IMPLEMENTATION OF DLMS/COSEM OVER LoRaWAN®

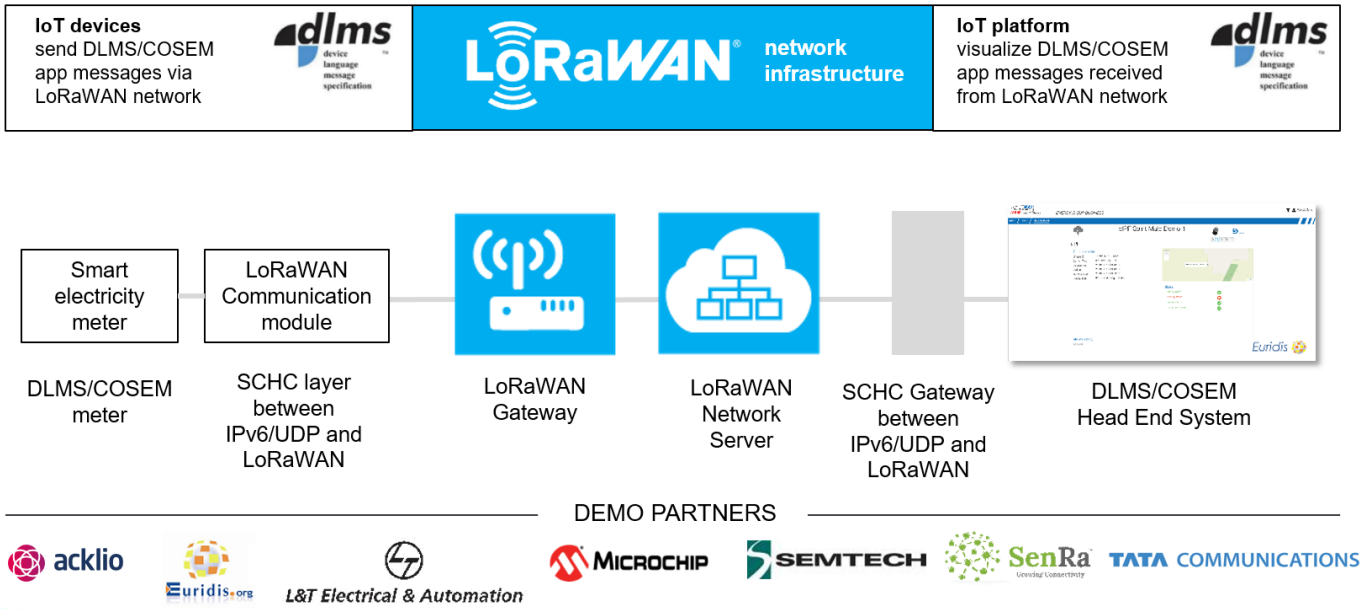
Demo supported by the LoRa Alliance® for ISUW 2020

The LoRa Alliance®, the global association of companies backing the open LoRaWAN® protocol for the Internet of Things (IoT) low-power wide-area networks (LPWANs), and the DLMS User Association (DLMS UA), a non-profit utilities and device manufacturers organization standardizing and promoting DLMS/COSEM smart devices protocol, are collaborating to develop and support a specification of a new DLMS communication profile over LoRaWAN networks.

This paper describes the implementation made in a live demo for utilities.

DLMS is a leading application standard for utilities worldwide. By using the open LoRaWAN network protocol, utilities can profit from its unique benefits, such as the end-to-end security, the flexibility in choice of network models and a best-in-class unique certification program for end devices. LoRaWAN's low power consumption and deep penetration are key aspects that allow utilities to deploy long-lifetime wireless smart meters for gas, electricity, thermal energy and water, plus IoT devices in buildings and underground, and use these to connect assets, create new services and accelerate their digitization. Seamless integration is achieved through the Internet Protocol layer thanks to the SCHC layer defined by the IETF.

Architecture and components of the implementation



The smart device connected via LoRaWAN to the DLMS/COSEM client application is:

- **Smart electricity meter** (from Larsen & Toubro with a LoRaWAN communication module (from Microchip) embedding the adaptation layer (SCHC from Acklio)

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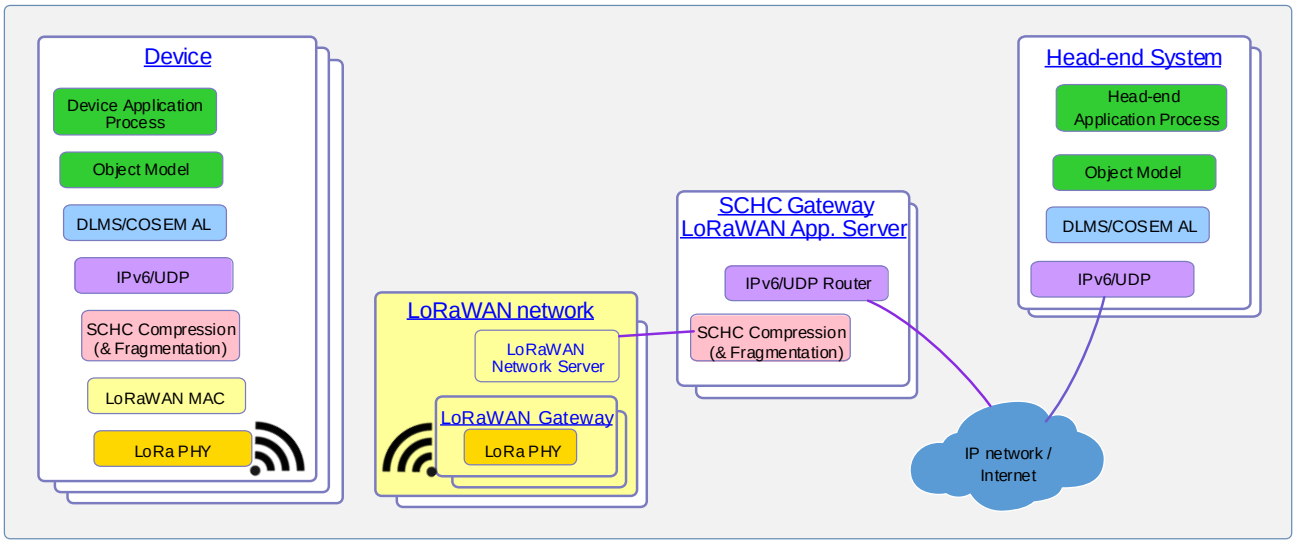
Protocol stack used in the implementation



The principle is all devices are generating DLMS/COSEM packet data units that are transported in IPv6/UDP packets, then compressed and fragmented by the adaptation layer using the SCHC technology - Static Context Header Compression- (with library provided by ACKLIO), and then transmitted by radio communications via the network transport layer of LoRaWAN supported by the operators (SenRa or Tata Communications). On the reception side, the DLMS/COSEM data are extracted and made available to the upper layer for the DLMS/COSEM client application and viewed on Head End System display (from Euridis association). Another display shows the compressed/fragmented and raw IP/UDP traffic going through the SCHC Gateway. Semtech collaborated with all participants to support the integration.

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