Case Study: LoRa Smart Meter

Background

Prepaid electricity billing system and automated smart meter reading have been widely adopted by electricity companies worldwide nowadays to reduce the error of human reading and improve the efficiency the billing process. To activate the prepaid system, a robust and reliable network is essential. One of the largest utility companies in Indonesia was looking for a 4G/LTE solution which can deliver a reliable and secured internet connectivity in outdoor environments to connect the LoRa meters installed in households to the utility company's Central Metering Control System that enables the automatic meter reading and billing to further control the power supply of 1,500 households in rural mountain areas.
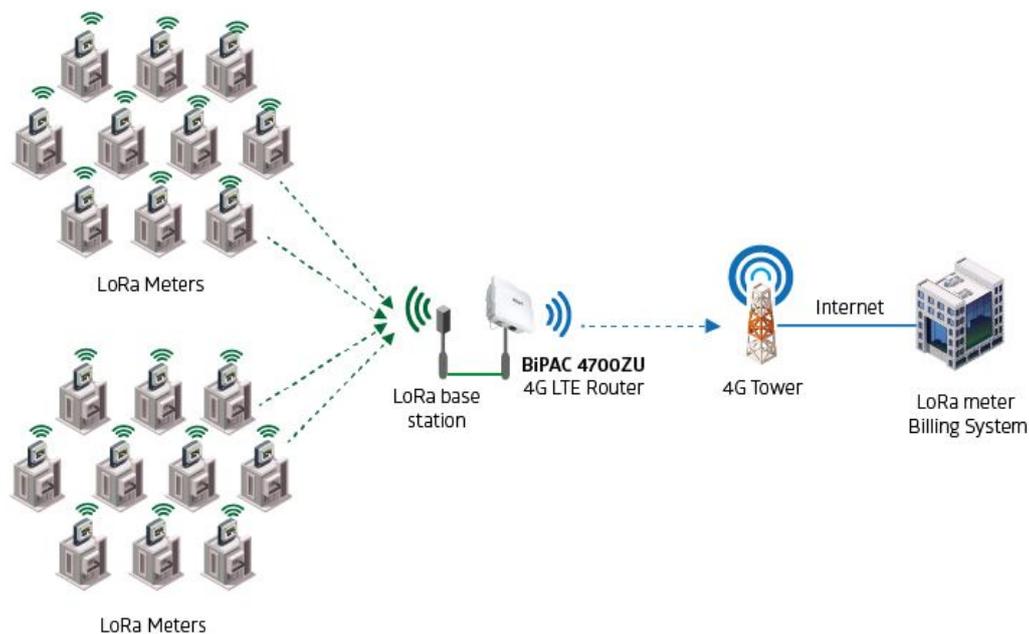
Challenge

The internet connection is unstable and highly influenced by the terrain and weather in outdoor environments. However, the climate in Indonesia is almost entirely tropical with the extremely rainfall variation (Raining season-November to March and Relatively humidity from 70% to 90%), and the temperature varies from seasons to seasons.

Solution

Billion provides BiPAC 4700ZU, the high-performance 4G/LTE Outdoor SIM Embedded VPN Router, serving as the backhaul to connect theLoRa base station which collects data from LoRa meters in households to the utility company's Central Metering Control System. Based on the data, the system could automatically read, activate and deactivate the identified smart meters. By connecting the meter reading, controlling, and billing process to the Internet, the utility company was able to reduce the financial expense on hiring labors to record the reading manually.

Features rugged IP67 enclosure, and a broad range of operating temperature 40°C-60°C/-40°F-140°F, BiPAC 4700ZU can endure the most challenging weathers and environments. Integrating with the 4G/LTE and optimal MIMO antenna, BiPAC 4700ZU can maximize LTE service coverage with data rate up to 100Mbps downlink and 50Mbps uplink. BiPAC 4700ZU can be flexibly positioned on any exterior wall, chimneys, or poles with the mounting kit. BiPAC 4700ZU also supports robust VPN including IPSec/PPTP/L2TP/GRE, allowing users to establish private encryption tunnels over the public Internet to secure billing data transmission.

4G LTE Router provides a back haul to connect LoRa meters to LoRa meter Billing System

BiPAC 4700ZU

The high-performance 4G/LTE Outdoor SIM Embedded

VPN Router Failover Firewall Router

Result

"Through the implementation of BiPAC 4700ZU and theLoRa metering system, the grid company could access to the prepaid billing data and activate the household electricity supply in real time. BiPAC 4700ZU not only enhanced the traditional metering and billing system but also helped the grid company to improve the efficiency of their service distribution process and corporate competitiveness", said William Lee, the Senior Product Manager of Billion Electric Co., Ltd.