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Stage 02: Draft Modification Report

SECMP0002:

Add new Command to reset Debt Registers

What stage is this document in the process?

01 Initial Assessment

02 Refinement Process

03 Modification Report

► 04 Decision

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Summary

This Modification Proposal seeks to add a new Smart Metering Equipment Technical Specification (SMETS) Command to allow Users to reset any of the three debt registers on an Electricity Smart Metering Equipment (ESME) or Gas Smart Metering Equipment (GSME).

Working Group View



- The Working Group (WG) unanimously believes that SECMP0002 should be approved.

Impacts



- Supplier Parties
- Other SEC Parties
- DCC
- DCC Central Systems
- Party interfacing systems

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About this Document

This document is a Draft Modification Report (DMR). This document provides detailed information on the issue, solution(s), impacts, costs and Working Group (WG) discussions and conclusion on SECMP0002.

The Smart Energy Code (SEC) Panel will consider this report to ensure that due process has been followed and determine whether to issue the modification for Modification Report Consultation (MRC).

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1. Summary

What is the issue?

Currently, there are no Smart Metering Equipment Technical Specification (SMETS) Commands to reset debt registers on an Electricity Smart Metering Equipment (ESME) or a Gas Smart Metering Equipment (GSME). This means that the User will have to utilise multiple commands in order to eradicate the debt that is displayed to the Consumer on a Smart Metering System (SMS).

If one of the commands in the process was to fail, the full reset of the debt register would be incomplete. This could potentially result in inaccurate data being held in the debt registers. The Proposer has highlighted that using multiple commands would be cumbersome and could cause confusion for the Consumer.

What is the Proposed Solution?

SECMP0002 seeks to add new SMETS commands so that the two Time Debt Registers and the Payment Debt Register can be independently reset to zero.

Impacts

Party

Large Supplier Parties	x	Small Supplier Parties	x
Electricity Network Parties		Gas Network Parties	
Other SEC Parties	x		

System

DCC Systems	x	Party interfacing systems	x
Smart Metering Systems	x	Communication Hubs	
Other systems			



Modification Path

SECMP0002 was initially considered by the Panel to have a material impact on existing and future Energy Consumers, and therefore agreed that it should be progressed as a Path 2: Authority-determined modification (as per SEC Section D2.6 (b)).

As the modification requires changes to Technical Specifications, BEIS has indicated that SECMP0002 will also require European Commission (EC) Notification.

Implementation Costs

The total estimated implementation cost to deliver SECMP0002 is approximately £2,452,796. This total cost consists of:

- **£3,000** in SEC Administration effort; and
- **£2,449,796** in DCC effort.

Implementation Date

The WG is recommending an implementation date for SECMP0002 of:

- 27th June 2019 (Release 4.0), if a decision to approve is made by 27th May 2018.

Working Group's views

The Working Group (WG) believes unanimously that SECMP0002 does better facilitate SEC Objectives (a) and (c). The WG therefore believes that this Modification Proposal should be **approved**.

2. What is the issue?

Background

In accordance with the SMETS, ESMEs and GSMEs are required to have three debt registers. These are:

- one Payment Debt Register, where the debt is recovered by deducting a configurable percentage of each credit added; and
- two Time Debt Registers, where the debt is recovered by deducting a specified amount from the Meter Balance per period of time.

Similar to the Meter Balance¹, there are Commands² to adjust these Debt Registers and read the values stored in them. However, unlike the Meter Balance, there are no SMETS Commands to reset these Debt Registers to zero.

What is the issue?

There are a number of operational scenarios where a Supplier User will need to eradicate the debt that is displayed to a Consumer on their Smart Metering System (SMS).

The Proposer (Npower) highlights that, based on current arrangements, Supplier Users will have to utilise multiple Commands to erradicate the debt recorded on the three Debt Registers on an ESME or GSME. For example:

- The Adjust Debt command only allows for a positive or negative adjustment of these registers, so a reset can be achieved by reading the value and adjusting by the requisite amount. The value of the adjustment would have to take into account any pending payments or time based debt to be able to calculate the accurate amount.
- The other mechanism to achieve a reset is to add a large credit to the meter so that any excess is rolled onto the Meter Balance and then resetting the Meter Balance.

¹ SMETS2 - the Meter Balance is the amount of money in Currency Units as determined by ESME/GSME. If operating in Prepayment Mode, the Meter Balance represents ESME/GSME's determination of the amount of credit available to the Consumer (excluding any Emergency Credit Balance). If operating in Credit Mode, it represents ESME/GSME's determination of the amount of money due from the Consumer since the Meter Balance was last reset.

² Commands - the value of a Common Object included in each Service Request and Signed Pre-Command to indicate to the DCC if that message has to be: transformed to an Unsigned GBCS Payload and returned to the User for signing; sent to a Device; or executed by the DCC.



3. Proposed Solution

Solution

SECMP0002 proposes to add a new Command so that each of the three Debt Registers on an ESME or GSME can be reset to zero independently.

In common with the reset Meter Balance Command, the new reset Commands will be usable when an ESME or GSME is in both credit and prepayment mode. However, in line with current SMETS requirements, the Commands will only affect a debt recovery when in prepayment mode.

The Commands will report success if the Debt Register in question is successfully set to zero once the Command has been executed. Responses to these Commands will not contain any data that can be considered as 'personal' in accordance with the Data Protection Act. Thus, there are no Response encryption requirements.

From a DCC User perspective, these Commands can be executed through a new Service Request (SR) 2.4 Reset Debt Register, where there will be an option to reset a Debt Register to zero. Only one Debt Register can be reset at a time.

The full detailed solution requirements can be found in the Solution Design Specification document attached to the Working Group Consultation (WGC) (Attachment B).

Draft legal text

The above changes will be mandated through the relevant version of the SEC that is released at the time this modification is implemented, and will apply to all newly installed ESME and GSMEs from that date.

The proposed legal text changes to the SEC are provided in Attachment C of the WGC.

4. Impacts

The following section sets out the impacts associated with the implementation of SECMP0002.

SEC Party impacts

Large Supplier Parties	X	Small Supplier Parties	X
Electricity Network Parties		Gas Network Parties	
Other SEC Parties	X		

Large and Small Supplier Parties

The use of the new SR associated with this modification will be optional, not mandatory. Therefore, Large and Small Supplier Parties will only be impacted should they choose to send and receive the new SR, as it will require updates to their DCC User Interface. Further, Suppliers that wish to use the new SR will have the ability to reset the three Debt Registers on an ESME or GSME.

Other SEC Parties

Other SEC Parties, specifically Meter Manufacturers, will be impacted by this modification. This is because SECMP0002 adds additional ESME and GSME requirements to into the SMETS.

This modification does not require retrospective changes and therefore there are no updates required to ESME and GSME already installed.

Central System impacts

DCC Systems	X	Party interfacing systems	X
Smart Metering Systems	X	Communication Hubs	
Other systems			

DCC Systems

The DCC has advised, through the full DCC Impact Assessment, that SECMP0002 will impact the Data Service Provider (DSP) Systems, the Communication Service Provider

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(CSP) North Systems, and Great Britain Companion Specification (GBCS) For Industry (GFI).

The main impacts on the DSP include:

- introduction of one new SR into the DCC User Interface;
- required schema updates for the Message Mapping Catalogue (MMC);
- uplift to Parse and Correlate to support new the Commands; and
- new Anomaly Detection Thresholds to be defined.

The main key impact on CSP North is that updates are required to message categorisation for billing purposes.

Smart Metering Systems

SECMP0002 proposes new ESME and GSME mandated functional requirements and requires changes to SMETS. Therefore, this modification will impact Smart Metering Systems (SMS).

Party Interfacing Systems

SEC Parties that implement SECMP0002 will be required to update their DCC User Interface to send the proposed new SR 2.4 Reset Debt Register.

Testing

The DCC will be required to carry out Pre-Integration Testing (PIT) and System Integration Testing (SIT) for SECMP0002.

SECMP0002 will also require Supplier Users who choose to implement the modification to demonstrate that they are able to support the sending of the new SR and the receiving of the Service Response. Therefore, the DCC shall provide Testing Services to support the implementation of SECMP0002 to prove:

- the DCC User/Test Participant can successfully execute the SRs and can use them effectively in Production; and
- that the code should be uplifted into Production.

Further details of the requirements relating to User Testing can be found in the Solution Design Specification document attached to the WGC (Attachment B).

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SEC and Subsidiary Document impacts

SECMP0002 requires changes to the following [SEC documentation](#):

- SEC Schedule 8 – GBCS;
- SEC Schedule 9 – SMETS;
- SEC Schedule 11 – Technical Specification Applicability Tables;
- SEC Appendix E - DCC User Interface Services Schedule;
- SEC Appendix AD – DUIS; and
- SEC Appendix AF – Message Mapping Catalogue.

Consumer impacts

The WG has identified positive impacts on Consumers because the modification mitigates the risk of failure when resetting Debt Register on an ESME or GSME. Therefore, the proposed new Commands will minimise the chances of misleading the Consumer.

Impacts on other industry codes

There are no impacts on other industry codes.

Greenhouse Gas Emission impacts

There are no impacts on Greenhouse Gas Emissions.

5. Costs

Estimated Implementation costs

The total estimated implementation cost to delivery SECMP0002 is approximately **£2,452,796**. This cost comprises of £3,000 in SECAS effort and £2,449,796 in DCC effort.

A more detailed breakdown can be found in the tables below.

SEC costs

The estimated SEC implementation cost is detailed in the table below:

SECAS implementation costs		
Implementation Activity	Effort (man days)	Cost
Application of approved changes to the SEC. Publication of new version of the SEC on the SEC Website and issuance to SEC Parties. Review and updated any impacted SEC guidance materials.	Five	£3,000 ³

DCC costs

The estimated DCC implementation cost is detailed in the table below:

DCC implementation costs (excluding VAT)	
Implementation Activity	Cost
Design	£24,921
Build	£1,161,514
Pre-Integration Testing	£1,263,361
Total estimated DCC implementation cost:	£2,449,796

³ SEC man day effort based on a blended rate of £600 per day.



6. Implementation

Recommended implementation date

The WG is recommending an implementation date for SECMP0002 of:

- 27th June 2019 (Release 4.0), if a decision to approve is made by 27th May 2018.

The WG notes that the above implementation date is subject to change depending on the final content of the DCC and SECAS Release Management Policy, which is currently being consulted upon.



7. Working Group Discussions

Terms of Reference

The WG has considered and answered the questions put forward in the SECMP0002 Terms of Reference (ToR). A summary of its discussions and conclusions are detailed below.

Scope of SECMP0002

Considerations were made as to whether the ability to reset the Accumulated Debt Register on an ESME or GSME should also be included in the modification. The Accumulated Register records the debt recovered and accumulated debt. The WG agreed that the modification should only seek to reset the Time 1 and Time 2 Debt Registers and the Payment Debt Register on an ESME and GSME. It was also noted that each Debt Register should be reset individually by one Command.

The DCC also questioned whether there should be any differentiation in processing the new Commands between meters that are in pre-payment and credit mode. A dependency on a meter being in pre-payment mode was not considered to be applicable by the WG.

Finally, the WG discussed whether the new Commands should be able to both reset and adjust the debt register. The WG considered that the new Commands should not have dual functionality.

Conclusion

The WG agreed that the Accumulated Debt Register should not be included in SECMP0002 and that a pre-payment mode dependency is also not required. It was also agreed that the new Commands should only reset Debt Registers and should be separate from the set of existing adjustment Commands.

Privacy Impacts

The WG questioned the privacy impacts of the modification, and whether the data in the Commands will need to be encrypted. It was noted that the Debt Register data will not be readable if it is encrypted and therefore, it was agreed that input from the Department for Business, Energy, and Industrial Strategy (BEIS) was required.

SECAS contacted BEIS in regard to encryption and potential privacy issues. On the former, BEIS' understanding is that the proposed modification will not result in outbound sensitive information being transferred from the meter.

In relation to privacy, BEIS informed the WG that it is the WG's responsibility to consider and conduct a privacy assessment if necessary. The WG noted that the proposed modification

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will result in less data being communicated than the current design, and also that the new Commands will minimise the amount of sensitive information being transferred.

SECAS also highlighted that the default response for the ZigBee Command is successful or unsuccessful, whereas the GBCS ESME is more complex. The WG was asked to confirm whether setting the response value from ESME to zero was acceptable, to address privacy issues that will arise from returning other values.

The WG noted that if the previous value of a register were to be read and returned in a Device Language Message Specification Companion Specification for Energy Metering (DLMS COSEM) response, it would need to be encrypted as per the Blue Book. This could cause delays in implementation.

It was also noted that although setting the response value for ESME at zero may result in quicker implementation, it is not strictly conformant and could possibly affect DLMS certification. The WG concluded that returning the previous value is not required.

Conclusion

The WG agreed that encryption is not required and that the proposed Command does not need to return the previous value on the Debt Register to the Supplier User. This has been reflected in the Solution Design Specification (Attachment B).

Security Impacts

The WG considered that the modification will need to be factored into the Threshold Anomaly Detection Procedure (TADP). Given that the new Commands shall be Critical, they will be in scope of threshold anomaly detection, so affecting both DCC Users and the DCC in this area.

Further considerations were also made on how the gas Command groups compile and how the TADP will treat this traffic in the threshold count. It was highlighted that the gas command groups a number of SRs together and passes figures to the device, rather than requesting the debt registers to be 'zero'.

As the additional Commands will be Critical SRs, the WG observed that new packet inspection requirements will need to be set and managed, to be consistent with the planned mechanisms for existing Commands. The WG agreed that the details of the modification should be raised with the Security Sub-Committee (SSC), specifically in relation to whether packet inspection would be needed.

The SSC agreed that the additional GSME SRs should include packet inspection to align it with all other SRs. SECAS clarified that packet inspection will be required if the value is adjusted to ensure the value has not been interfered with.

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Through the Preliminary Assessment (PA), the DCC requested confirmation as to whether Attribute Limit Anomaly Detection for the new Commands will be required. SECAS raised this with the SSC, which advised that:

- the GSME Commands should be subject to Attribute Limit Anomaly Detection. This is because the GSME Commands include a supply affecting parameter. In this case, the Attribute Limit check should ensure that the value of that supply affecting parameter is set to zero; and
- the ESME Commands are not required to be subject to Attribute Limit Anomaly Detection. This is because the reset behaviour is achieved by the reset method, and not by a parameter whose value is set to zero.

The WG agreed that these changes should be included in the solution.

Conclusion

In summary, it was agreed that:

- the modification will need to factor in TADP requirements;
- packet inspection is required for the GSME Commands, but not the ESME Commands; and
- Attribute Limit Anomaly Detection is required for the GSME Commands, but not the ESME Commands.

These requirements have been included in the Solution Design Specification.

8. Working Group's Conclusions

The WG's **unanimous** view is that SECMP0002 better facilitates General SEC Objectives (a) and (c) and should be **approved**.

Benefits and drawbacks of SECMP0002

The Proposer and the WG have identified the following benefits and drawbacks related to SECMP0002.

Benefits

The WG has identified the following benefits:

- The modification will reduce DCC System and User System traffic as Supplier Users will be able to use one Command to reset Debt Registers rather than utilising multiple Commands; and
- SECMP0002 will reduce the risk of failure when resetting Debt Registers as only one Command is required, thus reducing the risk of misleading Consumers.

Drawbacks

The WG has identified that Suppliers have needed to implement workarounds to reset Debt Registers to zero until this modification can be implemented. It was noted that the development of these workarounds may diminish the business case for SECMP0002.

Views against the General SEC Objectives

Objective (a)⁴

The **majority** of WG members believe that SECMP0002 better facilitates General SEC Objective (a) because Suppliers will be able to make more efficient use of the DCC System by replacing two Commands to reset Debt Registers with one. This will reduce the traffic across Supplier and DCC systems, thus reducing the risk of failures.

⁴ 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



Objective (c)⁵

The **majority** of WG members believe that SECMP0002 better facilitates General SEC Objective (c) because it reduces the risk of failed resets of Debt Registers. The Proposer and the WG noted that sending two Commands to perform one operation increases the chance that either Command could fail. The Consumer could also be looking at their Smart Metering System at the time that these Commands were being applied. Therefore, the proposed new Commands will minimise the chances of misleading the Consumer.

⁵ 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

Appendix 1: Glossary

The table below provides definitions of the terms used in this document.

Acronym	Term
SMETS	Smart Metering Equipment Technical Specification
ESME	Electricity Smart Metering Equipment
GSME	Gas Smart Metering Equipment
WG	Working Group
SEC	Smart Energy Code
MRC	Modification report Consultation
EC	European Commission
WGC	Working Group Consultation
DSP	Data Service Provider
CSP	Communication Service Provide
GFI	GBCS For Industry
MMC	Message Mapping Catalogue
PIT	Pre-Integration Testing
SIT	System Integration Testing
TOR	Terms of Reference
BEIS	Business Energy and Industry Strategy
GBCS	Great Britain Companion Specification
DLMS COSEM	Device Language Message
SR	Service Request
TADP	Threshold Anomaly Defection Procedure
GFI	GBCS For Industry
SSC	Security Subcommittee

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