Visit us
geotogether.com

Give us a call
+44 (0)1223 850 210

Drop us an email
info@geotogether.com

SECMP0007 Firmware updates to IHDs and PPMIDs

Author: F. Vanhoutte

Date: 16-07-19

Version: v1.2

Contents

Introduction 2
SECMP0007 Proposition 2
Alternative Methods 3
Options 1: Query Next Image Request 3
Proposition 3
Advantage 3
Disadvantage 4
Option 2: FW Changed Alert 5
Proposition 5
Advantage 5
Disadvantage 5

geo | 3 St. Mary's Court | Main Street | Hardwick | Cambridge | CB23 7QS | UK

Green Energy Options Ltd. is registered in England. Company number: 5783558. VAT Registration: UK 896 6052 79

© Green Energy Options Ltd 2017

Introduction

SECMP0007 calls for the introduction of an OTA firmware updating service to be added to DCC services for SMETS2 HAN devices such as PPMIDs and HCALCs. As part of the proposed solution, it is suggested that there is a restriction on the updating of firmware images locally to the device. The reason provided is that the DCC needs to ascertain the latest firmware version installed for its image library and the method of doing this is for the comms hub to request the image version number 15 minutes after download to the HAN connected device.

There is a government and industry desire for the major smart metering system being installed in the UK to provide a platform for innovation and increased functionality within the home. Indeed, BEIS has helped fund a number of trials and product developments to achieve this. As part of this drive, innovative products will be offered to the market which combine additional feature sets on top of the mandated devices installed with the smart meter. **geo** believes that innovation will be severely curtailed if local upgrade to firmware is not permitted, particularly in the light of increasing Supplier churn where a new supplier may not be aware of the devices and services operating in the home when they take over a new customer.

This paper sets out two alternative approaches by which the DCC can obtain the latest firmware image file name. These two options will both achieve the DCC objective whilst also allowing local firmware upgrades to take place.

SECMP0007 Proposition

As part of SECMP0007 the DCC will maintain a register which DCC user would be able to access to verify the current active firmware version running on the devices. To be able to maintain this register it has been proposed that:

- "Local" upgrades would not be permitted
  On upgrading the device through the DCC, the communication hub would request the firmware version from the device.

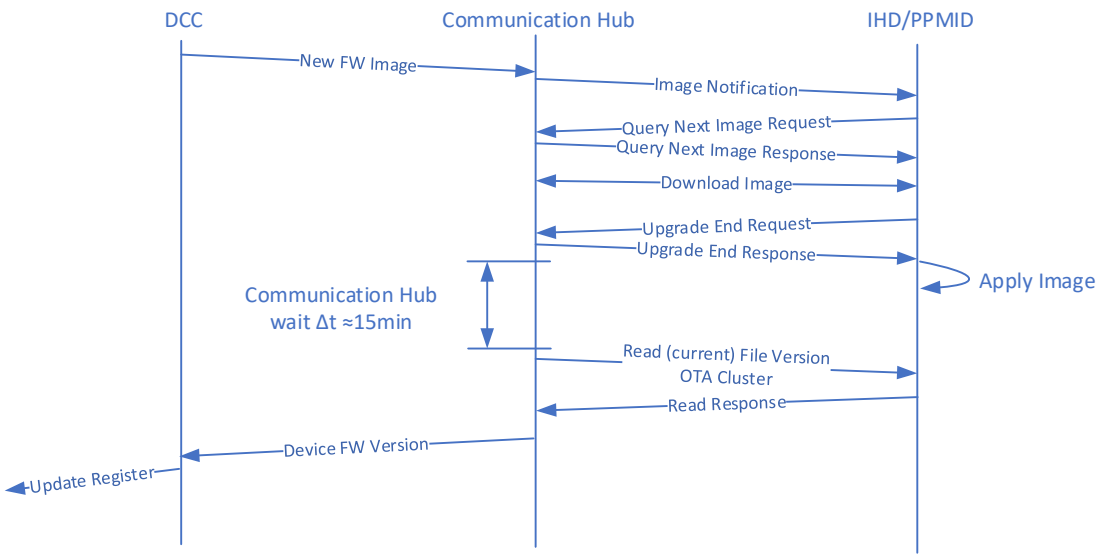

Figure 1: Proposed SECMP0007 flow

© Green Energy Options Ltd 2019

Alternative Methods

Options 1: Query Next Image Request

Proposition

For this option **geo** proposes that the upgrade server for the devices on the smart meter HAN (in this case the communication hub) will takes advantage of the information provided by the devices when requesting if a new image is available. The payload of this mandatory command has the following construction:

Field Control | Manufacturer Code | Image Type | (Current) File Version | Hardware Version (optional)

On receiving the command from the HAN device, the communications hub can extract the current Firmware Version and provide the data to the Head-End-System. The possible data flow between DCC, Communication Hub and HAN device has been represented in figure 2, including the scenario where the device would be upgraded through the DCC and through a "local" method.

On power-up and after locating the "Upgrade Server" on the HAN the device would query if a new image is available, based on the images currently stored on the communication hub, it will respond either with:

- No image available
- Information concerning the image available for download by the device.

At the same time the communication would be based on the information contained within the *Query Next Image Request* construct the command to send to the DCC to notify the current active firmware version running on the device. On receiving the message from the communications hub the appropriate registers can be updated. It would be possible for the hub to implement additional logic to only pass the data to the DCC if a change has been detected.

Advantage

As with the mechanism currently proposed with SECMP0007 the communication hub would need to implement a command to provide the current firmware version operational on the device. However, instead of the communication hub having to request the information from the device once an image has been downloaded (with the assumption the application has applied the image and the device is still powered up) the information would be provided by the device on a periodic basis. The frequency of this information could be defined in GBCS.

© Green Energy Options Ltd 2019

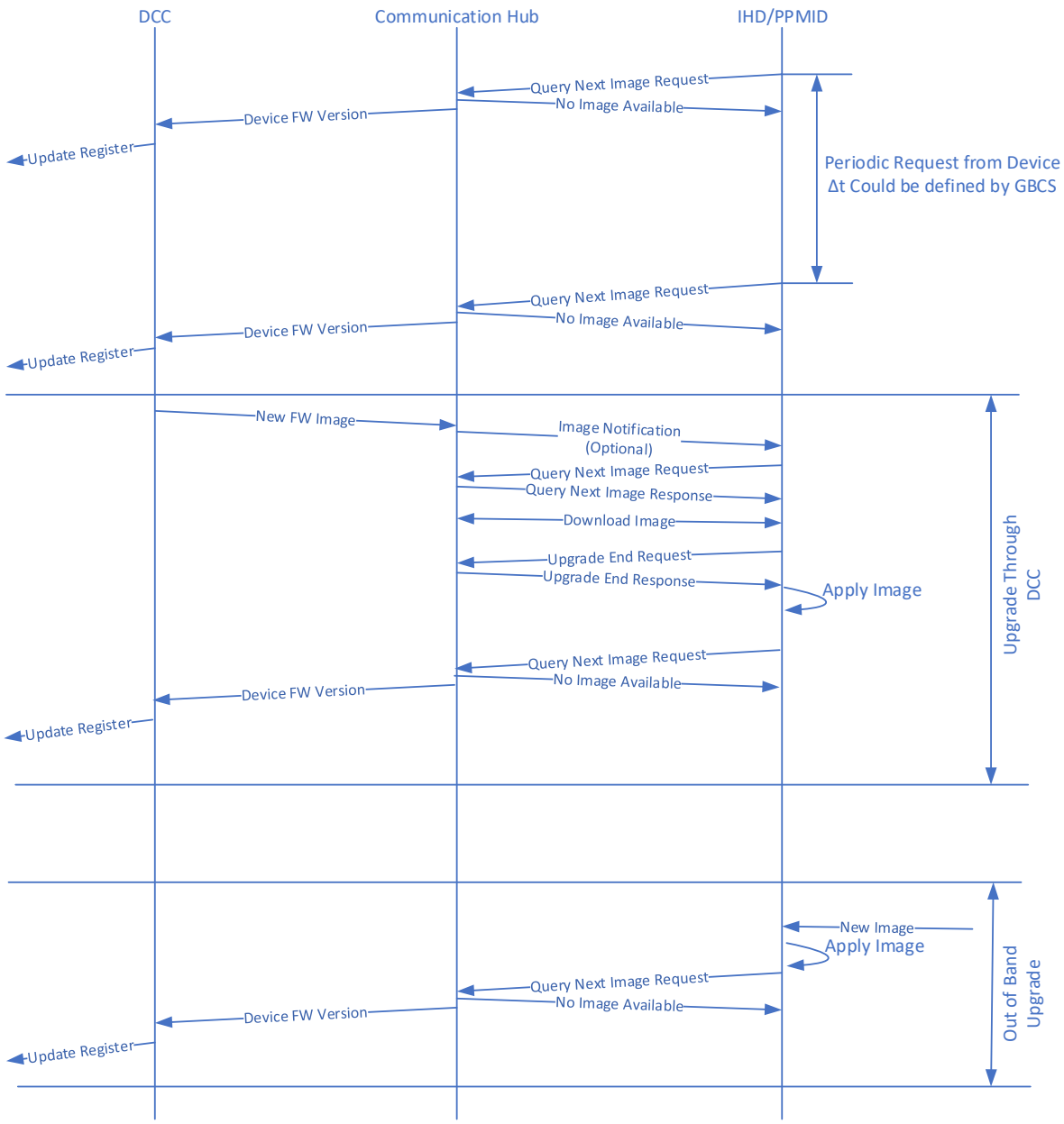

Figure 2: Upgrade Data Flow

Disadvantage

In the simplest implementation the communication hub would pass the received information to the DCC, this would generate additional information/commands to be processed by the DCC infrastructure. The impact/quantity of these messages could be limited by defining additional requirements on the HAN Device, example:

- Check for new image on power-up and then no more frequent than once every 24 hours.

© Green Energy Options Ltd 2019

Option 2: FW Changed Alert

Proposition

On completion of a firmware upgrade the device will send an alert/notification to the DCC to inform the DCC services of the change. The alert could include the new active firmware version.

Advantage

The device will notify when the firmware was updated either through the DCC or “local”, which could be used to trigger a request to get the current active firmware version if this cannot be included in the notification.

Disadvantage

This option would only be applicable to devices that have the capability of sending alerts to the DCC, i.e. have the appropriate certificates.

Logic will need to be implemented on the device to track a change in firmware, but also if an appropriate alert has been sent to the DCC.

© Green Energy Options Ltd 2019