NATIONAL NARROWBAND NETWORK Co.

Ergon Energy

Energy efficiency solution for one of Australia's largest utilities

"We needed a scalable solution that could go beyond the trial. We chose NNNCo as our partner because they're able to provide a nationwide carrier service based on LoRaWAN as their core technology and deliver the end-to-end solution for Ergon Energy."

Sanjeewa Athuraliya,
Telecommunications Architect, Ergon Energy

The Business Need

Ergon Energy has one of the lowest customer densities of any utility company, resulting in very long distribution lines and making load variation and management a key issue. The company wanted a load control IoT solution to enable it to connect beyond substations to manage specific appliances (such as hot water) in individual household power consumers. Ergon also wanted to leverage a network that could support many other use cases, transforming their assets from passive to active.

The Solution

NNNCo delivered an end-to-end scalable solution, deploying a low power wide area network (LPWAN). The solution uses the global open standard LoRaWAN technology and highly cost-effective sensors installed on hot water circuits.

Starting with a trial in Townsville, the initial sensors gave Ergon Energy granular control to switch individual loads on and off so that they could be managed where needed and in times of peak power demand without affecting customers.

The Tech Story

- World's first group multicast LoRaWAN™ network deployment

- Long-range LoRa® technology essential to support the network across Ergon Energy's very large distribution areas

- Open standard enables the network to connect to others over time and build an ecosystem rather than a silo solution

- Individual addressability to each device / sensor enables Ergon to remotely configure each one with unique characteristics

- Multicast functionality for group communication ensures the solution is scalable to millions of devices / sensors

- Bi-directional communication delivers a managed network with feedback capability from devices

- Low-cost devices contain the compact module from Murata to deliver a cost-effective roll-out over time

- Low power devices are capable of operating on small batteries for many years, in cases where the devices are not mains powered

The End-to-End Solution
The Ergon Energy Load Control System consists of three main components:

Australia's Narrowband Network

01.

Devices / Sensors

The NNNCo DRED **(Demand Response Enabling Device)** is a purpose-built controller designed to send commands to different energy devices / sensors when required based on strictly controlled and protected instructions. Commands can be sent to individual devices or a defined group of devices.

The NNNCo DRED:

- Uses the LoRaWAN communications technology for connectivity

- Operates on the Australian ISM (915-928 MHz) frequency band

- Supports true bi-directional unicast and multicast packet delivery mechanisms

- Supports a Single Pole Single Throw (SPST) relay rated 230-240V AC and 40 Amp AC1 (voltage free) with screws to wire the circuit to be switched

02.

Gateways

Many types of gateways can be supported by NNNCo, such as the Cisco IXM LoRa Gateway and NNNCo's specially developed Ruggedised LoRaWAN Gateway. The Ruggedised Gateway used for Ergon is an IoT solution developed to deal with the extremes of the harsh Australian environment.

The gateway consists of an IP67 enclosure, with an integrated LoRaWAN gateway, power supplies and batteries, the choice of backhaul (3G and/or Ethernet), space to add cavity filters in case of GSM interference and an independent monitoring system.

The enclosure has flexible mounting arrangements to suit most pole and mast diameters, as well as wooden power poles.

03.

Network Infrastructure

At the heart of NNNCo's network infrastructure is a network server that provides the intelligence needed to support our bi-directional traffic- "Every Bit Counts". NNNCo is working with some of the world's leading energy and water utilities, technology providers and innovators to roll out large-scale, carrier-grade network solutions.

Our network has the following features:

- Capable of operating effectively from both dense city environments (from basements to penthouses) to across long distances, for example in rural areas;

- Uses the LoRaWAN open standard, which provides for greater flexibility and longevity;

- Provides for sufficient redundancy within the network to ensure reliable coverage;

- Delivers a solution at a relatively low annual cost per device / sensor;

- Collects and shares information that can make people's lives safer, healthier and easier; and

- Includes a powerful IoT platform including end-to-end device management with open API's to support any 3rd party remote application server.

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