



Case study

Aprisa XE and Aprisa SR empower robust, reliable, digital multi-service network

When electricity distribution operator WEL Networks decided to install a new IP communications network throughout their area of service, they wanted a single future-proof solution that could support their wide range of traffic requirements. They chose the Aprisa family from 4RF: the Aprisa XE point-to-point microwave link and the Aprisa SR point-to-multipoint radio. To date, more than 100 radios have been installed and the network continues to be expanded with the addition of further Aprisa SR radios.

WEL Networks

New Zealand



Aprisa SR in roadside cabinet



CHORUS TE UKU TOWER USED BY WEL NETWORKS UNDER A CO-SITE AGREEMENT

APPLICATION AND DEPLOYMENT REQUIREMENTS

WEL wanted to migrate their communications network to IP and decided to install a new digital network. With their critical infrastructure at stake, communications could not be compromised and WEL needed a highly reliable, robust solution to ensure service continuity. Additionally, WEL did not want to have to integrate equipment from multiple vendors and so the chosen communications solution needed to support a variety of traffic applications. These included:

- Backhauling smart metering traffic from the company's network of meter mounted mesh radios
- Delivering teleprotection information from substations and other electricity assets
- Basic broadband Ethernet services for company communications
- Communicating monitoring and control data from RTUs situated at pole top reclosers, substations, transformers and regulators throughout the electricity distribution network

About WEL Networks

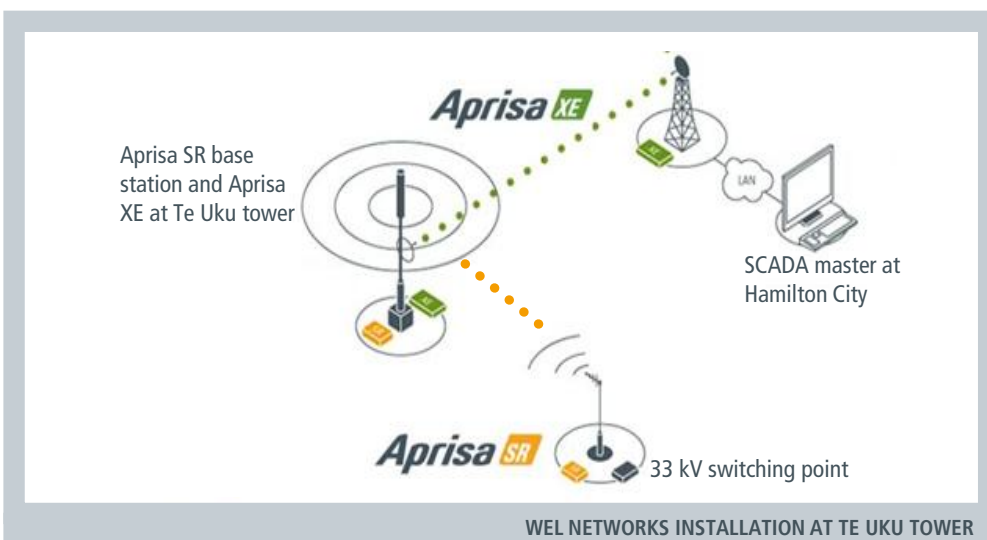
WEL Networks Limited (WEL) is an electricity infrastructure provider, distributing electricity services to over 84,000 homes, businesses and organisations throughout the Waikato region of the North Island of New Zealand. WEL owns, develops and maintains the electricity network of lines, substations and associated infrastructure. The company has more than 5,100 kilometres of lines and has an annual throughput of over 1,160 Gigawatt hours. www.wel.co.nz

NETWORK DEPLOYMENT

WEL chose the Aprisa family of radios from 4RF because not only did the products meet their stringent requirements but because 4RF was able to provide the complete project solution:

- Network engineering to design the optimum radio paths and equipment locations
- Frequency analysis and the licence application with New Zealand's regulatory body
- Supply of equipment: Aprisa XE point-to-point and Aprisa SR point-to-multipoint radios
- Training the WEL team with regard to installation, configuration and management
- Commissioning of the initial Aprisa XE and Aprisa SR radios

The Aprisa XE was deployed in both the licensed 900 MHz and the licensed 1.4 GHz bands, and the Aprisa SR was deployed in the licensed 400 MHz band. The radios are located throughout WEL's service area. One specific deployment of both products together is in the SCADA communications network at Meridians Te Uku wind farm, which became operational in November 2011, distributing generated power into the 33 kV electricity distribution network.



This deployment included:

- Aprisa XE point-to-point link connecting IP from the SCADA master controller in Hamilton City to the Te Uku radio tower
- Aprisa SR base station connected to the Aprisa XE via a router
- Aprisa SR remote station located at the 33 kV ring main switching points to the electricity network, where the RTU is situated to monitor and control the switching equipment

To ensure that interference-free operation was achieved at the shared RF high site, an external filter / duplexer combination was fitted to the base station using a dual RF port Aprisa SR.

RESULTS

WEL now has an installed base of more than 70 Aprisa SR radios and more than 50 Aprisa XE radios. As its IP network continues to grow, more Aprisa SR radios are being installed to support WEL's ever-increasing SCADA communications requirements.



Aprisa SR



Aprisa XE



Rack mounted Aprisa XEs

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We chose 4RF not only because of their reputation for high performance equipment in utility and critical infrastructure applications, but also because they could provide a total solution all the way from initial network engineering to training our technical teams.

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Alan Harrop

Control Systems Manager, WEL Networks

ABOUT 4RF

Operating in more than 130 countries, 4RF provides radio communications equipment for critical infrastructure applications. Customers include utilities, oil and gas companies, transport companies, telecommunications operators, international aid organisations, public safety, military and security organisations. 4RF point-to-point and point-to-multipoint products are optimized for performance in harsh climates and difficult terrain, supporting IP, legacy analogue, serial data and PDH applications.

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