

# Improve Utility Distribution Operations and Asset Performance With Edge Analytics

## Challenges

- **Data volumes.** Finding insights in sensor data without analytics is like finding a needle in a haystack. Advanced capabilities are required to extract meaning and insights for decision making.
- **Decision latency.** Once data is sent to the central operations center, often it's too late to act. Speed is the primary concern.
- **Dependent on business rules.** Analytics are constrained by existing systems that are not predictive or prescriptive in nature.
- **Multiple protocols and data standards.** Integrating data for analysis across platforms and devices requires data reconciliation.
- **Deployment.** Repeatability can be difficult, with specialized knowledge and equipment required to scale efficiently.



SAS is the leader in analytics. Through innovative software and services, SAS empowers and inspires customers around the world to transform data into intelligence. SAS gives you THE POWER TO KNOW.



Cisco's Internet of Things offerings accelerate digital transformation, helping deliver insight and action from your data.

## The Issue

Utilities are managing more distributed assets than ever, especially with the emergence of renewables and microgeneration within distribution systems. Assets throughout the transmission and distribution value chain are now enabled digitally, providing data that utilities previously could not access. This data can be used to avoid catastrophic failure, improve reliability and safety, identify underperforming assets and more. Since underperforming assets are a drain on costs and may result in missing key performance metrics, this new data plays a critical role in optimizing the portfolio of assets and their maintenance.

The abundance of data from smart grid assets enables more real-time analytics, but only if the right infrastructure is in place. Moving analytics closer to the source of data creation allows utilities to reduce the latency of decisions and also filter data to optimize data movement, in consideration of network constraints. Real- to near-real-time operations are critical for success in today's dynamic utility operations and customer environments.

## Our Approach

Cisco and SAS provide integrated software and networking capabilities to help utilities:

- **Forecast demand or generation** at levels of specificity and speed required by the line of business.
- **Visualize performance** across connected grid assets through robust dashboards and interactive maps.
- **Gain early warning** of negative asset health indicators to prevent costly outages.
- **Adopt predictive maintenance models** for critical assets to optimize maintenance costs and ensure resource alignment and reliability.
- **Optimize distributed energy resource integration** by quantifying specific needs and time frames to leverage the right generation resource at the right time, place and cost.
- **Simplify edge-to-enterprise analytics infrastructure** by deploying Cisco UCS, Kinetic IoT data fabric, and edge capabilities in conjunction with SAS' Analytics to support powerful processing in a proven, validated design.

Our comprehensive Edge-to-Enterprise IoT Analytics Platform delivers industry-leading performance, scalability and cost of ownership.

## Cisco and SAS

- Unparalleled technology leadership with a commitment to innovation.
- Validated joint architecture and global award-winning services and support.
- A robust developer and partner ecosystem.

## What Our Customers Are Doing

- **Renewable asset monitoring and analytics.** From wind turbine blades to solar inverters, efficiency is critical in renewable generation. Our customers are using real-time sensor data to optimize yield from wind turbines and schedule proactive maintenance.
- **PMU analytics.** Real-time phasor measurement unit data from transmission or distribution grid is being used to detect anomalies and improve power quality.
- **Grid surveillance.** We're enabling grid operations to view and analyze the performance of assets connected to the grid in real time, as well as triage alerts.
- **Distribution asset analytics.** Our customers can analyze the health of critical distribution assets, use image recognition for inspection and vegetation management and optimize maintenance to reduce unplanned downtime.
- **Load forecasting.** Utilities can forecast very short term, short term, midterm and long-term hourly electricity demand using low latency data on consumption and demand.

- **Microgrid optimization.** Optimize the integration of generation resources into the power grid, forecast capacity and load and enable surveillance of connected assets with the SAS and Cisco solution.

## The Cisco and SAS® Difference

Cisco and SAS help utilities harness the power of big data from intelligent assets.

With Cisco and SAS, you can:

- **Provide real-time insights on anomalies.** Detect performance anomalies in near-real time and create automatic alerts or recommended actions, ensuring that utilities are on top of any issues that may result in higher costs or reduced reliability.
- **Predict when generation capacity can be efficiently met by distributed energy resources.** Forecast need, availability and market cost, which is a complex task that changes by the minute.
- **Filter data to optimize bandwidth consumed.** Unlock constraints in the network that limit the volume of data that can be centralized for analysis. Use intelligent filtering to send only the necessary data, which may have been summarized or analyzed before transfer.

- **Process more transactions at grid scale.** Adapt to exponential growth in distributed resources with infrastructure that scales efficiently and quickly to meet your needs with embedded security you can rely on.
- **Visualize key performance indicators.** Gain insights into asset performance through easy-to-interpret visualizations of temporal and geographic data.
- **Deliver data across edge devices and applications.** Guarantee peer to peer, point to multipoint data delivery with large data volume, low latency, and scalability. An edge-based data broker substantially increases the control and monitoring capabilities for modernized distribution automation, renewable energy management, and microgrids.
- **Normalize data from a variety of devices and protocols.** Simplify control center deployment and operation through unified SCADA head ends.