better understand the scale of the issue and the impact it is having. The CSC approved of this approach and provided no further comments. SECAS provided an update to the CSC including a summary of the RFI responses. CSC members were happy for the modification to proceed to the Refinement Process. No further comments were received.

Request for information responses

During the Development Stage, SECAS issued an RFI consultation to better understand the impact the issue is having on SEC Parties. SECAS received three responses to the RFI (two Large Suppliers and one Other SEC Party). Two of the three respondents stated that the issue impacts their organisation.

The respondent that is not impacted (a Large Supplier) stated that their organisation's orchestration does not rely on the unjoin being successful when removing a Device. This is because the command could be failing because the Device is faulty. They advised that the cost of any Proposed Solution developed should be compared to the number of manual corrections being requested by Users.

The second Large Supplier stated that it was supportive of the need to address the issue, but is concerned as to why the DSP is not receiving the keys in the second 8F12 Alert. The DCC has since

responded to state that this issue is separate as it involves the CSPs and their Alert delivery success. The Large Supplier commented that a preferred solution would be to reduce the current £2,000 cost to amend the SMI. This would allow the security protocols to remain in place. Further comments were given where the respondent is not convinced that the cost benefits to the DCC will outweigh the security benefits. This will be investigated during the Refinement Process, but currently the DCC does not believe there is a security risk by removing the validation.

The Other SEC Party commented that successful SR 8.7.2s are not always registered within the DSP systems, which prevents, if required, the subsequent SR 8.8.2 from succeeding. It stated that it is directly impacted when it attempts to add or remove Type 2 IHDs or CADs. It felt the need for a SEC Modification to address the issue as it results in a negative customer experience as it can take a long time, possibly several weeks, for the SMI to be updated.

Solution development

Views of the Requirements Workshop

From the responses to the RFI consultation, the Proposer advised that there have been multiple requests to manually update the SMI status, which cost £2000 per request. Removing the unnecessary DSP validation rule, would be a low impacting DUIS change that could be implemented in a maintenance release and enable Users to update the SMI themselves. The Proposer also confirmed it is only proposing to remove the DSP validation rule for the Service Requests mentioned in the problem statement, not all Service Requests.

A member noted that the Devices would be in each other's Device logs, so they hold the ultimate truth, whereas the DSP holds a mirror of this. However, there are occasions DSP view of the Devices on the HAN is not a true reflection.

A member questioned if there was a reason this DSP validation was originally put in place which we are unaware of. Attendees could not identify why this DSP validation was in place but agreed it should be removed.

Views of the Working Group

A member stated that there is no validation for a join request. The Working Group was supportive for removing the unjoin validation as it would help with stranded Devices and Device reuse.

Working Group members stated that the tracking in the SMI needs to remain, as this is used for other business needs within industry although there are alternative ways to check the status via a Read Device Log.

The Working Group queried why within the GBCS there is no requirement for the validation of this SRV and why the current DCC implementation requires it. It was also noted that this aspect is worth investigating with the DSP, as there could be a genuine reason as to why this piece of architecture exists. The Proposer stated that initial discussion with DSP indicated that the removal of this validation isn't something that will cross impact other parts of the DSP solution. Working Group members agreed that this modification will need to be reviewed by Technical Architecture and Business Architecture Sub-Committee (TABASC) to provide their views and ensure the removal of the response code does not have any implications. It was also agreed the DCC needs to confirm if this modification progresses to the Preliminary Assessment stage.

Upon the return of the DCC Preliminary Assessment, Working Group members queried why there was no SIT or UIT. The DCC advised, for this modification there is no specific SIT or UIT, as there is no system impact, and that UIT would take place as part of the Release and Users would be able to take part in that if they want too as usual.

Working Group members noted and agreed to progress to a Refinement Consultation and only return to the Working Group if there are any controversial responses.

Views of the TABASC

The Proposed Solution was presented to the TABASC, who were concerned about removal of the Response Code E080801 and the impacts on Parties Business Processes. SECAS provided two Process diagrams (refer to Annex C) which were circulated to TABASC and Parties, and they advised they do not see any impacts for removal of the Response Code E080801; however it will be clearer following the DCC Preliminary Assessment and Refinement Consultation with Industry.

8. Case for change

Business case

It is envisaged that this modification will improve I&C success rates and not leave Devices stranded; therefore Devices are able to be commissioned, provide smart functionality and benefits of smart features to consumers. This will also save the ongoing cost and effort to manually correct the SMI database to allow Users to reuse any Devices, which costs a User on average £2,000 per manual correction and can take more than 12 months for any firmware fixes of meter defects to be deployed.

There might have only been five instances recorded and manually corrected by the DCC between August 2020 and July 2022, due to a possibility that Parties are exchanging stranded Devices instead of having them manually corrected by the DCC due to the cost. If this is the case, there is also an environmental impact of exchanging meters to be considered.

Views against the General SEC Objectives

Proposer's views

The Proposer believes that MP178 will facilitate SEC Objective (a)¹ as it will ensure efficient installation and operation of smart metering systems due to Devices are able to be commissioned, provide smart functionality and benefits of smart features to consumers.

Industry views

Views on this will be gathered during the Refinement Consultation.

¹ Facilitate the efficient provision, installation, operation and interoperability of smart metering systems at energy consumers' premises within Great Britain.

Views against the consumer areas

Improved safety and reliability

This modification will be positive against this consumer benefit area, as Devices are able to be commissioned, provide smart functionality and benefits of smart features to consumers.

Lower bills than would otherwise be the case

This modification will be positive against this consumer benefit area, as the improved I&C success rate would ensure Devices are able to be commissioned, provide smart functionality and benefits of smart features to consumers.

Reduced environmental damage

This modification will be positive against this consumer benefit area, as this would ensure Devices previously stuck in a strange state and unable to be commissioned can be saved from to be replaced with a new Device.

Improved quality of service

This modification will be positive against this consumer benefit area, as the improved I&C success rate would ensure Devices are able to be commissioned, provide smart functionality and benefits of smart features to consumers.

Benefits for society as a whole

This modification will have a neutral impact against this consumer area.

9. Appendix 1: Progression timetable

SECAS will issue this Modification Proposal for Refinement Consultation. After which, it will return to the Working Group for discussion if there are any controversial responses, before requesting the Change Board to approve the Impact Assessment costs.

Timetable	
Event/Action	Date
Draft Proposal raised	15 Jul 2021
Presented to CSC for initial comment	27 Jul 2021
Problem Statement discussed with Sub-Committees	Aug 2021
Request for information issued to industry	Aug 2021
Presented to CSC for final comment and decision	28 Sep 2021
Modification placed on hold	Oct 2021 – May 2022

Timetable	
Event/Action	Date
Business requirements developed with Proposer	Jun 2022
Business requirements discussed at the requirements workshop	11 Jul 2022
Business Requirements discussed with Working Group	3 Aug 2022
Rework business requirements with Proposer	Aug 2022
Discuss Modification with TABASC	1 Sep 2022
Rework business requirements with Proposer	Sep 2022
DCC Preliminary Assessment requested	23 Sep 2022
DCC Preliminary Assessment returned (expected)	21 Oct 2022
Discuss DCC Preliminary Assessment with the Working Group	2 Nov 2022
<i>Refinement Consultation</i>	<i>8 Nov – 26 Nov 2022</i>
<i>Discuss Modification with TABASC</i>	<i>1 Dec 2022</i>
<i>Discuss Refinement Consultation with the Working Group</i>	<i>7 Dec 2022</i>
<i>Impact Assessment costs approved by Change Board</i>	<i>21 Dec 2022</i>
<i>Impact Assessment requested</i>	<i>22 Dec 2022</i>
<i>Impact Assessment returned</i>	<i>3 Mar 2023</i>
<i>Modification Report approved by CSC</i>	<i>21 Mar 2023</i>
<i>Modification Report Consultation</i>	<i>27 Mar 2023 – 14 Apr 2023</i>
<i>Change Board Vote</i>	<i>26 Apr 2023</i>

Italics denote planned events that could be subject to change

10. 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
ACB	Access Control Broker
BAD	Business Architecture Document
BAM	Business Architecture Model
BAU	Business as Usual
CAD	Consumer Access Device
CR	Change Request
CSC	Change Sub-Committee
DCC	Data Communications Company
DSP	Data Service Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment

Glossary	
Acronym	Full term
GBCS	Great Britain Companion Specification
GPF	Gas Proxy Functions
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
HCALCS	HAN Connected Auxiliary Load Control Switch
I&C	Installation & Commission
IHD	In Home Display
PIT	Pre-Integration Testing
PPMID	Prepayment Meter Interface Device
RFI	Request for information
ROM	Rough order of magnitude
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specifications
SMI	Smart Metering Inventory
SRV	Service Reference Variant
SR	Service Request
TABASC	Technical Architecture and Business Architecture Sub-Committee
UIT	User Integration Testing