ESB Networks

Microwave connectivity for mission-critical SCADA

About ESB Networks

ESB Networks Ltd., a subsidiary within ESB Group, is the licensed operator of the electricity distribution system in the Republic of Ireland. ESB Networks Ltd. is responsible for building, operating, maintaining and developing the electricity distribution network and serving all electricity customers. The company has a 3,000 strong workforce spread throughout the country.

Project Benefits

- Delivers reliable, robust microwave connectivity at sub 3GHz for the ESB's SCADA network where fibre is unavailable

- Investment protection - offering legacy interfaces such as X21, V24 and RS232, negating the need for other equipment between the radio and traffic connection

- Provides full remote management via the ESB's NOC allowing remote web browser configuration and remote troubleshooting

"This solution guarantees the kind of resilient microwave connectivity we need for our mission-critical SCADA, where fibre is unavailable."

George Rathborne, service delivery manager, telecoms services, ESB Networks

The ESB enjoys reliable and robust telecoms connectivity for its mission-critical SCADA at the network edge, thanks to microwave radio links, supplied by EMR Integrated Solutions.

Under a framework agreement secured through competitive tender, EMR provides ESB with the 4RF Aprisa XE, a high-performance, flexible point-to-point microwave link, which serves over 60 locations, including many of the company's windfarm sites, throughout the country.

The solution provides ESB with resilient microwave connectivity at sub 3GHz - for its mission-critical SCADA network, which carries crucial operational data from its distribution and transmission assets in the field.

Business Challenge

The ESB's first preference for connectivity is always fibre, but with fibre unavailable at some of its 38 Kv and 110 Kv transmission and distribution stations, microwave was the next best option, as George Rathborne, service delivery manager, telecoms services, ESB Networks explains.

"We were looking for low capacity access links for our microwave network to cover transmission stations and distribution stations on the edge of our network. Specifically we were looking for something that could carry a number of channels and hand off those channels as various service types. But we needed something that was relatively easy to configure and SNMP manageable," he said.

The Solution

In responding to the ESB's tender, Alan Feenan, sales director with EMR proposed the 4RF Aprisa XE microwave portfolio.

"We felt it was an ideal fit for ESB as it's one of the few solutions on the market that provides legacy interfaces such as X21, V24 and RS232. We also suggested the 4RF network manager, which integrates with the ESB's Network Operations Centre (NOC) and gives staff full visibility of their assets in the field, a key requirement for utility networks."

The Solution

Performance-engineered to provide maximum link availability, the Aprisa XE gives capacity and reliability over long distance paths under the most difficult conditions. Chaotic topography, obstructions, over water paths, temperature and atmospheric extremes all limit conventional digital microwave links, but not the Aprisa XE.

- **Long distances** - covers long distances, in excess of 200 km with a single link, ideal for rural, remote and offshore applications
- **Challenging links** - makes even the most challenging links possible, overcoming all types of deployment problems and harsh environmental conditions
- **Single box architecture -** combines voice, data and IP interfaces in a single box, with built-in multiplexer and cross-connect
- **High capacity** - provides high capacity, up to 65.4 Mbit/s, with carrier-class availability and low latency
- **Unbeatable reliability** - delivers unbeatable reliability in even the harshest of environments
- **Cost-effective** - with a low cost of ownership and rapid return on investment, Aprisa XE is easy to deploy and maintain

Benefits

The primary benefits of the project centre on resilience and high availability according to Mr Rathborne.

"We're in the business of providing a telecoms network that survives when other things don't. For example in February 2014 during Storm Darwin and 177 km/h winds, our SCADA systems suffered little or no damage, when many of the public telecoms fixed line and mobile networks across the country were severely impacted. We're working with a product that has very high availability figures and is designed for the type of communications that we're carrying.

"From the point of view of reliability, 1.4 links are long haul – they're not susceptible to failure and in fact the panning of the antennas is not highly critical – you can have a small bit of movement without losing signal. That made the product a good fit for our requirements," he said.

The solution also provides ESB with full management capability from its NOC. With thousands of distribution and transmission assets and devices in the field, engineers need to have remote visibility of as much equipment as possible.

"It's a fundamental requirement of our tenders, that there's a management system with at least SNMP functionality for monitoring alarms and events. We need solutions that will allow us to remotely configure and track connections from our NOC," said Mr Rathborne.

Why EMR?

"Initially when you deploy a product there's always a little bit of R&D to be done before you get to integrate the management of the kit with your existing management system. That requires input from EMR as a vendor and that has worked very well for us," said Mr Rathborne.

"They are technical sales people in the real technical sense and we would bring some of their staff to our customer meetings to talk through solutions. EMR is in the solutions business as distinct from an equipment vendor. We don't want somebody who just sells us boxes," he said.

For more information on radio solutions for the utility industry, please contact Alan Feenan, Sales Director at;
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