Building NERC CIP-Compliant Substation Networks

Cisco Connected Energy Services enables secure remote management in the substation.

Customer Name: Large Utility Company

Industry: Electric Utilities

Business Impact:

- Secured substation access that meets NERC CIP requirements
- Developed role-based security for more controlled access
- Standardized configurations to protect against change management errors
- Advanced capabilities that leverage existing assets to meet evolving NERC CIP standards
- Designed proof-of-concept and implementation roadmap for future deployment

Business Challenge

North American electric utilities face a daunting challenge in the smart grid era: Complying with increasingly stringent North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) security requirements that require a new level of security across both grid control systems and the enterprise.

For this utility, vulnerabilities were created by the fact that a remote access network was required to manage intelligent electronic devices (IEDs) throughout the substation fleet. Some utilities enable this network with centralized remote access through a "demilitarized zone," or DMZ concentrator, which allows access only to authenticated users. It is effective in providing information on user access, but does not readily correlate users to specific IEDs within each substation.

Unauthorized access to the network also had to be controlled within the substation itself. This requirement went beyond physical security, as technicians in the substation might, for

example, incorrectly install or reconfigure IEDs. To minimize human error, network policies and simplified configurations needed to be implemented at the access layer.

Solution and Results

Cisco Services utility experts created a multilayer defensive network based on the rich set of security features within Cisco routers and switches. For IED access control and logging:

- New levels of access control and authentication have been established, with multiple checkpoints for each access request.
- Role-based security was designed for more controlled access.
- Augments "last-mile" access, based on end-to-end service-level agreement (SLA) metrics
- Zone-based security segments the various network uses, and users, from each other.

For local network access within the substation:

- Secured substation access that meets NERC CIP requirements
- Standardized configurations to protect against change management errors
- Advanced capabilities that leverage existing assets to meet evolving NERC CIP standards
- Designed proof-of-concept and implementation roadmap for future deployment

Cisco Connected Energy Services

Cisco® Connected Energy Services partners with utilities to prepare for the future of the smart grid, helping to secure and automate the entire energy chain and dramatically increase grid reliability and responsiveness. Providing comprehensive planning services, Cisco experts assess your utility's current position and capabilities, and provide innovative, cost-effective options for optimizing present and future investment.

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