Advanced EMS – Platform

Optimal, Reliable Transmission Network Operation
Maximize Renewable Energy with Full Generation Control

THE EMS REFERENCE

EMS-WAMS, renewables and analytics integration increases network optimization, improves system security and capacity and enhances operator and analyst decision making.

KEY OUTCOMES

- Increased Network Reliability and Capacity
- High Renewable mix
- Look Ahead analysis
- Optimal Generation Control
- Full WAMS integration
- Data Analytics ready

KEY FEATURES

- Control rooms, field staff, planning, energy and trading
- CIM based modeling with full validation of power system
- Inter-utilities. Model exchange
- Fast, secure switching
- Market interoperability

Master renewable energy

Utilities face new challenges and additional network stress due to increased renewables penetration. GE's Advanced EMS, Platform, has been in use for over 30 years with leading utilities worldwide, and successfully tested with WAMS technology over the last 10 years. The digital transformation of utilities requires full mobilization of network assets in a reliable way to ensure maximum transmission of energy from multiple sources. High renewable energy penetration, intermittency and low inertia generate an increased level of threats, which require a full understanding of real-time and future network status, to allow a fast response as rapid changes occur. Platform, the GE Advanced EMS, has a full set of powerful applications, which enable operators to deliver the best operation performance, minimizing risk and increasing flexibility, in multiple generation mix systems.

The Heart of Your Network Management

GE Platform Advanced EMS is the brain of network management. It integrates with all utilities functions, such as planning and field management, asset and maintenance management, IT internal services, security services as well as substation automation system, HVDC line control, power plant control systems, and other EMS interchanges.

GE Platform Advanced EMS implements a CIM data model standard from the modeling stage to real-time optimization results. Its modular design is flexible to match your future challenges. It supports multiple redundant and resilient configurations, from simple redundancy, to multiple backups and ultimate recovery systems, as well as test and training systems.

Customer profiles

- Transmission System Operations
- Regional Transmission Organization (RTOs, ISOs)
- Integrated utilities (generation, transmission, distribution)

Digital Energy

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Platform components

GE Platform Advanced EMS integrates multiple components which can be implemented in a modular approach according to the utilities demand. This applies to main real time systems, as well as to back-ups (in same or separate locations) and Dispatcher Training system (DTS).

Experience UI UX- WEB UI – Browser - Vision
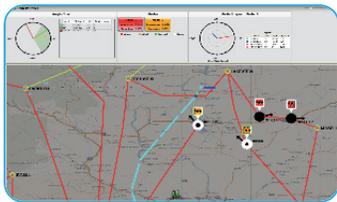
| **WAMS** | **Renewable and DER** | **Network Generation** | **Analytics** |

Real-Time Data Across the Enterprise

| **Network Model** | **Scada** | **Intelligent Alarming** | **Cyber Security** | **Data House** |

Network Model
- Time-based models, within the enterprise.
- Full business process automation for importing, aggregating, validating, exporting models in different formats, including CIM-16/CGMES.
- Models validation from a Network Security or Market perspective, as well as in short and mid-term time points.

Scada
- Processes real time data from the field.
- Detects abnormal status and alarm them as per operating rules. Includes a topology processor.
- Scalability over million points.

Intelligent Alarming
- IA processing suppresses nuisance alarms, creating one synthetic alarm and generating a diagnosis indicating a faulty device.

Data House
- Manage real time and historian data, and integrate with corporate IT systems.
- Feature a set of power tools, such as SOA adapter, and webservices. Any data is accessible in real-time across the enterprise.

Cyber Security
- GE Platform Advanced EMS embeds in its original design cyber security rules for software development: IP architecture, access control and logging. It delivers required logs to comply with the latest NERCIP regulations.
- Additional services can complement the standard delivery.

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Power System Modular Applications and Analytics

Wide Area Management System
The Advanced EMS enabler

WAMS Monitoring
- Angle difference
- Oscillation Stability
- Islanding
- Short Circuit capacity
- Sub Synchronous Resonance
- System disturbance

Stability Assessment
- Alarm management
- Angle-based Enhanced Island
- Enhanced disturbance

Online Stability
- WAMS coupled with
- Dynamic Stability Analysis

Dynamic DTS

Network Security and Optimization
Flexible to match your network

- Topology Processor
- Quick Network Analysis
- State Estimation
- Load flow calculation
- Contingency Analysis
- Operator Guide
- Security Enhancement
- Security Constraint Dispatch
- Contingency Planning
- Voltage/VAR dispatch
- Volt-Var Control (VVC)
- Loss Minimization
- Corrective Controls
- Look-ahead Network Analysis
- Short-Circuit Analysis
- Optimal Power flow
- Line Outage Distribution Factor
- Special Protection Schemes (RAS)
- Topology Estimator
- Dynamic Line Rating
- Voltage Stability
- Transient Stability
- Small Signal Stability
- Real Time & Study environments

Analytics
Extract the value of your data

- Machine learning, Artificial intelligence, and big data technologies will serve the increased data volume from asset sensors, weather prediction, and consumer behavior, in order to drive outcomes in network operations.
- Use cases include: Fault and event analysis, inertia prediction, transmission constraint, and state estimation errors.

Generation Control & Optimization
Ready for renewable & storage management

Generation Control and Grid Economy
- Load Forecast
- Transaction scheduling
- Unit Commitment
- Economic Dispatch
- Multi-Area Load-Frequency Control
- Automatic Generation Control
- Reserve Monitor
- Real Time and Study Modes

- Advanced Generation
- Impact of DER
- Impact of Demand Response
- Curtailment
- HVDC control
- Smart Dispatch
- Generation Scheduling
- Generation Schedule Import/Export
- Market Interfaces
- Load Frequency Control (ENTSO-e)

Renewable and DER
Master renewable deployment

- Assesses renewable generation in real-time, in location, by type, and by utilization factor.
- Estimates renewable generation from multiple forecast sources and evaluates ramp and stability levels.
- Assesses risk and provides recommendations for remedial actions to operators.
- Smart dispatch controls intermittency and renewal generation low inertia.
- Automatic generation control covering storage, central and distributed renewables.

Dispatch Training Simulator

- Perfect replication of your EMS including WAMS (Dynamic DTS).
- Initialization from real-time and Historian.

Contact Us
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