
Issue 93 'Remote Communications' Summary

Summary

Meeting Objectives

The Chair welcomed attendees and presented the following meeting objectives to Workgroup Members:

- To understand the current requirements for remote communications as detailed in the Codes of Practice (CoPs);
- What impact will the cessation of existing communication technologies have on current metering population;
- Explore the potential impacts that emerging technologies will have on current metering population, and determine a potential solution for mitigating the impacts; and
- Explore the security issues that exist in public Internet Protocol (IP) addresses versus the private IP address.

Emerging Communication Technologies and the CoP

1 Background and Issue

- 1.1 Elexon presented the current requirements that are detailed in CoPs 1 and 2, for remote communications, noting that it was somewhat outdated.
- 1.2 Elexon expanded on the current requirements in CoPs 3 and 5, noting that it was similar requirements to CoPs 1 and 2, but with an additional clause that highlights the requirements of breaking a seal when disconnecting the remote connection to/from the Outstation.
- 1.3 Elexon then asked the WG to consider the questions below, during the WG discussions:
 - 1.3.1 Does the clause in CoPs 3 and 5 align with the future of remote communications (and existing technologies) where remote connections can be cut off over the air by Mobile Network Operators (MNOs)?; and
 - 1.3.2 Are the examples of remote communications given in the CoPs outdated (e.g. Paknet, Public Switched Telephone Network (PSTN)) or are they the acceptable media high level enough to support the emerging technologies? Should the examples be updated to reflect newer emerging technologies?
- 1.4 A WG member from IMServ commented saying that PSTN can be cut off, so maybe the current wording is not accurate. Also, the existing requirements in CoPs 1, 2, 3 and 5 can be clarified, making them less restrictive.
- 1.5 The same WG member suggested a communications guidance document that details the permitted communications method, can be created as an outcome of the review. Further, the process to update the communications guidance document should not be time and resource intensive. Some members welcomed this suggestion, others didn't comment.
- 1.6 Elexon talked about the current metering infrastructure, highlighting their dependencies on PSTN for fixed line communications and 2G mobile communications. Further, Elexon highlighted British Telecommunication's (BT) commitment to "turning off" PSTN and Integrated Services Digital Network (ISDN) by 2025.
- 1.7 Elexon also informed the WG that Metering Systems using Circuit Switch Data (CSD) over 2G network will cease to operate following the cessation of PSTN.
- 1.8 Elexon mentioned that MNOs such as Vodafone, O2 and Telefonica recently announced that 2G and 3G networks are expected to be phased out by 2033. Elexon also asked the WG to note that 2033 was drop dead date and it is expected that 2G and 3G will become unreliable and ceased much earlier than this date.
- 1.9 Finally, Elexon summarised what the highlighted issues from above will mean for the current metering population, covering the following points:
 - 1.9.1 Metering Systems communicating over PSTN will gradually stop working reliably between 2022 and 2025;
 - 1.9.2 Metering Systems communicating over CSD will gradually stop working reliably between 2022 and 2025; and
 - 1.9.3 GPRS over 2G will become unreliable and cease to work completely once the MNOs switch off their networks.

2 Emerging Technologies

- 2.1 Elexon presented the future of mobile communications that is known as Long Term Evolution (LTE), which operates with 4G, and also works on 5G. Further, highlighting the currently known technologies that could be used for metering, such as CaT-M (1) and NB-IoT. A WG member added that Electronic Design and Manufacturing International (EDMI) use CaT 1 only for their meters, noting that they needed a product before CaT M. Elexon noted this.
- 2.2 Elexon explained the reason why 2G were likely to become unreliable was because 5G, which operates at higher frequency bands, requires a license that is expensive. Therefore, MNOs are re-farming¹ lower frequency spectrums (currently being used by 2G and 3G) for 5G.
- 2.3 Elexon then summarised the areas that must be considered to mitigate the impact of emerging technologies on metering, which were:
 - 2.3.1 Both NB-IoT and CAT-M are suitable replacement for 2G communications therefore, can be used for the purposes of metering.
 - 2.3.2 The pros and cons of NB-IoT and CAT-M must be outlined. Elexon noted that it was not in favour of either, but stated that if the CoPs needed to be updated to include specific “types” of LTE – both CaT-M and NB-IoT will be included as an acceptable means of communications.
 - 2.3.3 Registrants and their Agents must note and understand the difference between LTE-M and NB-IoT. E.g. LTE-M operate the same way as 2G (i.e. they are always connected), whereas NB-IoT forbids a permanent connection and must be woken up by a local timer.
 - 2.3.4 Due to the time limited lifecycle of 2G, should the BSC CoPs contain an “end date” for the use of mobile communications operating over 2G and encourage Registrant to move over to newer technology solutions? This will mitigate the risk that older technology poses to Settlements.

3 PSTN

- 3.1 Elexon explained what PSTN meant to the WG, highlighting their use cases.
- 3.2 Elexon then suggested that Registrants and Agents may also wish to reassess their current PSTN portfolio, noting that as LTE is rolled out nationally, it may be that a mobile solution is now suitable for Metering Systems that were operating over PSTN.
- 3.3 Elexon noted that satellites could be installed as an alternative, noting the reduction in the cost of satellites in the last few years. Elexon added that the following must be considered:
 - 3.3.1 The connection and download speed is often slower than the aforementioned technologies;
 - 3.3.2 The delays may cause timeouts when trying to retrieve data from Meters; and
 - 3.3.3 The practicalities of installing a satellite at a property may make them an unfeasible option.
- 3.4 Elexon then summarised what the points mentioned above meant for the current metering population, which were:
 - 3.4.1 PSTN and CSD metering communications solutions should be replaced as a priority and arguably not installed (going forward) wherever possible.
 - 3.4.2 Given the number of existing Paknet communications, there is a risk that Registrants and their Agents may not be able to move away from the population of Metering Systems using ageing technologies, as early as required.
 - 3.4.3 The examples currently specified in the Communications\Remote Interrogation section of the BSC Metering CoPs are outdated. To this, Elexon posed some questions to the WG to confirm their views on the following:
 - 3.4.3.1 If the examples should be updated?;
 - 3.4.3.2 How granular should the newly specified technologies be?; and

¹ “Re-farming” is the term used for the process governing the repurposing of frequency bands that have historically been allocated for 2G mobile services (using GSM technology) for new generation of mobile technologies.

- 3.4.3.3 Should the updates be used to cease the rollout of PSTN and CSD from a particular date? Also, could we include a transition period for replacing the ageing technologies?
- 3.4.3.3.1 A member from IMServ recommended the implementation of a 'communications' approval process, which is mutually exclusive from the CoPs. He noted that this will enable an easier and a much faster document update.
- 3.4.3.3.2 Another member asked if the Industry pays for the communications in terms of providing the PSTN line, in the Central Volume Allocation (CVA) market? The IMServ member and Elexon said yes. The same member asked if the customer in the Supplier Volume Allocation (SVA) market will bear the cost. The member from IMServ responded, saying in the SVA market, the customers are charged for the communications. The member who asked the question noted this and suggested that on CVA sites, it must be confirmed if Industry bears the cost or not. Elexon explained the difference between SVA and CVA in terms of their commercials, noting that CDCA are currently responsible for the commercial communications relationship, as outlined in BSC Section R1.4.2².
- 3.4.3.4 In summary, the WG concluded that:
- 3.4.3.4.1 A communications document, which can easily be updated outside of the BSC Change process, should be created. Also, consider an arrangement that enables any Party to approach Elexon and propose a new communications method, which can be tested and validated by other participating Parties and Agents.

A_13 'Security of using public IP addresses for communications to Metering Systems'

- 3.5 Elexon explained the differences between public and private IP addresses, noting the benefits and risks of both channels.
- 3.6 Elexon then asked the WG what their views were on the use of public versus private IP addresses.
- 3.6.1 A WG member asked if it was possible to have whitelisted access on public IP addresses, which removes the threat of Meters being locked out through repeated 'hacking' attempts. Another member confirmed that this is not something the providers do, as they have limited resources to support it.
- 3.6.2 Another WG member noted that using private IP addresses was his preferred option, but thinks that BSC Parties should be allowed to choose which method they wish to use. The same member explained that public IPs can be paired with private Access Point Names (APNs), and as long as access is granted to authorised persons, no re-programming of the Sims in the Metering System will be required. He added that there is a security risk attached to this. Elexon took an action to investigate the possibility of creating a national private APN, which will be mandated for all Advanced Half Hourly (HH) Meters.
- 3.7 Elexon and the WG concluded on the following:
- 3.7.1 A guide will be created that will explain how to manage public IPs on private APNs, and private IPs;
- 3.7.2 A recommendation on what method should be used by Parties; and
- 3.7.3 The different available options and how they will work.

A_03 'Duplicate communications paths for Metering Equipment in the CoPs'

- 3.8 Elexon explained the background of this Aspect, noting the ambiguity in the requirements that currently exist in CoPs 1 and 2.
- 3.9 Elexon then outlined some considerations to the WG, which were:
- 3.9.1 Given the emerging technologies, the requirements for duplicate communications in both CoPs 1 and 2 may no longer be appropriate.
- 3.9.2 Will the current requirement work technically for the new technologies that were highlighted in the earlier slides.

² <https://www.elexon.co.uk/the-bsc/bsc-section-r-collection-and-aggregation-of-meter-data-from-cva-metering-systems/>

- 3.9.3 Should the wording in both CoPs 1 and 2 be reviewed and updated to set the requirement in more generic terms, which are not yet defined or restricted by a technical solution.
- 3.9.3.1 A WG member stated that we must identify the risks to Settlements, as part our review of this Aspect, noting [CP1527](#)³ which has some linkage with this proposal. Elexon noted this.
- 3.9.3.2 Another WG member stated that going for duplicate communications paths will enforce resilience albeit, may be too difficult to achieve.
- 3.9.3.3 Another member stated that it should be different communications paths. Further, asked if the communications paths should be mandated in CoP1?
- 3.10 Elexon noted these views and concluded that our recommendation on this aspect will consider the impacts from CP1527 and specify the Communications availability requirements in the CoPs.

AOB Items

- 3.11 Elexon highlighted that offshore wind farms (Appendix F of CoPs 1 and 2) had some guidance on communications, and that it would look to incorporate the guidance in the review of Aspects 3 and 13. The WG noted this.

Actions

- 3.12 Elexon to investigate the possibilities of creating a national private APN, which will be mandated for all Advanced HH Meters.

Next steps and meeting close

- 3.13 Elexon confirmed that it would share the outcome of the WG meeting with the wider Issue 93 WG at its next meeting in May.
- 3.14 Elexon confirmed that it would look to draft some redlining for Aspects 3 and 13, which will include the following from a high level:
- 3.14.1 A new Communications guidance document;
- 3.14.2 A potential new process (possibly in [BSCP601](#)⁴) that will enable Third Parties to easily approach Elexon and propose new communication methods for testing and validation and then be included on Communications guidance document; and
- 3.14.3 A potential RFI to determine the recommendation for the “public versus private IP address” topic.

³ <https://www.elexon.co.uk/change-proposal/cp1527/>

⁴ 'Metering Protocol Approval and Compliance Testing'