

What stage is this document in the process?



Stage 02: Initial Modification Report

SECMCP0009:

Centralised Firmware Library

This Modification Proposal seeks to establish a library of firmware images, with access provided to all Parties responsible for the management of SMETS1 and/or SMETS2 meters.



The recommendation is that this Modification should be:

- progressed as a Path 2: Authority Determined Modification

This Modification Proposal should:
be progressed through the Refinement Process



Medium Impact:
Supplier Parties, Meter Manufacturers that are SEC Parties,
Firmware Developers.

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Any questions?

Contact:

Keith Phakoe

secas@gemserv.com

020 7090 7755

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About this document

This document is an Initial Modification Report. It has been issued to the SEC Panel to enable it to carry out its initial consideration of the Modification Proposal.

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1. Summary of Modification Proposal

This section provides an overview of SECMP0009. For further details on the Modification Proposal please refer to subsequent sections.

Defined terms and acronyms used in this document are listed for reference in the Glossary (Section 8) of this document.

1.1 Summary of Modification

The Proposer (RWE nPower) seeks the establishment of a repository where interested SEC Parties can access Firmware Release Notes and Images, and which can be distributed to installed devices as required.

1.2 Proposed Solution

There is currently a record of current Device Models on the Certified Products List (CPL), including SMETS1 and SMETS2 compliant Electricity Smart Metering Equipment (ESME) and Gas Smart Metering Equipment (GSME) Devices. This modification proposes a Centralised Firmware Library (CFL) of 'non-commercially released' firmware, to run concurrently but independently from the CPL, containing up-to-date images of this metering equipment, and giving all impacted parties free and fair access to the necessary data.

1.3 Impacts

Large and Small Supplier Parties, which are responsible for the management of ESME/GSME Devices, would be able to make use of the CFL. There may also be an impact on Equipment Manufacturers, User Systems, and other central systems if and when development of further functionality introduces a need for this.

1.4 Targeted Implementation Date

The Proposer has indicated a November 2017 implementation date.

1.5 Release Management and Testing Requirements

This Modification falls under the Panel's Release Management Policy. The testing requirements will be further informed in the Refinement Process and form part of the Working Group considerations. Implications for Device testing or Assurance Certificates are the responsibility of the relevant SEC Party.

1.6 Proposed progression

This Modification must go through the Refinement Process pursuant to SEC Section D3.9(c) as it affects the User Systems and/or Smart Metering Systems.

Section 6 of this document contains a detailed timetable and the Working Group constitution and objectives.

2. Why Change?

2.1 What is the issue?

As smart metering rolls out, there will be increasing pressure on Suppliers to ensure that the Devices they are responsible for are operating with the latest versions of firmware. This is in order to fully utilise the smart meters' ability to both convey and receive relevant information.

There will also be the issue of making sure that firmware is still up to date for any Device, whether or not there has been a change of Supplier or Customer. This will mean that all Suppliers will need to be able to have access to the latest firmware images even if they do not normally purchase Devices from a particular Manufacturer.

Currently there is no provision for any kind of centralised access point for this information, and this is what this Modification seeks to address.

A number of papers were drafted by the SECAS Community of Experts (CoE), each developing the CFL proposal, prior to this Modification Proposal being raised. These papers could be distributed to working group members in advance of any Refinement Process of the proposal, in order to provide background and context. This will also aid discussions at the Working Group.

These papers are referenced below:

- *SECP_17_1302_04*: This paper laid out the original suggestion for SECAS CoE to develop the CFL proposal.
- *SECP_23_1408_04*: This paper provided an assessment of the practicality of providing a CFL, taking into account legal, regulatory, technological, economic, security and other factors.
- *SECP_27_1112_07*: This paper set out some of the architectural considerations for the CFL.

In addition, Energy UK drafted a paper in March 2014 outlining Supplier's requirements in relation to firmware management: this included the original CFL proposal. The Supplier community still voice their support for this proposal through Energy UK as it is believed to fill a void in the current Smart Metering Implementation Programme (SMIP) arrangements.



What's the issue?

There is currently no central repository for latest versions of device firmware that suppliers can access to update their equipment.

3. Proposed Solution

The Proposer seeks to establish a CFL. The library would be a repository of “non-commercially released” firmware images for all Device Models which are required to be included on the CPL. The term “non-commercially released” firmware images relates to those firmware images that are released to fix bugs and defects associated with a Device Model, rather than firmware images that are developed on a commercial basis between an Energy Supplier and Device Manufacturer in order to deliver enhanced functionality and/or features that go beyond the minimum SMETS1 and/or SMETS2 specifications.

It is therefore recognised that certain firmware versions included on the CPL may not be available via the CFL based on the commercial nature of their existence – consideration may need to be given within the CFL to make this distinction clear to all users. This distinction should also help support the quality of Manufacturer Release Notes associated with any new firmware images.

The CFL will allow Suppliers who do not have an existing commercial relationship with a device Manufacturer to review firmware release notes and acquire available firmware images to distribute to Devices with relative ease. This allows the equipment affected by customer/supplier churn from change of Supplier events to be updated without the need for a commercial relationship to exist.

In accordance with SEC Section F2.1 and clause 2.9 of the CPL Requirements Document (an SEC Subsidiary Document, the specific Appendix is [TBC]¹ pending formal designation), these Device Models are all other than Type 2 Devices, i.e.:

- ESME
- GSME
- Prepayment Meter Interface Device (PPMID)
- HAN Connected Auxiliary Load Control Switch

Firmware images for both SMETS1 and SMETS2 compliant ESME/GSME Devices should be included, covering “non-commercially released” firmware images, and the library should offer a web interface to facilitate access to said firmware images. This web interface would also provide basic information on available firmware images.

It is envisaged that new SEC drafting would be required for the governance and security requirements of the CFL.

All Supplier SEC Parties who have the potential to become a Responsible Supplier should be granted free access to the library.

It is envisaged that although Suppliers will be required to update both the CPL and CFL when a new piece of firmware is released (the drafting of which will be the subject of further discussion subsequently regarding the robustness of the request to Manufacturers to update both CPL and CFL simultaneously if possible), both entities will exist independently of each other. This proposal does not currently envisage the CFL being incorporated into current design [for DCC Release 1.2 / 1.3] and build specifications would be a new standalone service.

What’s the solution?

Establishment of a Central Firmware Library (CFL) for firmware images which are used to update equipment, rather than a commercially developed image between Suppliers and Manufacturers.

¹ This Initial Modification Report is aligned to SEC Version 4.8

It should be noted that the content of the CFL outlined above will constitute a minimum requirement and provision should be made for subsequent addition of items as the solution evolves and develops.

3.1 Security

As with any library holding commercially sensitive information, the security of the CFL itself should be central to any Modification Proposal. Firstly, while there are some protections built into the process for distributing firmware already, there is the question of what measures would need to be implemented to ensure that the hosted images were completely secure, and there is also the issue surrounding the sharing of SMETS1 or SMETS2 security vulnerabilities, which currently is not in place.

At this stage in the progress of the Modification Proposal until initial refinement has been completed, desired functionality and information assets are identified, and accompanying SEC Section G requirements are drafted, the solution should be taken to the Security Sub-Committee (SSC) for discussion. Any security requirements identified via this route should be included as part of the new SEC drafting arising from this Modification Proposal.

(This will be a ‘moving part’ of the entire process, and will probably have implications for the targeted implementation date above.)

Secondly, it is not currently envisioned that the CFL should issue pro-active alerts when new versions of firmware are released as the CFL is not intended to act as a vulnerability management tool. The CPL remains the source of information on notification of new firmware releases, which should then prompt Suppliers to access the CFL to obtain more detailed information on what the release contains. As a result, this will place extra emphasis on the requirement of Responsible Suppliers to update both the CPL and CFL (ideally) simultaneously.

This aspect of the security issue suggests more of a procedural question, laying down tightly defined guidelines as to the updating of firmware, and the subsequent notification of Suppliers that new versions need to be distributed. This will ensure uniformity of action, and minimise the possibility of updates not being disseminated in a timely fashion.

3.2 Legal Text

The necessary amendments to the SEC and relevant SEC Subsidiary Documents will be prepared during the Refinement Process.

3.3 Applicable SEC Objectives

This Modification Proposal will better facilitate Objectives a), c), d), e), f), as detailed in Table 1.

Rationale for Objective Criteria Addressed	
General SEC Objectives (C1.1)	Proposers' View
(a) the first General SEC Objective is to facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain	All Suppliers would have access to all firmware releases, resulting in increased equality between market participants, alleviating a potential barrier to entry for new Suppliers and improving potential response times to firmware updates.

Rationale for Objective Criteria Addressed

<p>(c) the third General SEC Objective is to facilitate Energy Consumers' management of their use of electricity and gas through the provision to them of appropriate information by means of Smart Metering Systems;</p> <p>(d) the fourth General SEC Objective is to facilitate effective competition between persons engaged in, or in Commercial Activities connected with, the Supply of Energy;</p> <p>(e) the fifth General SEC Objective is to facilitate such innovation in the design and operation of Energy Networks (as defined in the DCC Licence) as will best contribute to the delivery of a secure and sustainable Supply of Energy;</p> <p>(f) the sixth General SEC Objective is to ensure the protection of Data and the security of Data and Systems in the operation of this Code;</p>	<p>Efficient operation of Devices is achieved through wider access to firmware which may alleviate bugs or in other ways improve functionality.</p> <p>Protection of data and security would be made easier by readily available firmware images as responsible suppliers' ability to respond to identified vulnerabilities is enhanced. This also helps achieve a secure supply of energy. Notification of recommended updates also helps achieve security of the network.</p>
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4. Impacts & Costs

The following section sets out the initial assessment of the likely impacts arising from SECMP0009. Additional impacts may be identified by the Working Group, if it is subjected to the Refinement Phase.

4.1 Impacts

The following is provided as an indication of likely impacts as known at this time. The Refinement Process will further inform the effects of SECMP0009.



Are there any impacts?

Yes. The SEC will need amendment, and User Systems will be impacted also.

Material Impact on Greenhouse Gas Emission

There is unlikely to be any material impact on Greenhouse Gas Emissions.

Impact on Parts of Smart Energy Code or SEC Subsidiary Documents

SEC Sections, Schedules of Appendices (Subsidiary Documents) likely impacted	Potential Impact
Section F	SEC Section F would need expanding, to include an entirely new section for the CFL. The drafting would likely be similar in structure of the CPL requirements within the SEC.
Section G	New provisions would have to be included in SEC Section G to cover the security requirements.
New Subsidiary Documents	The specific requirements of the CFL should be introduced as a new SEC Subsidiary Document. No existing Subsidiary Documents or SEC Sections other than SEC Section F and SEC Section G (above) would need amendment.

Impact on other Codes and documents

Code(s) and Reference	Product Reference
No Impacts.	This proposal is for an entirely standalone system which does not exist in other industry codes.

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Impact on Smart Energy Code Party Categories

Potential Impact	Party Category
Manufacturers and Energy Suppliers are responsible for the procurement and installation of devices in customers' premises and therefore their administrative and operational processes may be impacted by this Modification Proposal.	<ul style="list-style-type: none"> Large Supplier Parties Small Supplier parties Manufacturers

Impact on DCC Systems

Area of DCC impacted	Potential Impact
DCC	The CFL does not need to be integrated to the DCC's Systems, therefore it should not have a direct impact on any central system. This will need to be informed during Refinement Process.
Data Service Provider (DSP)	To be investigated during the Refinement Process.
Communications Service Providers (CSPs)	To be investigated during the Refinement Process.
Trusted Provider	To be investigated during the Refinement Process.

Impact on other Systems

Area of impact	Potential impact
User Systems	This Modifications may impact User Systems, depending on whether a User seeks to integrate the library in some way. However, this is entirely optional and would already be covered in the scope of any User Security Assessment. As this Modification Proposal introduces new functionality, with solution and system requirements not yet fully defined, whether this constitutes a new central system is currently unknown.
Smart Metering Systems	To be investigated during the Refinement Process.
Other (e.g. Security and PKI)	To be investigated during the Refinement Process.

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4.2 Costs

The costs of implementing SECMP0009 will be identified as it progresses through the Refinement Process. These costs will capture indicative DCC implementation costs as provided in their impact assessment responses and any SEC Party costs (where provided during the relevant consultations).

5. Implementation

The Proposer has requested that this Modification Proposal be implemented in June 2017 as part of SEC Release 2.0.

During Refinement, it may become clearer whether June 2017 is achievable under the implementation timetable. In this event, the Working Group should identify this as part of their deliverables and this has been incorporated into the supplementary considerations in section 6.5 below.

5.1 Modification Testing Requirements

The Panel Release Management Policy notes that, as part of the Panel's considerations of a Modification Proposal and the associated implementation timetable and date, the Panel will consider what Testing is required and who will be eligible to participate. SEC Section H14 requires the DCC to make provision for Modification Proposal implementation testing as part of its Testing Services.

This Modification Proposal is anticipated to require testing consistent with the latest SEC Section T arrangements for:

- i. DCC Testing (Systems Integration Testing - SIT); and
- ii. Interface Testing (IT) with a representative number of Electricity Network Operator (ENO) Users and DCC to demonstrate the capability of the DCC solution to interoperate with ENO User Systems.

In both cases, the approach for SIT and IT will be informed during the Refinement Process.

However the Proposer's initial view is that there will be a need to test the security provisions built into the initial build and development of the CFL (and its subsequent iterations). It will be revised over time as the Modification Proposal goes through the process towards Implementation.

It is noted that the final testing scope and arrangements will be integrated under the Panel Release Management Policy approach for "R2".



When will the Modification be implemented?

The proposed implementation date is November 2017.

6. Progression

6.1 Modification Path

Based on the initial review of the Modification Proposal, and subsequent discussion with the Proposer, SECAS recommends that the appropriate Modification Path is: Path 2 - Authority Determined.

6.2 Progression Route

The Refinement Process is required for this Modification Proposal, and a Working Group needs to be established by the Panel, as the Proposer has identified that due to the impact on Meter Manufacturers, both Large and Small Supplier Parties, and the potential impact on User Systems and the SSC, the SEC criteria for following the Refinement Process (see SEC D3.9(c)) has been met.

6.3 Working Group Membership Requirements

SEC Section D6.3 states out that a Working Group must be at least five members with relevant expert knowledge. Therefore we propose that the Working Group should be made up of:

- The Proposer or a person nominated by the Proposer as a duly authorised representative of the Proposer;
- No less than five other Working Group members with relevant experience and expertise in relation to the subject matter of the Modification Proposal (noting that the Technical Sub-Committee (TSC's) expertise need not be duplicated as this may be achieved through co-ordination between the Working Group and TSC);
- Any interested members from the TSC (or other Sub-Committees) (or its Technical and Business Expert Community (TBEC)), notwithstanding the duplication issue raised above;
- Manufacturer experts (provided by, for example, BEAMA);
- Any other Working Group members who are broadly representative of the Users likely to be affected by the Modification Proposal, so that the Refinement Process is well informed;
- A secretary (who shall be non-voting) resourced by SECAS to see to the administrative needs of the Working Group; and
- A Chair.

The Working Group can also be attended by:

- DCC representatives; and
- DECC and/or Ofgem representatives.

6.4 Convening the Working Group

It is noted that SEC Section D6.3 makes provision for the Panel, with the cooperation of SEC Parties, to establish a standing list of persons with potentially relevant experience who may be willing to serve on Working Groups. As Modification Paths have only recently been enabled, such a standing list is not available to the Panel.

Therefore it is recommended that an open invitation is issued at this time, with a view to using this exercise as a means of identifying the constitution of any future standing membership that can be called upon as a Modifications Working Group.

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Modification Working Group members are required to meet the SEC requirements to confirm in writing to SECCo that they agree to serve on that Working Group, and to do so in accordance with this Code.

Working Group Chair

SEC Section D6.4 enables the Panel to request that SECAS provides the Chair for the Working Group. While the Modification process is further bedded down, it is proposed that, to facilitate convening the Working Group in the first instance, SECAS provides the Chair. The Working Group, once constituted, may then proceed to appoint a Chair from within its membership, if that is the majority view of the members. This optionality would only be available at the first meeting to preserve continuity.

6.5 Working Group Terms of Reference

To meet the requirements set out for Working Group's in SEC Section D6.8 - D6.14, standard Terms of Reference are provided in Appendix B of this document. In addition, the following questions have been identified for the Working Group to consider to fully assess the Modification Proposal.

Working Group Terms of Reference – supplementary questions to consider

What is the materiality of the issue?

Is the solution proposed in this SECMP0009 more efficient than the current command set?

Are there other deficiencies in the current solution that are addressed by SECMP0009?

Which of the two methodologies set out in SECMP0009 is the preferred approach?

What are the detailed changes to the SEC and/or SEC Subsidiary Documents to support this SECMP0009 (and its Alternative(s))?

What are the systems impacts for DCC/User/Smart Meters?

What are the costs and lead times to introduce the solution in this SECMP0009 (or its Alternative(s))?

Is the implementation timetable appropriate?

Are Consumers positively or negatively impacted by the proposed (or any Alternative) solutions and to what extent?

What Modification implementation testing is required to implement the proposed Modification, or any Alternative(s)?

What are the implementation steps and activities required to implement the proposed (or any Alternative) solution(s)?

Have the views of the relevant Panel Sub-Committee's been taken into account

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Working Group Terms of Reference – supplementary questions to consider

Has the Refinement Process identified any potential reason that this Modification (or its Alternatives) may require EC Notification (noting that the Authority will determine if any such Notification is pursued)

The above is not intended as an exhaustive list and it is expected that the Working Group will identify and address any other considerations that arise during the Refinement Process.

6.6 Timetable

As the Modifications Process has only recently been activated, the timetable in Figure 1 below was put together in discussion with the Proposer and SECAS as a good faith estimate. A number of assumptions underpin this timetable:

- The Proposer has requested that the Modification Proposal is implemented in November 2017;
- The proposed timetable below has been put together based on a November 2017 implementation date, noting that the implementation date may need to be flexible to accommodate the necessary implementation and testing lead times, if the Modification Proposal is approved;
- The proposed timetable includes some assumed timescales for the turnaround of DCC’s detailed Impact Assessments and Authority determination, based on the indicative timescales provided by these entities;
- If the changes associated with this Modification Proposal require EC Notification, the proposed timetable does not currently factor in the three months required to complete this, and which would occur after a Change Board vote or any Authority (SoS) approval process;
- The proposed timetable has been drawn up based on this Modification Proposal progressing without cancellation or suspension under the [DECC SEC Modification Guidance](#) issued by DECC;
- The timetable assumes that any Panel Sub Committee inputs can be fed into the Refinement Process at the appropriate time, and this may be subject to alteration.

Modification Timetable	
Activity	Date
Modification Proposal raised	1 March 2016
IMR considered by Panel	11 March 2016
Working Group meetings Indicative activities: <ul style="list-style-type: none"> • Initial considerations • Legal drafting 	March - May



Modification Timetable	
<ul style="list-style-type: none"> • Sub-Committee feedback • Alternative(s) identified • Detailed evaluation 	
Working Group Consultation	May 2016
Final Working Group meeting Indicative Activities: <ul style="list-style-type: none"> • Consultation response summary • WG deliverables met • Assessment for Modification Report 	June 2016
Panel reviews Modification Report	June 2016
Modification Report phase consultation	June/July 2016
Change Board vote	September 2016
Modification Decision by the Authority	October 2016
Implementation	November 2017

Figure 1: SECMP0009 Timetable

7. Panel Initial Assessment

The Panel is requested to **NOTE** the contents of this paper for SECMP0009 and, pursuant to SEC Section D3.6, **AGREE** the following as set out in this Initial Modification Report:

- whether to accept the Modification Proposal;
- it is a Path 2 Modification (taking into account the view expressed by the Proposer);
- that it is necessary for the Modification Proposal to go through the Refinement Process as set out in Section 6.2 of this document;
- the Modification progression timetable set out in Figure 1 of Section 6.6 of this document;
- to establish a Working Group with the membership and Working Group Chair as set out in Section 6.3 of this document;
- whether SECMP0009 should be considered together with any other current Modification Proposal(s);
- The supplementary considerations for SECMP0009 to supplement the standard Working Group terms of Reference set out in Section 6.5 of this document; and
- The potential to group SECMP0009 with other Modifications to gain efficiencies in the Refinement Process across a number of potential changes to the Technical Specifications.

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8. Further Information

More Information is available in:

- Attachment **A**: Modification Proposal
- Attachment **B**: standard Working Group Terms of Reference

For further information, please see the Modification Register of the SEC website.

Or contact the Code Administrator at secas@gemserv.com.

9. Glossary

The terms listed in the below table are defined in SEC Section A.

Glossary	
Term	Acronym
Centralised Firmware Library	CFL
Certified Products List	CPL
Communication Hub Installation & Maintenance Support Materials	CHIMSM
Communications Service Providers	CSP
Data Communications Company	DCC
Data Service Provider	DSP
DCC Key Infrastructure	DCCKI
DCC User Interface Specification	DUIS
Electricity Smart Metering Equipment	ESME
European Commission	EC
Gas Smart Metering Equipment	GSME
Home Area Network	HAN
Impact Assessment	IA
Initial Modification Report	IMR
Public- Key Infrastructure	PKI
SEC Modification Proposal	SECMP
Secretary of State	SoS
Smart Metering Implementation Programme	SMIP
Security Subcommittee	SSC
Smart Energy Code	SEC
Smart Energy Code Administrator and Secretariat	SECAS
Smart Energy Code Company	SECCo

Glossary	
Smart Meter Wide Area Network	SM WAN
Smart metering equipment technical specifications	SMETS
Smart Metering Key Infrastructure	SMKI
Sub Committee	SC
Subsidiary Document	SD
Technical Sub-Committee	TSC