

Power Utility Uses Magnum Fibre Switches to Provide Reliable Electricity Supply in Spain

An Industrial Ethernet Application

TECHNOLOGY TODAY

The last few years have led to a dramatic increase in electric power utility automation, specifically automation of substations. Consequently, IEC 61850, a new common communications architecture, has been conceived to define the communication between devices in the substation and the related system requirements. It has the goal of enabling interoperability between a variety of Intelligent Electronic Devices (IEDs) in substations and utility control and protection systems. Ethernet products in substations have to conform to the same IEEE 1613 environmental criteria as is applicable to protection relays if they are located in the same place, and must be able to operate at temperature extremes and in high electro-magnetic fields.

Power utilities are turning to industrial Ethernet because of its high reliability, high bandwidth and industry standardization. Industrial features include built-in fibre for high EMI noise immunity, 48 and 110 volt DC power operation, and extended operating temperature capabilities. These features allow Ethernet LANs to be deployed in substations along with control and instrumentation equipment to maintain high availability of electric power to the public.

ABOUT SPANISH COMPUTER SERVICES (SCSI)

Spanish Computer Services and Installations, S.L (SCSI), a leading Spanish Power Utility Integrator, has been established for over 10 years. SCSI provides specialist IT service and support for businesses in multiple markets throughout Spain including global corporations such as Anacomp. GarrettCom-trained and certified engineers from SCSI are in Spain and Portugal.

THE CHALLENGE

In partnership with power utility professional services groups, SCSI is upgrading nearly 200 substations with video surveillance, video conferencing and Voice over IP (VoIP) facilities using Ethernet as the communications protocol.

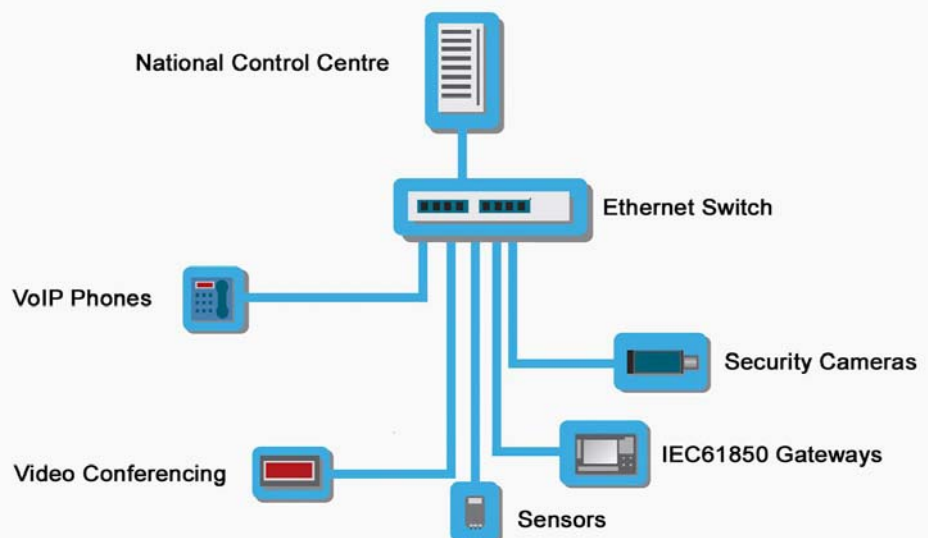
The project will streamline operations throughout the Power Utilities network of substations by reducing the need for on-site personnel and engineer travel between sites. It requires hardened Ethernet switches which are IEC 61850 compliant and offer high reliability. It also requires Ethernet media configuration flexibility that includes mixed 100Mb fibre and 10/100 copper.

Another major requirement for the power utility is that the Managed Ethernet Switches need to be able to operate from different DC power sources as some of the substations equipment operates at 48V DC and others at 110V DC.

THE SOLUTION

SCSI chose GarrettCom's Magnum 6K family of managed fibre switches for their customer RED ELÉCTRICA DE ESPAÑA. The Magnum 6K family

Typical GarrettCom switch implementation in Spanish Substations



SPANISH COMPUTER SERVICES (SCSI)

THE SOLUTION (Cont.)

offers high configuration flexibility, and high reliability as shown by the IEC 61850 and IEEE1613 standards compliance. The rigorous testing to industry standards fulfills the criteria deemed necessary by the power utilities industry to support mission-critical applications that demand high reliability, electromagnetic radiation immunity, and sustained operation under temperature stress among other tough conditions. Spain is geographically vast, and often power substations are located in remote areas. The maintenance and repair costs can be very high. It was therefore crucial for SCSI to have a reliable and cost effective method of communicating with each individual substation network. GarrettCom's Secure Web Management facility and SNMPv3 capabilities provides a method for SCSI engineers to remotely monitor and manage the fibre switches using a graphical user interface from their Control Centre.

THE RESULT

Combinations of Magnum 6K16, 6K25, and 6K32 fibre switches have been utilized to create a network across the transmissions grid of substations which allows the Spanish Power Utility to save both time and money in their day to day operations. The mission critical requirements associated with Power Utilities demand that SCSI source robust and highly specialised equipment.

Networked 'IP' Digital video cameras have been installed in the substations for both video surveillance and video conferencing. The video data is secure and is sent over IP across the network via the Magnum 6K family of Ethernet switches, which boast multicast support with exceptional performance.

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The video-over-Ethernet traffic stream from the cameras is combined with other LAN traffic including weather metering and protection data, enabling one common LAN system to be used for operations traffic as well as for video surveillance. To maintain security of the video data, the Spanish Power Utility takes advantage of GarrettCom's Tagged-VLAN feature (IEEE specification 802.1q) which allows the multicast video data to only be sent to sites where it is configured to go.

ABOUT MAGNUM PRODUCTS

The **6K-Series of Managed Switches** offer modularity, supporting a mix of fibre and copper ports, and advanced management features including standards-compatible support for self-healing rings and the most comprehensive set of web management and security features to be found in an industrial switch.

The **Secure Web Management (SWM)** offers users a safe and secure method for accessing mission-critical switches from the convenience of graphical web browsers. SWM monitors switch activity and supports changing configuration settings from a web browser.

ABOUT GARRETTCOM

GarrettCom is the leading manufacturer of industrial and Carrier Ethernet LAN products. GarrettCom offers a comprehensive line of ETSI and NEBS-certified switches and Convertors for use in telecommunications and industrial automation environments. Software applications, embedded in the company's MNS-6K LAN management software, support redundant rings and 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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