ENGINEERING

SCADA NETWORK ASSESSMENT

Preparing Utilities for the Future—the Practical Way

THE CHALLENGE

The supervisory control and data acquisition (SCADA) system is one of the most important parts of a utility's operation because it directly supports the generation and delivery of power and system protection in its service area. It is critical that SCADA networks be highly reliable, secure, and cost effective.

Many utilities are currently faced with a significant challenge to modernize their SCADA networks. Network technologies used in many SCADA networks 30 years ago, such as frame relay, synchronous optical networking (SONET), and private line wire services, have reached end-of-life.

Equipment and service providers are phasing out support over the next few years, and maintaining these services is becoming prohibitively expensive. Furthermore, many existing SCADA networks were not designed to support the demanding communications needs of highly intelligent utility infrastructure. Compounding the need for upgrade, growing cybersecurity threats dictate more robust and secure network architectures requiring further network segmentation, redundancy, and monitoring.

THE SOLUTION

Peraton Labs combines smart grid operations and cybersecurity expertise with a proven past of network planning and design success to meet this critical need. We assist utilities in developing practical plans, architectures, and designs to modernize critical SCADA network infrastructure. Our services are specifically focused to help a utility support smart grid applications and provide the foundation for systems monitoring and control for the next few decades. Comprehensive yet flexible, the services address complete network overhauls as well as incremental upgrades and targeted new technology insertion to meet a specific need. Whether the project is still in its inception or midstream, our approach can help ensure success.

THE APPROACH

Peraton Labs performs a critical assessment of the SCADA network's functionality, architecture and design, performance capabilities, resilience, network management and operations structure, and cybersecurity posture. The assessment compares against current industry standards and best practices, a utility's smart grid vision, and the North American Reliability Corporation's (NERC's) Critical Infrastructure Plan (CIP) requirements and roadmap. The assessment highlights the strengths and weaknesses of the existing network technologies, support systems, processes, and organization.

Our SCADA network modernization assessment includes:

- Physical survey of SCADA systems at substations to establish or validate existing inventory data
- Installation of Peraton Labs' SecureSmart™ ProtocolPatroller and TrafficProfiler probes to quantitatively measure existing SCADA and support service traffic characteristics, such as bandwidth, protocols, traffic types, packet loss, latency, etc., in an unobtrusive manner
- Documenting the hierarchy of network technologies in use and evaluating the remaining life of network equipment and energy controller endpoints
- Assessing network operating costs, maintainability and affordability
- Forecasting network expansion needs, both in coverage and capacity to support a utility's smart grid vision
- Assessing existing network redundancy and network segmentation
- Assessing network monitoring capabilities
- Evaluating cybersecurity architecture, current state of network and endpoint security, and support for emerging NERC CIP standards
- Assessing cross-organizational responsibilities, what institutional knowledge exists, who holds it, and how employees access it
- Gathering SCADA network requirements for modernization

Our SCADA network assessment services address critical utility challenges, including:

- "build-buy" decisions to decide whether to extend private network facilities or lease connectivity from commercial service providers,
- selecting best-suited network technologies with adequate lifetimes, and
- developing internal standards for equipment selection and deployment approach.

The Peraton Labs' approach provides a clear understanding of the current SCADA network and its potential to support the future smart grid. Not only does it provide a balanced view of the candidate next steps to modernizing the SCADA network within budget constraints and corporate goals, it can also help a utility decide whether to "rip-and-replace" or migrate and transform its network to avoid piecemeal implementations of new technology over time. Lastly, it assists utilities to balance budgets and capital costs against operational costs.

FOR MORE INFORMATION

- Contact info@peratonlabs.com
- See CMaaS SecureSmart - Peraton Labs for information on Peraton Labs' SCADA network assessment using SecureSmart™
- See Network migration and modernization - Peraton Labs for information on our SCADA network modernization and implementation services

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