

Southern Power District (Nebraska) Chooses Magnum DX940 Routers with Cellular

A Utility Networking Application

ABOUT SOUTHERN POWER DISTRICT (SPD)

Southern Power District (SPD) is a publicly-owned electric distribution system providing electricity and related services to customers in south central Nebraska. Southern operates over 6,900 miles of distribution lines that are served by 73 substations located throughout the District's 4,028 square mile service area. The chartered service area extends through the rural areas of seven counties: Adams, Franklin, Hall, Hamilton, Kearney, Merrick, Phelps, and a portion of Clay County.

THE CHALLENGE

SPD was looking to improve the management of electrical load data through the implementation of substation Nexus meters as well as advanced substation networking equipment. SPD wanted to replace a radio based system that had been experiencing significant interruptions during high load periods. These interruptions frustrated the decision-making process for electrical load management, as well as delayed system status information. The networking equipment chosen would have to be versatile enough to communicate with the meters and various line tracking devices, as well as offer cellular

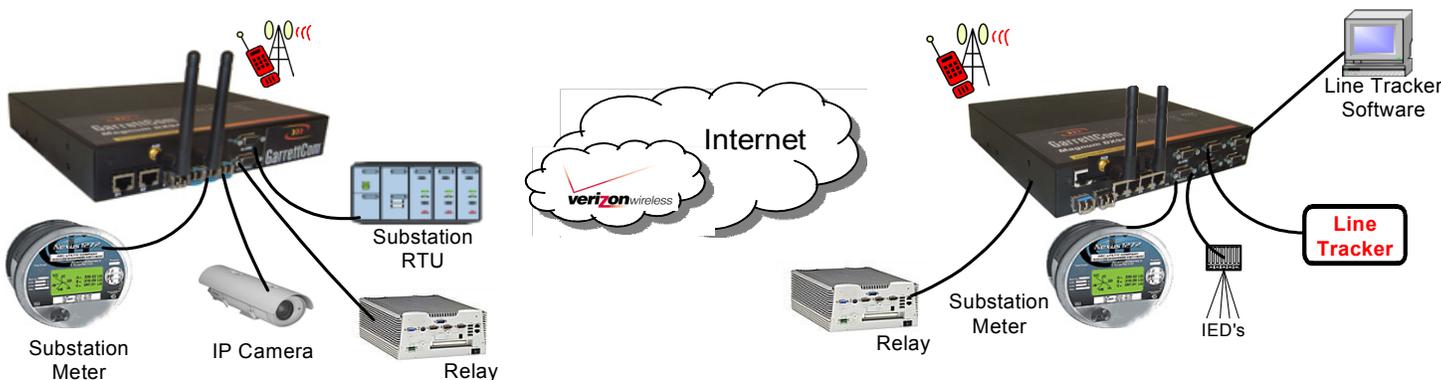
wireless connectivity for the remote substations. Indeed, the networking equipment would have to allow for remote interrogation, monitoring and data retrieval from a wide variety of substation equipment, utilizing protocols.

SPD worked with McCaskey Company to find the networking equipment that would meet their needs. The equipment needed to offer a combination of Ethernet, serial, and cellular wireless communications in order to connect to all of the different substation devices as well as to SPD HQ. Additionally, the networking equipment would have to be hardened enough to survive in outdoor environments at the substations where the equipment would be deployed. McCaskey Company turned to GarrettCom and the Magnum DX940 Industrial Routers with Wireless Cellular.

THE SOLUTION

The Magnum DX940 offers a Verizon-Certified 3G Cellular WAN interface, and may be configured with six Ethernet ports and four serial ports. The Ethernet ports are primarily used to connect to the meters while the serial ports connect to different substation equipment as well as line tracking devices. The

Magnum DX940 Routers with Cellular at Southern Power District (SPD)



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THE SOLUTION (CONT.)

Nexus meters that connected to the DX940 are used to monitor watts, volts, amps, power factor, kWh, and harmonic distortion of the electrical power provided to customers served by the substations.

The cellular modem provides the communication path for the substations and data collection points. Because the DX940 Routers needed to be deployed in small outdoor cabinets, an external antenna was required in order to achieve steady cellular connectivity. Multiple antenna choices are available with the DX940 units, so a suitable outdoor-mounted antenna could be selected.

Finally, the equipment had to be easily monitored and managed remotely. The DX940 offers GUI-based MNS-DX or MNS-DX-SECURE software to enable network management with cyber security.

In the course of testing the Magnum products, various tests were done to insure cellular connectivity over the Verizon facilities. Additionally, line tracking devices were connected to the serial ports on the DX940 to insure communication. These line tracking tests were very important to SPD as it was imperative that the DX940 units could communicate with all of the different devices to fully realize all the benefits of the upgrade. Both SCADA and capacitor bank projects are being designed at SPD, with the Magnum DX940 an integral part of the improved substation networks needed for each project.

ABOUT MAGNUM PRODUCTS

Magnum DX Routers can be configured with features of an IP Router, an Ethernet Switch, and a Serial Device Server in a single product. Magnum DX products deliver secure multi-protocol networking in a compact, rugged package built for heavy-duty industrial sites, substations, and other harsh environments. The Magnum DX line is IEEE 1613/IEC and 61850-3 compliant for power utility substations.

Each DX unit serves as a multi-protocol concentration and access point for fiber-based Ethernet connections at an industrial site. Encrypted per-session SSL and IPsec VPN capabilities, along with other industrial firewall and port security features, assure cyber-security protections will extend cost effectively from control centers all the way to end-point devices and small facilities.

ABOUT GARRETTCOM

GarrettCom, a wholly-owned subsidiary of Belden Inc., is the leading manufacturer of industrial networking products. GarrettCom offers a comprehensive line of hardened industrial routers, terminal servers, Ethernet switches, and serial products for use in utilities, physical surveillance, traffic control, industrial automation, and telecommunications. The company's management software supports redundant rings and cyber-secure web-based access to local and remote networks. GarrettCom markets its products through a network of resellers, OEMs, system integrators, and distributors worldwide. For more information on GarrettCom and its products, visit www.GarrettCom.com.



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