







Power Utility Company Upgrades to Remote Connectivity

North America and global utility customers rely on GarrettCom Magnum DX940e Routers for remote and secure connectivity.

-  **IP Connectivity** to legacy serial devices
-  **4G/LTE cellular** for secure remote connection
-  **High-speed and secure** data transfer remotely over long distances
-  **Ruggedized, compact and flexible design** helps with integration into tight infrastructures
-  **Compliant with NERC CIP** firewall and security standards

**Be certain.
Belden.**

Background

With the advent of new and changing technologies, power utility companies are looking to upgrade to new infrastructure. Also, new technologies come with new compliance standards which need to be adhered to.

The North American Energy Reliability Corporation's Critical Infrastructure Protection (NERC CIP) is a set of mandatory standards, applicable to all bulk power system owners, operators, and users. Under NERC CIP, covered entities are required to identify critical assets and to regularly perform a risk analysis of those assets. It requires the use of firewalls to block vulnerable ports and the implementation of cyber-attack monitoring tools.

In the North America market, power utilities are moving from serial interfaces to IP connectivity. This means moving from legacy infrastructure to new infrastructure and supporting devices.

The Challenge

Project & System Requirements

Belden worked with a power utility customer in North America who needed to expand their customer base by reaching new locations while maintaining compliance with security and safety standards.

Remote Connectivity

The customer was expanding their reach with various new remote stations. They needed to connect these remote sites to the central office so the Remote Terminal Unit (RTU) data could be transferred to the Supervisory Control and Data Acquisition (SCADA) master and with the help of that data they could do asset monitoring, billing and troubleshooting.

No fiber was laid out to connect to the central office and due to budget constraints, laying new fiber was not a viable solution. Many areas were also not connected over the legacy leased line interfaces such as T1 or DDS.



NERC CIP Compliance and Security

In multiple other sites, the customer was using T1 and the service provider was supporting it with TDM/SONET. The move in carrier technology from TDM to MPLS meant a lot of changes on the compliance side since it required a move to IP. This move caused all the power utilities using T1 to come under the purview of NERC CIP.

Also, with introduction of IP, there was a need for additional security for remote locations to prevent unauthorized access to the sensitive data.



The Belden Solution

The customer was looking for a cost-effective, holistic solution to connect its remote locations, connect legacy devices and comply with NERC CIP standards and network security.

- 1) GarrettCom's Magnum DX940e provided the 4G/Cellular WAN interface for remote connectivity and also acted as a remote terminal server to interface with equipment connected to the serial ports.
- 2) It also provided the relevant security features and policies needed for NERC CIP compliance. Magnum DX940e offers Layer 3 stateful firewall and IPSec-VPN with 3DES/AES256 encryption that are part of its requirements.
 - Magnum DX940e comes with a packet firewall that added layer of access security to all the IP interfaces
 - VPN on DX940e enabled encryption of data across WAN and Ethernet interfaces

3) Magnum DX940e is designed to be used in ruggedized and harsh environments and is certified to power substation approvals such as IEEE1613 and IEC 61850-3.

4) Magnum DX940e offers Graphical User Interface (GUI) based MNS-DX or MNS-SECURE software to enable network management and monitoring.

Belden provided a scalable network management solution, Industrial HiVision, which allows multiple devices to be configured, monitored and managed through a single console. Multiple Magnum DX940e devices can be controlled through Industrial HiVision that supports user upload and download configuration rules, upload software upgrades, user policy management and ensures security settings on each device.

Customer Results

Lower Costs, Improved Efficiency

The customer achieved efficient substation automation for secure metering, data collection, monitoring and control of substation equipment, reducing costs and improving workflow.

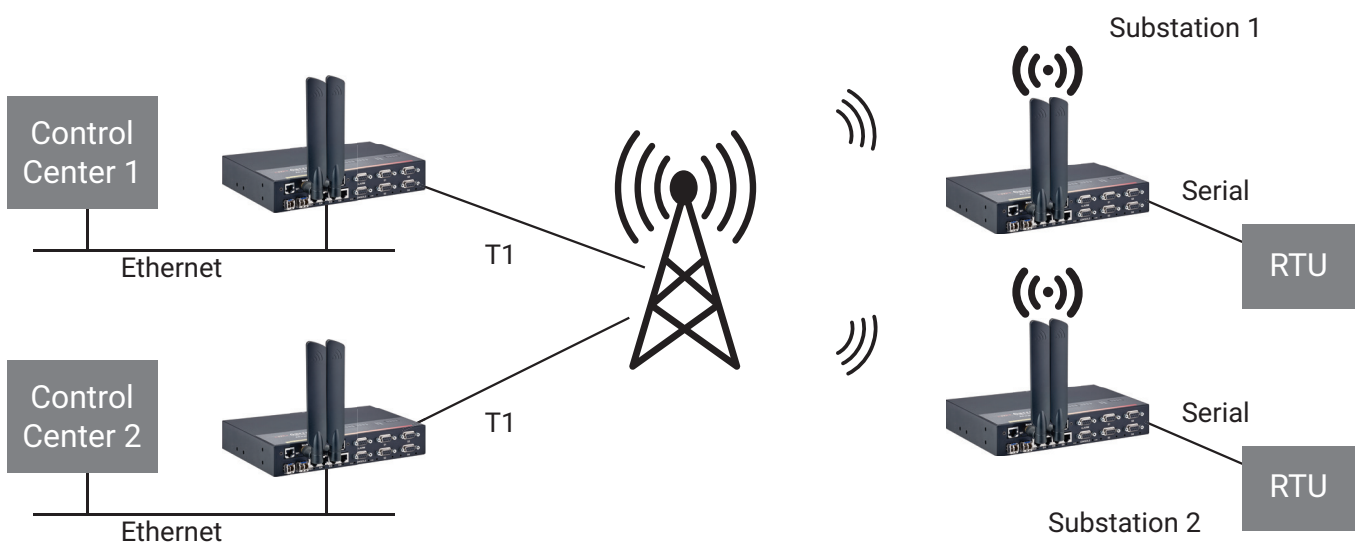
Industrial Equipment, Securely Managed

Supporting harsh environments and compliant with many industrial standards and certifications, GarrettCom equipment can be centrally managed and remotely accessed and protects substation equipment against cyber threats. This saves hours of time that would have been spent driving to remote locations to track configurations, troubleshoot or make manual adjustments to spreadsheets.

Capabilities include firewall, SSL (Secure Socket Layer) encryption and Virtual Private Network (VPN) for secure remote access connectivity. Also provides access control with multi-level password protection.

Flexibility for IP Migration

Legacy and serial communications can be more flexibly migrated to IP communications using GarrettCom networking equipment. This allows customers to control pace of adoption and migration. GarrettCom can also enable utilities more flexibility in designing customer services, maintenance and pricing.



Belden Competence Center

As the complexity of communication and connectivity solutions has increased, so have the requirements for design, implementation and maintenance of these solutions. For users, acquiring and verifying the latest expert knowledge plays a decisive role in this. As a reliable partner for end-to-end solutions, Belden offers expert consulting, design, technical support, as well as technology and product training courses, from a single source: Belden Competence Center. In addition, we offer you the right qualification for every area of expertise through the world's first certification program for industrial networks. Up-to-date manufacturer's expertise, an international service network and access to external specialists guarantee you the best possible support for products.

Irrespective of the technology you use, you can rely on our full support – from implementation to optimization of every aspect of daily operations.



Always Stay Ahead with Belden

In a highly competitive environment, it is crucial to have reliable partners who add value to your business. When it comes to signal transmissions, Belden is the No. 1 solutions provider. We know your business and want to understand your specific challenges and goals to show how effective signal transmission solutions can push you ahead of the competition. By combining the strengths of our five leading brands, Belden, GarrettCom, Hirschmann, Lumberg Automation and Tofino Security, we are able to offer the integrated solution you need. Today, it may be a single cable, switch or connector, to solve a specific issue; tomorrow, it can be a complex range of integrated applications, systems and solutions. With the rise in smart, connected devices brought on by the Industrial Internet of Things (IIoT), together, we can make sure your infrastructure is ready to handle and make sense of the influx of data. Transform your business now with instant access to information, and make your vision a reality. Visit info.belden.com/iioT to learn more.

About Belden

Belden Inc., a global leader in high quality, end-to-end signal transmission solutions, delivers a comprehensive product portfolio designed to meet the mission-critical network infrastructure needs of industrial, enterprise and broadcast markets. With innovative solutions targeted at reliable and secure transmission of rapidly growing amounts of data, audio and video needed for today's applications, Belden is at the center of the global transformation to a connected world. Founded in 1902, the company is headquartered in St. Louis, USA, and has manufacturing capabilities in North and South America, Europe and Asia.

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