SCADA network modernization and implementation services

Preparing utility networks for the future - the practical way

The challenge

The Supervisory Control and Data Acquisition (SCADA) system is a critical component of a utility's operation. It directly supports the generation and delivery of power, gas, water and other utility services. Most utilities are currently faced with a significant challenge to modernize their 30-year old SCADA networks. Technologies such as synchronous optical networking (SONET), Frame Relay and private line wire services have reached end-of-life, and providers are phasing out support over the next few years. Additionally, these services are becoming increasingly expensive to maintain. Many existing SCADA networks have shown they cannot support the demanding communications needs of utility distributed generation and smart grid, initiatives.

Determining the best roles for current and emerging technologies, such as Multiprotocol Label Switching (MPLS), carrier ethernet, software defined networks, and others, in an evolving network can be daunting. It's an operational and financial decision a utility may have to live with for the next 20 years. In addition, growing cybersecurity threats dictate more robust and secure network architectures requiring further network segmentation and redundancy.

The solution

Perspecta 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

Our services are based on a proprietary and disciplined, four-phased methodology to plan, design, build and operate (PDBO). Each phase adds detail and specificity to the requirements, strategies, and plans specific to each stage of the project lifecycle. PDBO is a proven methodology for dynamic, complex communications infrastructures for enterprises, government agencies, utilities and telecom operators.

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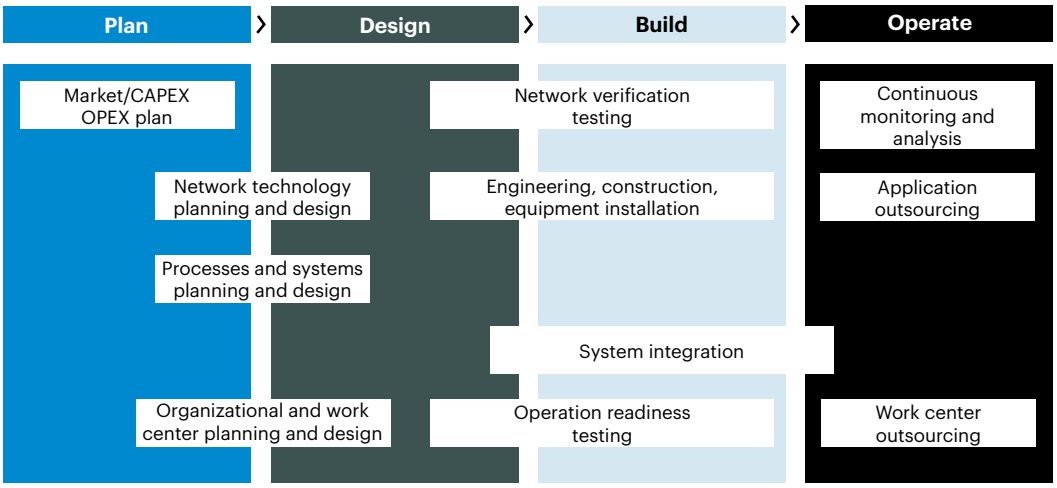

Our experience has shown that focused investment during up-front planning can help avoid costly mistakes during implementation. It can help a utility decide whether to rip-and-replace or migrate and transform its network and legacy technologies to avoid mismatched implementations over time. It also assists utilities to balance budgets and capital cost against functionality and operational costs.

Plan:

- Long and short-term needs; smart grid vision
- Stakeholder requirements
- Current communications and IT infrastructure:
  - Interface number/type
  - Packet-based networks compatibility
  - Substation services
  - Operations center communications
  - Mission critical services backup paths
  - Systems reaching end-of-life
  - Manual vs. automated operation requirements
- SCADA network traffic characterization and traffic model
- Services, volumes, frequencies, latencies, redundancies, hotspots and availability levels
- Tributary service traffic streams e.g. critical infrastructure protection SCADA, telemetry, video surveillance, peer-to-peer protection
- Security monitoring
- Situational awareness
- Day-to-day operations
- Baselines

Design:

- Locations and quantities of SCADA assets
- Network architecture
- Economic and technical analyses
- Traffic engineering
- Survivability and availability
- Topology, bandwidth allocation and service level agreements
- Cybersecurity architecture overlay
- Integrated network and operations plan
- Insourcing and outsourcing plans
- Organizational domain knowledge
- Division of operational responsibilities
- Private wireless systems vs. existing Advanced Metering Infrastructure plan
- Solution analysis
- Replacement strategies
- Standardization vs. vendor proprietary plans
- Supply chain risk mitigation

Build:

- Actionable roadmap
- Staged rollout and budget plans
- Standards alignment
- Trials and procurement
- Installation, testing acceptance
- Continuous monitoring
- Operations support systems
- Interoperability

Operate:

- On-going operations and systems support
- Continuous performance and cybersecurity monitoring
- Maintenance procedures
- Operations processes
- Organizational coordination
- Network operations center and security operations center modification
- Visibility indicator refinement
- Metrics and reporting
- Governance and change management

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