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ABB NETWORK MANAGER

# Energy Management System

Operational confidence.



# 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

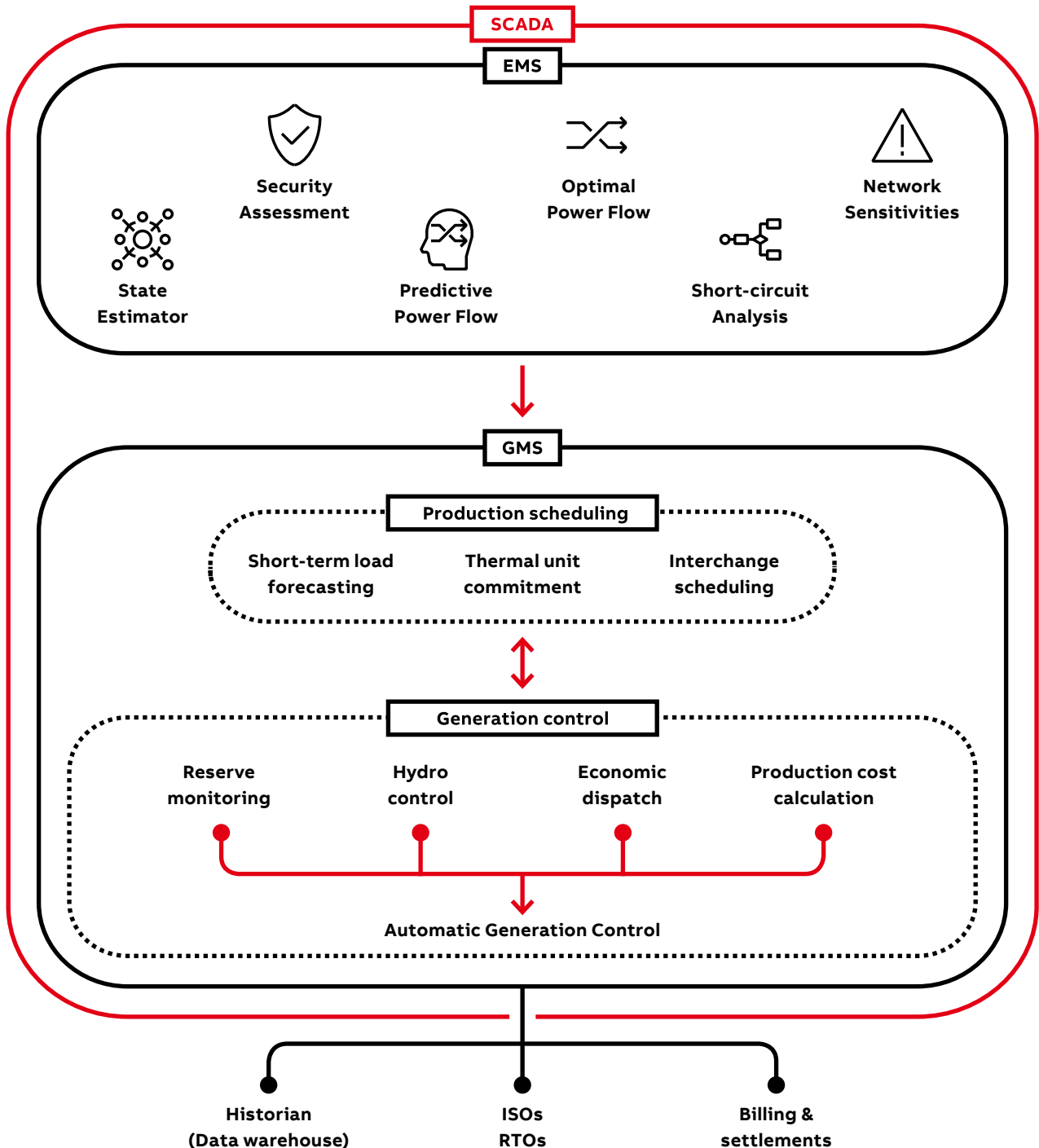
- Improve operational security and grid reliability
- Optimal utilization of transmission assets
- Minimize transmission losses and prevent line overloads and voltage collapses
- Early warning and detection of critical operating conditions in the network and network applications to alleviate them
- Improve 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.



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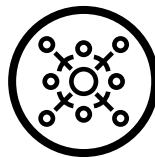
## Performance highlights

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



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



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



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



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**Dispatcher power flow** computations in **1 second**

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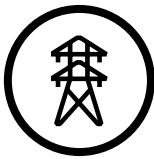




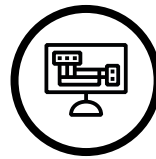
Managing networks with  
**over 4 million data points**



**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

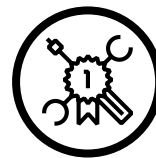


## 3

### 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

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## Additional features

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### 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)

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### 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

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### 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

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### Operational planning

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





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