ABB Network Manager
Energy Management System

The ever-increasing demand for power offers significant opportunities for system operators worldwide to find new ways to be more efficient and effective.

Industry challenges

Transmission networks are getting more complex. The shift towards more renewable energy poses new technological challenges – delivering power over greater distances from remote generation sites to major demand centers, and managing supply-side variability. Transmission infrastructure investments have not kept pace with growth and, as a result, many transmission systems today are operating at or very close to capacity.

How do you tackle these challenges while delivering consistently superior services to your customers?

Network Manager can help.

Solution

Network Manager gives you the necessary visibility and control of your grid operations. The solution is built on a high-performance, cyber-secure SCADA platform designed to meet the requirements of mission-critical control systems.

Advanced network applications with state-of-the-art algorithms and computational methods help you achieve and maintain system stability and service reliability. From real-time control and analysis to predictive optimization and operational planning, Network Manager facilitates safe and efficient day-to-day operation.

Have ultimate confidence in your network with ABB.

Benefits

• Improve operational security and grid reliability
• Optimal utilization of transmission assets
• Minimize transmission losses and prevent line overloads and voltage collapses
• Early warning and detection of critical operating conditions in the network and network applications to alleviate them
• Improve situational awareness and decision support for operators
Energy Management System
Solution overview

Network Manager’s common SCADA platform allows seamless integration of EMS with GMS and external systems.

- Security Assessment
- Optimal Power Flow
- Network Sensitivities
- State Estimator
- Predictive Power Flow
- Short-circuit Analysis

SCADA

GMS

Production scheduling
- Short-term load forecasting
- Thermal unit commitment
- Interchange scheduling

Generation control
- Reserve monitoring
- Hydro control
- Economic dispatch
- Production cost calculation

Automatic Generation Control

Historian (Data warehouse)
ISOs
RTOs
Billing & settlements
Performance highlights

01 ABB’s EMS enables secure, efficient and optimised operation of Paris’s electric power system.

Field-proven SCADA platform with 99.99% (“four-nines”) availability

Full topology state estimation on a 2,000-bus network in 2 seconds

Security analysis of a 4,500-bus network with 1,000 contingencies in 6 seconds

Dispatcher power flow computations in 1 second
Managing networks with over 4 million data points

Over 400 ABB control centers successfully delivered globally

Manages a large part of the USA’s Northeast grid, serving major metropolitan areas

ABB’s first SCADA and network management systems were launched in the 1960s
Advanced transmission network applications

Network Manager has a complete portfolio of power applications that covers four key functional areas.

1 - Network monitoring

Provides the best assessment of the current operating conditions of the transmission grid
- State estimator
- Telemetry snapshot
- Status and analog retrieval
- Bad topology detection

2 - Decision support

Assists operators in making the safest operational decisions more efficiently
- Dynamic network coloring
- Real-time interlock analysis
- Study capability
- Network save cases

3 - Security assessment

Provides an assessment of the network conditions under a wide variety of contingency ("what if") situations
- Security analysis
- Voltage Stability Analysis

4 - Operations enhancement

Assists operators in enhancing network operating conditions
- Dispatcher power flow
- Security constrained dispatch
- Volt/VAR control
- Network sensitivity
Additional features

Wide area monitoring system (WAMS) integration

- Full WAMS integration enables highly accurate monitoring of transmission system conditions over long distances
- Robust and scalable solution that supports data collection, analysis and reporting from a large number of phasor measurement units (PMUs)

Operator training simulator (OTS)

- The OTS provides operators and dispatchers with a risk-free training environment that is virtually identical to the live production system
- Broad spectrum of training scenarios from analyzing historical events to planning for future contingencies

Cyber security

- Network Manager conforms to security standards CIP 002-011, ISO 27001/2, and the NIST Cyber Security Framework
- Internal and external penetration testing performed by the Idaho National Lab
- Advanced security and compliance services available through ABB Cyber Security Care offerings

Operational planning

- Day-ahead congestion forecasting (DACF) helps operators evaluate future congestion in the network and determine transmission grid stability