SCADA-Xchange™ Software

Integrated Software for SCADA Systems

Applications

Sensus DA SCADA-Xchange™ software is a powerful means of integrating Sensus' control and data acquisition functionality into distribution supervisory control and data acquisition (SCADA) systems or distribution management systems. It allows a SCADA system to poll any Sensus Distribution Automation (DA) device as if it were connected directly to the SCADA system.

SCADAXchange™

Features

APPLICATIONS

To a SCADA system, SCADA-Xchange software appears as a group of Remote Terminal Units (RTUs) or Intelligent Electronic Devices (IEDs) connected to one port on the system. SCADA polls one location to receive data from multiple devices. SCADA-Xchange software transfers Sensus DA field device data from the Sensus DA PowerVista™ database to a utility's SCADA system using DNP3.0/ IEEE1815 protocol over a secure TCP/IP connection. When a field device change is detected, the event is reported like any other alarm on SCADA.

For outgoing communication, SCADA-Xchange software receives requests and commands from the utility's SCADA system and then transfers these via the PowerVista™ software application to field units using the FlexNet™ communications network or cellular networks. These commands are carried out like any other message sent to an RTU.

FEATURES

Data passes through SCADA-Xchange software in three situations:

1. When unsolicited or report-by-exception events occur
2. Time scheduled reports are sent by the Sensus DA field device
3. Direct queries or commands to devices are initiated by users via SCADA or the PowerVista application

Additional features include:

- Functions as a DNP3 slave responding to the SCADA system polls and commands
- Provides a reliable, secure and cost effective communication option to extend SCADA beyond the substation to distribution equipment
- Uses proven DNP source code
- DNP 3.0 protocol over TCP/IP or serial is standard. Other protocols can be supported with protocol converters.

BENEFITS

- No SCADA protocol development or special interfaces are required
- Cost effectively extends SCADA to any distribution equipment connected to Sensus DA devices
- Operates without special master software
- Installation, training and support are available from Sensus

DNP-TCP/IP or Serial

The standard method for exchanging data between SCADA-Xchange software and the utility SCADA system is a TCP/IP connection using DNP 3.0 protocol. The connection is any IP routable network between the Sensus Network Operations Center (NOC) and the SCADA system, and can utilize a frame relay or a Virtual Private Network (VPN). Additional security features such as encryption are available.

Some SCADA systems only support serial interfaces. In these cases, a protocol converter can be used to convert serial DNP data to TCP/IP DNP data.

Specifications

Implementation

The SCADA system connects to the SCADA-Xchange server via a TCP/IP connection. Typically, this involves the following:

- An outbound-only connection is added to the utility firewall addressed to a Sensus IP address
- New points are added to the SCADA system database
- SCADA is configured to poll the connection
- For additional security, a SonicWall Secure Sockets Layer (SSL) appliance can be placed between the firewall and the SCADA system to encrypt all TCP/IP packets

Security Considerations

The Sensus NOC connects to FlexNet communications network or cellular networks through a secure, dedicated frame relay or Virtual Private Network (VPN) connections. Data transmissions to and from the field units can only be initiated and received by the NOC. The field devices or endpoints cannot be addressed from other IP addresses, cell phones or phone lines.

- The Sensus DA NOC is supported by a redundant OC48/OC12 connection to the Internet backbone, and the facility

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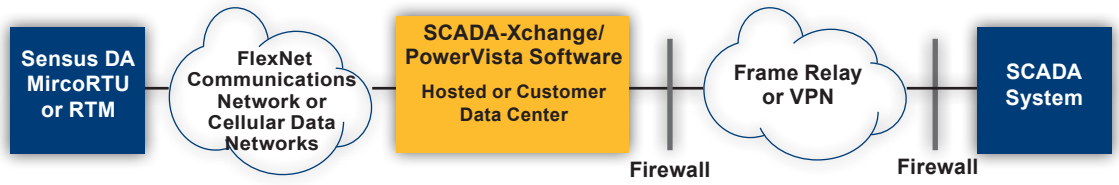
maintains a Cisco Seal of Approval, a fire suppression system and a backup generator
- All PowerVista servers and all SCADA-Xchange software transactions are protected by hardware and software firewalls. Servers are maintained with the latest security updates and regularly scanned for any security vulnerabilities.
- The PowerVista servers support 128 Bit SSL encryption. Each web session is secured with a new 128-bit encryption key.
- Sensus has researched and recommends two options for connecting utility SCADA systems to SCADA-Xchange software: a frame relay or VPN connection.

Alternative Protocols

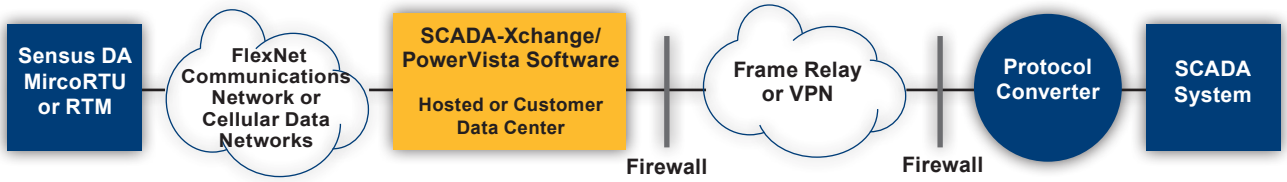
Protocol converters are available to support SCADA protocols other than DNP. Since most alternate protocols are based on an RS-232 physical link, the protocol converter will normally be located at the utility's SCADA facility near the RS-232 ports used for RTU communications.

In a typical configuration, SCADA-Xchange software will use DNP-TCP/IP to communicate with an RCOM protocol converter from Applied Systems Engineering (ASE) running on a Windows-compatible computer. RCOM translates from DNP to most RTU/IED protocol. Using the standard 8-channel interface, SCADA-Xchange software can communicate with multiple systems that may use the same or different protocols. Contact Sensus for additional information on protocol conversion.

STANDARD DNP TCP/IP (WAN INTERFACE) — EXAMPLE CONFIGURATION



ALTERNATIVE PROTOCOL CONVERTER — EXAMPLE CONFIGURATION



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