WAVE

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Revitalizing Australia's Utility Communications Infrastructure

How Country Energy Deployed Australia's First Radio-Over-IP Network with a Customized WAVE-Powered Selcall System

In Brief

Responsible for delivering safe and reliable power to 1,500 communities throughout New South Wales, Australia's most populous state, Country Energy had a pressing requirement to upgrade severely outdated radio equipment and unify communications across several regions. Choosing to leverage the power of software, Country Energy deployed the country's first commercial Radio-over-IP network, powered by WAVE. Today, Country Energy operates a single virtual operations center that facilitates unified communications across the company's widely distributed operations. Dispatch and maintenance coordination has been substantially enhanced, and improved communications with line workers helps to keep them safe.

The Challenge

Country Energy is one of three utilities responsible for delivering power in New South Wales, Australia's most populous state. To provide reliable electricity to homes, businesses, schools and hospitals in more than 1,500 communities, Country Energy manages Australia's largest power supply network, a system that spans 95% of New South Wale's near 310,000 square miles. On a daily basis, Country Energy's field technicians must operate within a full range of environments, from deserts and mountains to plains and coastal regions.

Yet contending with harsh, disparate landscapes was only part of the operational challenges Country Energy faced. Country Energy has only existed since July of 2001, the result of a merger between three different regional energy companies. While they initially managed to consolidate a variety of radio networks through a central Omnitronix interface, the company acquired an additional regional energy provider in 2005. Given the physical limitations of the dated Omnitronix equipment, it was impossible to integrate the new company's radio system. Thus, Country Energy was left operating two separate UHF radio networks and had an entire regional operation that could not effectively communicate with the other operational service centers and field technicians.

As Country Energy looked to integrate the acquired company's region, and developed strategies to achieve significant growth, it became apparent that replacing the existing analog networks was fundamental to maintaining mission-critical communications capabilities. Cumbersome and rudimentary, the Omnitronix system was slow and inefficient, requiring the manual operation of switches and connections. The number of available connections was also limited and expanding the network to accommodate additional channels would have required investing in an already antiquated system with the purchase of additional equipment.

The existing radio systems also lacked any interoperability with the company's office phones. In order for field technicians to communicate with office personnel outside operational service centers, they had to resort to mobile phones. This method was becoming increasingly expensive and was notoriously unreliable as cellular network coverage across certain regions was nonexistent.

On its way to becoming Australia's leading energy company, Country Energy needed a state-of-the-art communications system worthy of its goals. While maintaining the regional operational service centers was necessary for political and customer service reasons, the company had to connect and unify them. Each center had to be able to access and operate any channel in any region, especially in the event of an emergency that could disable an individual center. With technicians working on live lines and customers relying on dependable power for comfort and safety, Country Energy needed to find a system that would provide the means to coordinate the most effective maintenance and repair operations possible.

The Solution

Country Energy determined that an IP-based network would best provide the functionality and scalability necessary to meet the company's geographically dispersed nature and aggressive goals for growth. After an extensive RFP and evaluation process, the company selected WAVE as the foundation for Australia's first commercial Radio-over-IP (RoIP) network and contracted with CISTECH Solutions of Glenbrook, New South Wales, Australia, and a Certified WAVE Integrator. The excellent reputation of WAVE throughout the country, from use by a number of defense department and other federal and state organizations, played a substantial role in the decision.

Owned by the government of New South Wales, Country Energy was as concerned with achieving cost-efficiencies as allowing for future growth. As the only IP interoper-

Customer Pain Points

- **Multiple Networks.** Incomplete post-merger integration left the company operating multiple radio networks from disconnected operations centers.
- **Limited Capacity.** Legacy radio network was incapable of expanding to meet the requirements of a company experiencing exponential growth across a vast geographic area.
- **Antiquated Hardware.** Analog dispatch interfaces were cumbersome, slow and inefficient, requiring extensive manual operation of switches and connections.
- **Lack of Interoperability.** To communicate with office employees outside the operations centers, field technicians needed to use mobile phones, an impractical and expensive solution to system limitations.

Solution Features

- **System-of-Systems.** Unifies existing communication systems, eliminating the costly and time-consuming need to replace whole systems to achieve interdepartmental and cross-regional interoperability.
- **Extensive Interoperability.** Creates a tightly integrated communications environment, eliminating borders, boundaries and limitations by uniting all communication devices regardless of technology, manufacturer, frequency, or operator.
- **Easy Customization.** WAVE SDK allows development of customized solutions that meet specific operational needs

ability solution that leverages the power of software, WAVE provided an unparalleled combination of both characteristics.

Operating over the existing wide-area network (WAN) and capable of working with existing radio equipment, WAVE eliminates line and upgrade costs. Furthermore, its standards-based architecture allowed CISTECH to build the system on standard routing and switching platforms and standard desktop PCs, instead of the expensive proprietary equipment required by typical hardware-based solutions.

Additionally, by capitalizing on software, WAVE allows for unparalleled customization. Country Energy's radio network employs a selective calling (selcall) squelch protocol to narrow communications to specific field radios within a larger channel. A CISTECH Tone-Signaling-over-IP (TSoIP) device provides the functionality to make this possible, while WAVE was customized to incorporate a specialized embedded Selcall client.

Through the singular power of WAVE, Country Energy now operates one virtual operations center. Across 47-and-growing channels and some 3,000 radios, technicians and dispatchers can seamlessly communicate with each other in real time. Plus, dispatchers now work using only one console, whether managing daily business functions, communicating with staff or connecting technicians at different locations.

"By integrating disparate radio networks, this solution allows our four operational service centres to operate as a single, virtual entity, creating greater efficiencies and cross-company collaboration," said Ken Stonestreet, Group General Manager Networks and Infrastructure Country Energy. "Our regional support teams can now share workloads more easily, creating a more responsive, focused organization and helping the company reduce infrastructure and operating costs."

In addition, Country Energy plans to leverage the power of WAVE to achieve further efficiencies. The system is already capable of integrating telephony, making for a more complete Voice-over-IP (VoIP) network in which field radios can connect directly to internal, external and mobile phones. As Country Energy looks toward the future, they are now assured that their radio system will flawlessly handle anticipated growth.

Find Out More

*If you would like to learn more about WAVE software technology and the innovative communications solutions built around it, visit us at **www.twistpair.com**.*

About Twisted Pair Solutions

Twisted Pair Solution's award-winning WAVE software technology enables partners and customers to build and operate secure, highly scalable communications solutions in the world's most demanding environments. Recognizing that the best approach to solving the complexities of communications interoperability is to use standards-based software to unify diverse communications technologies, WAVE is trusted when communications is absolutely indispensable. Twisted Pair Solutions is headquartered in Seattle, Washington, USA with offices in the United Kingdom and Australia.

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