ABB Ability™ Network Manager ADMS
An integrated solution for advanced distribution management
ABB Ability Network Manager ADMS is a key component of the distribution control room that enables the efficient management of the sub-transmission, medium and low voltage distribution networks.

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**The challenge**

Electric distribution companies are under increasing pressure to improve reliability and reduce costs while meeting the challenges of grid automation, communication, distributed energy resources (DER), changing consumption patterns, microgrids and markets that are driving grid modernization and fundamentally changing the nature of distribution operations.

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**ABB Ability Network Manager Advanced Distribution Management System (ADMS)**

Network Manager ADMS is a real-time system for managing operations in a distribution control center. It provides monitoring and control, network analysis, network optimization and outage management capabilities in an integrated software platform, enabling effective management of assets on a platform developed to meet the evolving needs of distribution operators.

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**Key features**

- Distribution SCADA for reliable monitoring and control
- Outage management system:
  - Outage management
  - Switch management
  - Fault location isolation system restoration (FLISR)
- A range of advanced analysis tools to enhance situational awareness and support effective decision making:
  - State estimation
  - Load flow analysis
  - Volt/VAR optimization
  - Short circuit analysis
  - Loss reduction by feeder reconfiguration
- Enterprise service bus for integration
- Distributed Energy Resource Management Solution (DERMS)
  - Manages various DER and traditional distribution assets, e.g., capacitor banks, batteries
  - Maintains situational awareness through a single as-operated network model
  - DER registration
  - DER optimization and control - Volt/VAR control
  - Integrates with utility resources, aggregators and microgrids

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**Key benefits**

- A common working environment providing a seamless workflow for control room staff
- A single network model that is easy to maintain
- Integrated analytics solution providing insight to all levels of the organization
- Maintains grid reliability and performance – significantly reduced voltage excursions and higher network stability
- Network visibility at the Grid Edge – provides insights to DER events for monitoring and control of assets downstream of the substation and behind the meter
- Realize lower operational costs offered by distributed generation
- Significantly increase network hosting capacity for DERs to achieve regulatory targets for renewable generation, with minimal network investments
## Major functions

<table>
<thead>
<tr>
<th>Solution</th>
<th>Function</th>
<th>Overview</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCADA</td>
<td>Distribution SCADA</td>
<td>• Real-time monitoring and control for distribution network</td>
<td>• Field proven, high-availability, cyber secure supervisory control and data acquisition platform</td>
</tr>
</tbody>
</table>
| Outage management system | Outage management | • Trouble call management and outage prediction  
• Crew and referral management  
• Outage and reliability reporting | • Improved crew efficiencies during outages  
• Reduced CAIDI [customer average interruption duration index] and SAIDI [system average interruption duration index] |
| Switch management | • Create and maintain planned and unplanned switching plans electronically  
• User role management  
• Automated validation of switching plans | • Electronic creation and maintenance of switching plan removing reliance on paper  
• Validation of switching plans in simulation mode to improve reliability  
• Audit trail |
| Network applications | State estimation | • Determination of real-time power flow and voltage operating conditions | • Improve situational awareness of the non-observable network  
• Enable the operator to mitigate capacity and voltage violations that are not observable via SCADA telemetry to improve reliability |
| Load flow analysis | • Study future network conditions using forecasted load, generation schedules, and planned switching  
• Study high penetration DER including smart inverter regulation and ghost load affects | • Improved efficiency by utilizing the full operational range of assets  
• Maximize DER penetration  
• Improved contingency planning |
| Volt-VAR optimization (VVO) | • Creates the optimized capacitor and regulator controls to minimize losses and/or reduce demand, either in automated (close loop) or manual mode | • Reduced demand can off-set capital investments  
• Reduced demand can reduce carbon footprint |
| Short circuit analysis | • Computes phased based available short circuit current at every node on a distribution circuit | • Determines if switching operations give rise to network configurations that produce excessive short circuit current  
• Assists in determining protection coordination |
| Loss reduction by feeder reconfiguration (LRFR) | • Determines the optimal open point between feeders to reduce losses | • Improves power delivery efficiency  
• Improves capacity utilization of distribution assets |
| Analytics | ADMS analytics | • ADMS analytics dashboards and reports for internal and external publication (e.g., KPI, web, graphs, reports, etc.) intelligence available to the company | • Improved decision making throughout the company based upon access to up to date data |
| Distributed Energy Resource Management Solution (DERMS) | DER management | • Efficiently manage the entire life cycle of DERs from registration, optimization and their control to achieve the safe, secure and efficient operation of the electric distribution network | • Significantly reduced voltage excursions  
• Lower device operations & maintenance costs  
• Increased hosting capacity for DERs on the network |
Network Manager ADMS offers you access to a wide knowledge base and deep industry experience

<table>
<thead>
<tr>
<th>Network applications</th>
<th>Outage management</th>
<th>SCADA</th>
<th>DERMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topology processing</td>
<td>Trouble call, AMI, outage notifications</td>
<td>Data acquisition</td>
<td>DER registration</td>
</tr>
<tr>
<td>Real-time state estimation</td>
<td>Outage prediction</td>
<td>Alarming</td>
<td>Active power management</td>
</tr>
<tr>
<td>Simulation power flow</td>
<td>Auto-creation and management of ETRs</td>
<td>Trending</td>
<td>Volt/VAR optimization</td>
</tr>
<tr>
<td>Load transfer switching</td>
<td>Crew management</td>
<td>Real-time calculations</td>
<td>DER optimization</td>
</tr>
<tr>
<td>Fault location</td>
<td>Planned work</td>
<td>Integrated data engineering</td>
<td>ADMS DER visualizations</td>
</tr>
<tr>
<td>Restoration switching</td>
<td>Switch order management</td>
<td>Historian</td>
<td>Distribution markets</td>
</tr>
<tr>
<td>FLISR</td>
<td>Volt/VAR control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short circuit analysis</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Feeder reconfiguration</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Common graphical user interface

Outage management:
- Trouble call, AMI, outage notifications
- Outage prediction
- Auto-creation and management of ETRs
- Crew management
- Planned work
- Switch order management

SCADA:
- Data acquisition
- Alarming
- Trending
- Real-time calculations
- Integrated data engineering
- Historian

DERMS:
- DER registration
- Active power management
- Volt/VAR optimization
- DER optimization
- ADMS DER visualizations
- Distribution markets

Infrastructure:
- External adaptors & data exchange
- Historian & data warehouse
- Communication front end
- Business intelligence
- Field devices – DA devices, sensors and DER

The ABB advantage: enterprise-wide solutions

The ABB portfolio provides interoperability and increased functionality across the full range of enterprise applications used in distribution operations. Through service oriented architecture (SOA) ADMS interacts with the following ABB solutions:

**Workforce management (WFM)**
ABB’s WFM solution is designed to help field operations and dispatch personnel work smarter to proactively serve customers and maintain assets in the field, while significantly reducing operating costs and improving customer service. It is an end-to-end solution that automates the entire customer service and asset maintenance cycle, from short-term decision making in the control center to long-term maintenance planning in the back office.

**Enterprise asset management (EAM)**
ABB’s EAM solution enables organizations to standardize and streamline work processes to maximize worker productivity and improve asset performance through increased availability and improved reliability. EAM allows organizations to drive operational excellence by reducing operating costs, increasing productivity, while maintaining a safe work environment.