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Case Studies

VOICE LINKING – NEW ZEALAND POLICE

With 11,000 officers to connect in the field, fast and resilient communications systems are mission critical for New Zealand Police. A recent communications expansion and upgrade project saw the deployment of Mimomax Tornado 50kHz radios in their Analog Land Mobile Radio network at sites spread across the country.

With some links as long as 45 kilometers, hilly terrain and some non-line-of-sight paths to manage, the project required careful path planning prior to deployment to ensure high availability for the network. Key requirements for New Zealand Police were a combination of low audio latency and high spectral efficiency plus a wider power supply voltage range to offer less complexity at installation sites and fewer spares required.

VOICE LINKING – FIRE & RESCUE NSW

Fire & Rescue New South Wales in Australia required voice backhaul between 45 radio sites located in remote parts of southern NSW. With environments ranging from the highest communications site on the Australian continent to flat sites located in remote Western NSW, FRNSW required a resilient communications solution which would connect these remote sites to the Communication Centers in Sydney and Newcastle.

Involving some longer links and, at times, harsh weather, the Mimomax solution required extensive RF engineering for some of the sites.

VOICE LINKING- ERGON ENERGY

With a desire to expand their P25 voice network to outlying regions, Ergon Energy in Queensland Australia engaged Mimomax to provide a series of backhaul links for their P25 LMR sites. Providing spur site connections back to the nearest core network backhaul, the links are used primarily by their field workers to communicate and coordinate with the control centres for electrical network switching activities.

Ergon selected Mimomax for the radios' ability to handle harsh environments and support long links in a single hop as often there were no intermediate sites available. While the primary need was for voice linking, at remote sites which have no other links, the Ergon team are also using the Mimomax radio links to transmit site management data.

VOICE LINKING- RAVENSWORTH MINE

Ravensworth Mines required a high capacity linking solution which could withstand the harsh climate of rural Australia. Mobile Communications supplier, Gencom, selected Mimomax radios due to their ability to operate across a wide temperature range plus maintain a high level of availability, even under adverse conditions.

The Mimomax solution provides enough data capacity to support 7 mission critical voice channels in addition to data payload traffic across a narrowband 25 KHz channel. The wide beamwidth from the dual-polarized antennas also can accommodate shifts in location from the transportable communications trailers.

In addition, the ability to operate the system using solar power made the Mimomax solution approximately 65% more efficient than other solutions that were considered, thereby reducing operational costs for the customer.

Voice Backhaul – Puget Sound Energy

Puget Sound Energy (PSE) were looking to link a new mobile radio site to transfer voice and data over hilly terrain with a path distance of 9 miles (14km). Given the critical nature of the utilities industry and the high expectation of grid reliability from a number of nationally significant customers, PSE needed to ensure that the linking to this site was secure and offered high availability.

Mimomax provided PSE with ultra-high spectral efficiency and exceptionally low latency radios to deploy a backhaul solution capable of supporting multiple radio channels simultaneously with real-time data transfer and low error rates.

AMI Backhaul & SCADA – Navopache Electric Cooperative

Requiring a new communications solution to support and consolidate an AMI upgrade with their SCADA control, Navopache Electric Cooperative engaged Mimomax to supply a high capacity network in locations without a microwave backbone in their New Mexico and Arizona service area.

Mimomax provided Navopache with a point-to-multipoint network based on the Tornado ra-dio. The solution was designed to provide reliable ethernet connectivity plus backhaul from both AMI collectors and their upgraded SCADA controllers. The high throughput rates and full duplex communications offered by the Tornado radio have allowed Navopache Electric to maintain their SCADA traffic without interruption.

Teleprotection – Orion

Orion NZ required a teleprotection solution which offered the ultra-low latency and phase jitter to meet the design criteria for teleprotection circuits, the ability to be installed across difficult terrain- often in areas where stringent environmental standards would need to be met, and an approach which would not depend upon the installation of fiber or microwave links.

Mimomax developed an “Optimized Protection Variant” (OPV) of its MiMO linking product family. This solution provided the ability to support a dedicated serial protection circuit on licensed channels to ensure interference-free operation. The radios offered a typical latency of just 5ms with phase jitter minimized to less than 55ns. Orion also has the ability to use residual capacity to carry IP/ SCADA traffic with no impact on the dedicated protection circuit.

Leased Line Replacement – RACOM

As one of North America’s premier systems integrators for critical communications infrastructure, RACOM required a reliable P25 backhaul solution as a replacement for their own T1 link. With another communication tower in the middle of the 6-mile path, it was imperative to find a narrowband solution which could support non-line-of-sight communications.

Mimomax provided RACOM with Tornado radios for 450MHz to work around the interference issues presenting in 900MHz. High data throughput combined with non-line-of-sight ability made the Tornado radio the ideal T1 replacement solution for this scenario.

MIMOMAX TORNADO FAMILY

Tornado

Our award-winning Mimomax Tornado radio is pushing the boundaries of what can be achieved in narrowband channels. Utilizing MIMO technology, full duplex communications and high order modulation, the Tornado radio can achieve aggregate data rates of up to 1280kbps in a 50kHz channel and latency as low as 3ms with our Optimized Protection Variant and sub 10ms in a standard point-to-point configuration.

Tornado OPV – an optimized protection variant of the Tornado radio, designed to provide stable, ultra-low latency links for utility teleprotection circuits. The ultra-low latency requirements of teleprotection can be supported by enabling our Optimized Protection Variant software on either Tornado or Tornado X.

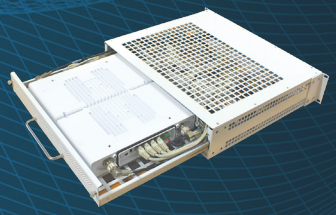
Tornado X & Tornado XR

Tornado X is a high transmit power addition to our full duplex, MIMO product range. Offering a transmit power which remains stable across all modulations, Tornado X is fully compatible with the Tornado radio allowing for a mix of radios in the network to suit terrain or meet network requirements.

Tornado XR is a full duplex, high Tx power remote radio for use in Multipoint networks only. Tornado XR is an ideal remote radio for networks where traffic is uplink predominant. It can also be integrated at weak remote sites to boost uplink performance.

Tornado 1+1

Tornado 1+1 provides automated support for both a warm and hot standby system with the Mimomax Tornado 1+1. If one radio fails, a second standby radio is automatically switched in to take over, with no loss of data. An ideal product for mission critical links with the highest availability requirements.



Family Compatibility

Each radio of the Tornado family can be integrated with other members of the family to provide the customized coverage and throughput required in different parts of your communications network. The Tornado family is also inter-operable with Mimomax's Tier II Pyxis radio. To find out more about Pyxis, visit our website- https://mimomax.com/products/mimomax-pyxis/

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About

Founded: 2007

Headquarters: Christchurch, New Zealand

Regional offices: Phoenix, Arizona and Portland, Oregon

Combining a deep understanding of RF engineering with expertise gained from numerous deployments across the globe, Mimomax provides utility customers with cost-effective, wireless communications solutions to support grid modernization. Advanced communications technology coupled with sophisticated RF network design ensures our customers not only gain visibility right to the edge of the grid but also optimize their investment in spectrum.

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