Proposed Change: SECMP0015 - GPF timestamp for reading instantaneous Gas values

Requirement

This section summarises the key parts of the requirement for this SEC Modification, as currently clarified and refined by the Working Group. The following solution(s) sections detail the required changes to SEC and wider documents that are proposed to implement this requirement. Where there are multiple solutions sections, they reflect the alternatives the Working Group wished to consider.

Context

[Underlined terms in this section are SMETS terms]

A GSME continuously updates its Consumption Register to reflect the volume of gas passing through its measuring element, which causes continuous updates to the Meter Balance.

Continuous Consumption Register changes:

- can also cause values in other registers to change continuously, depending on Tariff settings, specifically registers in the Tariff Block Counter Matrix and the Tariff TOU Register Matrix.
- when in Prepayment mode, can also cause changes in the Emergency Credit Balance

The above underlined values are referred to in this document as 'instantaneous' values.

Periodically, the GSME reports these instantaneous values to the GPF. The GPF keeps a copy of what is reported and so these copied values can be read from the GPF [The GSME's HAN radio is off most of the time and so the values cannot be read from the GSME remotely without significant delay]

Normally these periodic updates happen every 30 minutes but sometimes happen less frequently (e.g. due to local radio interference on the SMHAN). Thus, the values read from the GPF will be from a time in the past. However, there is currently no way of knowing how far in the past.

Functional Requirements

This SEC modification is to allow Remote Parties and Devices reading the instantaneous values from the GPF to know what the time was on the GSME's Clock to which those values relate. Specifically

- The GSME is to provide to the GPF with a date-time stamp value whenever the GSME provides its instantaneous values;
- The GPF is to update its copy of this date-time stamp whenever it updates its copy of the GSME's instantaneous values;
- The GPF is to make available its copy of the GSME date-time stamp to Devices on the SMHAN;
- When the GPF creates a Response to Use Cases GCS13a, GCS13b, GCS13c, GCS14 or GCS60, the GPF is to use its copy of the GSME date-time stamp to populate the date-time field in the Response it generates, and mark the source of that date-time stamp in the time status of the Response accordingly; and
- Parse and Correlate is to decode the time status in Responses so that GSME sourced date-time stamps are flagged, along with (as an option) a decoding as to whether the date-time is (1) reliable, (2) unreliable or (3) invalid.

Implementation Obligations

The associated changes to SEC documents, including SMETS, CHTS, GBCS and MMC would be implemented at 'Version X' of the SEC [to be agreed].

The Functional Requirements in this Modification would need to be met by all GSME / CH which comply with 'Version X' or a later SEC version, covering both those GSME / CH that are newly installed and those whose firmware is upgraded to 'Version X' or a later SEC version.

There would be no requirement to upgrade firmware on installed GSME / CH to implement this Modification. It would be for Suppliers to decide whether to upgrade GSME and for the DCC to decide whether to upgrade CH.

There would be no requirement for other Device types to be upgraded as part of this Modification (e.g. to be able to read the GSME date-time stamp), as there is no requirement for other Device types to use the additional information. It would be for Suppliers (excluding CADs) or Consumers (CADs) to decide whether to upgrade other Device Types.

From the point at which 'Version X' comes in to force, the DCC would need to make available to DCC Users an updated version of Parse and Correlate software, which includes support for the decoding of time status. In terms of this Modification, it would be for DCC Users to decide whether and when to implement the updated version of Parse and Correlate software.

There would be no obligation on DCC Users or the DCC to make any specific use of the GPF provided GSME date-time stamp, and so there are no additional changes to DCC User or DCC SEC obligations.

Changes

To deliver the Functional Requirements:

- GSME would be required to maintain a new SMETS operational data item ('Instantaneous Values Last Update Date and Time') and provide that value to the GPF each time it provides the instantaneous values. In ZSE, this equates to the *ReadingSnapshotTime* attribute (0x0007) in the *Reading Information Attribute Set* within the *Metering Cluster*;
- GPF would be required to keep a copy of that value, where it is provided by the GSME, and use it to populate the date-time field in the Responses to Use Cases that read instantaneous values [currently, the GPF puts the CH Date and Time in this field]. The CHF would be required to continue to use CH Date and Time, where the GSME does not provide the new data item;
- GPF would make available its copy of the *ReadingSnapshotTime* attribute (0x0007) in the *Reading Information Attribute Set* within the *Metering Cluster* to Devices on the SMHAN (or would set the to 'invalid time' when it does not have a valid value from the GSME, to make clear to other Devices that it does not have a GSME provided value);
- Parse and Correlate would decode bit 2 of the 'time status' (in the date-time field with Responses) to flag where date-times come from the GSME rather than the Device (GPF) creating the Response (so where bit 2 is set to 0b1). As an option, Parse and Correlate would also decode bits 0 and 1, in line with GBCS Table 9.1.4.2b. This would require a corresponding change to the MMC.

These changes do not affect the structure of any of the existing Use Cases, and so do not require changes to DUIS or DSP systems.

Compatibility

In terms of compatibility between CH and GSME at differing versions of the Technical Specifications, there should be no compatibility issues, since:

- as above, the CH will revert to existing behaviour where the GSME does not support this feature
- if the CH does not support this feature it should discard any GSME provided *ReadingSnapshotTime* attribute value reported to it. **[DN: DCC to confirm]**

In terms of another Device (e.g. CADs) attempting to read the GPF copy of the *ReadingSnapshotTime* attribute, the other Device will receive an UNSUPPORTED_ATTRIBUTE status from the GPF in the response, if the GPF does not support this Modification. It would receive 0xFFFFFFFF (meaning invalid time) if the GPF supports this Modification but the GSME does not. Both these behaviours are part of the ZigBee Specification and so should be factored in to the design of such Device types.

In line with the wider SEC approach, there is no requirement to update already installed GSME or CH to support these changes. The additional attribute shared over the SMHAN does not affect any other Devices.

From a DCC User perspective, access to these Use Cases would be provided by existing, unchanged Service Requests. The structure of existing Responses would also be unchanged. Versions of Parse and Correlate that do not decode the time status in Responses would still be able to process Responses (since the structure and content of Responses is unchanged).

Thus, there would be no requirements for a DCC User to make any changes as a result of this Modification, save thae Gas Suppliers would, for newly installed GSME, need to install GSME that include this functionality.

Solution

This section details the required changes to SEC and wider documents that are proposed to implement the requirement for this SEC Modification. Please note that all numbering, messages codes, alert codes and so on are based on GBCS 0.8.2 and related document versions. Numbering, codes etc may need to be updated in light of other changes agreed.

SEC main body change

None

SMETS changes

Add the following section, so as to require the GSME to maintain the additional Operational Data Item:

4.6.5.23 Instantaneous Values Last Update Date and Time

The date and time at which, according to GSME's Clock, the ***Error! Reference source not found.****(****Error! Reference source not found.****)* was last updated.

CHTS changes

So that the GPF makes this data item available to other Devices on the SMHAN, add the following to the end of the bullet pointed list in Section 4.5.3:

xxxvi Instantaneous Values Last Update Date and Time

Note that CHTS 4.6.3.9 requires that the GPF keeps a copy of all GSME Operational Data, and so will need to keep a copy of this new data item.

GBCS changes

To specify what the GPF should do when *ReadingSnapshotTime* is not provided, and for clarity as to when the *ReadingSnapshotTime* is to be updated, given that GSME are not required to support *CurrentSummationReceived*, *CurrentMaxDemandDelivered*, or *CurrentMaxDemandReceived* attributes, add the following to the end of section 10.4.2.11:

> 'For clarity, the GSME shall update *ReadingSnapshotTime* to the UTC time of the GSME's clock whenever the GSME updates the *CurrentSummationDelivered* attribute. Where the GSME does not provide a *ReadingSnapshotTime* attribute value, the GPF shall set the value of its *ReadingSnapshotTime* attribute to be 0xFFFFFFFF (meaning invalid time in ZigBee), and shall record that the value was not provided by the GSME.'

To require the GSME to make the *ReadingSnapshotTime* attribute available to the GPF, and the GPF to make its copy available to HAN Devices, add the green highlighted rows in the embedded document to Table 7.4:

GBCS Table 7 4 addition for SECMP(

To make clear how the GPF uses this value in the affected Use Cases and what the GPF does when it is not provided, in Table 7.2.7, add the underlined text to the following row:

Yes	Length	0x00 where no date / time is required in this Message 0x0C where a date / time field is required	1	Where date-time is not required for a Message, it shall be a 0 octet string as per the DLMS specification Where date-time is required for a Message, it shall be a 12 octet string as per the DLMS specification. See 'date-timestamp in response' column, 'Use Case reference' tab in Mapping Table.
Yes	Value	Either empty or a 12 character octet-string containing the date-time stamp for this Response	0 or 12	<u>If (1) this is a Response from a GPF in one of Use Cases GCS13a, GCS13b, GCS13c, GCS14 or GCS60, and (2) the GPF has a valid value stored for the *ReadingSnapshotTime* reported by the GSME, then that date-time shall be used to construct the value in this field, with bit 2 of clock status being set to 0b1 to show 'different clock base', since the GSME's clock is a different timing source than the GPF's normal timing source (the CH Clock).</u> <u>Otherwise, where a value is required by the Use Case, the field shall be populated using the date-time in the Device's clock, and bit 2 set to 0b0 (since the time source is the Device's Clock).</u>

SEC Appendix E changes
None

DUIS changes
None

MMC changes
[DN: tbc but to cover decoding of clock status.]

Other SEC document changes
None

Changes to documents outside of SEC
None