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DP170

‘Firmware updates to Point to Point Alt HAN Devices’

Modification Report

Version 0.1

17 June 2021



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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1. Summary

This proposal has been raised by David Jones from AlthANCo.

Alternative Home Area Network (Alt HAN) is being developed to address situations where one, or both, of the gas meter or In Home Display (IHD) are out of range, using Point to Point (P2P) Alt HAN Devices.

Over-The-Air (OTA) firmware updates are used to deploy updates that either fix faults or provide new functionality to certain Devices. The Smart Energy Code (SEC) and its subsidiary documents facilitate OTA firmware updates to meters and the Gas Proxy Function (GPF) which is part of the Communications Hub. It also supports OTA updates for other Device types such as Prepayment Meter Interface Devices (PPMIDs) and HAN Connected Auxiliary Load Control Switches (HCALCS) but has no provision for P2P Alt HAN Devices.

This means that any new functionality that is developed to deploy security updates or improve the service to consumers can only be deployed by physical onsite exchanges. The result is higher costs, longer timescales, and more inconvenience to the consumer than if an OTA firmware update could have fixed the issue.

2. Issue

What are the current arrangements?

What is Alt HAN?

In most cases, a standard smart metering installation will include Gas Smart Metering Equipment (GSME), Electricity Smart Metering Equipment (ESME), an IHD and a Communications Hub. All Devices must be within the expected proximity to the Communications Hub for the Home Area Network (HAN) to be able to connect them. Achieving a HAN in some premises including blocks of flats (Multi Dwelling Units (MDUs)) has additional challenges and Alt HAN is being developed to address these concerns. Alt HAN is required when the GSME or the IHD are out of range of the Communications Hub and the ESME.

P2P Alt HAN Devices

P2P Alt HAN Devices are being developed that will offer a solution in situations where one, or both, of the gas meter or IHD are out of range and act as a Range Extender. AlthANCo uses four different P2P device types (B1, B2, B3, B4) known as 'bridges' and these are configured in different ways depending on the set up of the premises. There will be either two or three Devices at each premise to provide a solution. This will depend on whether it is the IHD or GSME that is out of range, whether they are close together, and whether the GSME has a nearby electricity source.

Each bridge joins the ZigBee network as Range Extenders to tunnel traffic. This is achieved via the standard Appendix AD 'DCC User Interface Specification' (DUIS) whitelist functionality and performed by Service Users.

Over-The-Air (OTA) firmware updates

OTA firmware updates to meters and the GPF which is part of the Communications Hub are currently carried out via the DCC's infrastructure. They are used to deploy updates that either fix faults with Devices or provide new functionality to a Device. Without the use of OTA firmware updates, the only way to remedy these would be by a site visit and exchange of the equipment.

There are already defined processes in the SEC and its subsidiary documents to facilitate OTA firmware updates to Communications Hubs, ESMEs and GSMEs. Following the implementation of [SECMPO007 'Firmware updates to IHDs and PPMIDs'](#) in the November SEC Release 2021 this will also be possible for PPMIDs and HICALCS. However, there is no capability to carry out OTA firmware updates for P2P Alt HAN Devices.

What is the issue?

The SEC does not currently support firmware updates to P2P Alt HAN Devices.

Without the ability to perform a remote firmware upgrade new innovations and functionality to improve the service to consumers will not be cost effective. Additionally, if a security defect is identified then an OTA firmware update to fix the defect would be quicker than a site visit and thus limits the length of time that a consumer's premise is a security risk.

What is the impact this is having?

Mitigating against risk

OTA firmware updates enable the User to remedy faults on a Device without the need for a site visit. There is a risk that a P2P Alt HAN Device may lose its ability to communicate if there is a ZigBee stack upgrade that needs to be applied to fix a security related issue. This would lead to a mass recall of P2P Alt HAN Devices if there was not a remote firmware update capability.

The costs associated with either of these events would vary depending on the stage of the rollout that it occurred, but high-level estimations are provided below. These figures were produced by AlthANCo based on initial projections and will evolve as this modification is refined.

Estimated Impacts without OTA firmware update capability			
Risk	Detail	High-Level Estimate	Likelihood
Mass Recall Event	Low Impact (early stage in rollout: Jun 22)	£25m	Low
	High Impact (end of rollout Mar 25)	£112m	Very Low
Partial Recall Event	Low Impact (10% of Solutions)	£6m	Low – Medium
	High Impact (25% of Solutions)	£22m	Low

This highlights a significant impact should there be an issue that requires either a partial or a mass recall. If the capability for an OTA firmware update was available, then it is envisaged that these issues could be addressed remotely and in a much shorter timeframe than Device replacement.

Delivering future change

Smart Metering requirements continue to change as the Smart Metering Implementation Programme (SMIP) evolves. OTA firmware updates are needed to support and deliver innovative advancements within the Alt HAN and DCC ecosystems. If OTA firmware updates are not possible this would limit the opportunity for future innovation for P2P Alt HAN Devices as well as other Devices that would rely on them. Additionally, developments in security features would not be able to be rolled out without a Device being physically exchanged via site visit.

Impact on consumers

If OTA firmware updates are not possible then any changes needed will rely on site visits to consumer premises. This is an inconvenience to consumers to accommodate an onsite visit and additional cost to industry Parties. Consumers may be unable to receive an improved service that could be developed, where the benefits may outweigh the costs of an OTA firmware update, but not a mass rollout.

In addition, essential security or functionality updates to ensure P2P Alt HAN Devices are 'fixed' will not be able to take place remotely but will require site visits.

Appendix 1: Progression timetable

This Draft Proposal was raised on 15 June 2021. It will be presented to the Change Sub-Committee (CSC) for initial comment on 29 June 2021 before presenting it to the relevant Sub-Committees.

Timetable	
Event/Action	Date
Draft Proposal raised	16 Jun 2021
Presented to CSC for initial comment	29 Jun 2021

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
Alt HAN	Alternative Home Area Network
CH	Communications Hub
CSC	Change Sub-Committee
DCC	Data Communications Company
DUIS	DCC User Interface Specification

Glossary	
Acronym	Full term
ESME	Electricity Smart Metering Equipment
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
HCALCS	HAN Connected Auxiliary Load Control Switches
IHD	IN Home Display
MDU	Multi Dwelling Unit
OTA	Over The Air
P2P	Point To Point
PPMID	Prepayment Meter Interface Device
SEC	Smart Energy Code
SMIP	Smart Metering Implementation Programme