

# Unlocking the Potential of Smart Metering and the Smart Grid with Cisco IoT Control



A stylized image of a power line tower at night. The tower is a dark silhouette against a dark blue sky filled with stars. Several bright blue lines, resembling data connections or smart grid lines, radiate from the tower and extend across the sky. The lines are slightly curved and have a glowing effect. The overall scene suggests a connection between traditional infrastructure and modern technology.

It's not news that today's utilities are embracing the smart grid and smart metering. As in most other industries, utilities have become steadily more connected. According to a recent report by Transforma Insights,<sup>1</sup> in 2033 there will be **151 million grid operation devices**, transforming the supply of water, electricity, and gas worldwide.

<sup>1</sup> Grid Operations: 151 million connected devices in 2033 across electricity, gas, and water. Transforma Insights, September 2024.

Smart meters make up a critical part of the growth of smart grids. Although smart meters were first developed decades ago, their adoption has accelerated, driven by numerous trends.



**Government-led deployments:** Government sustainability initiatives have been a critical driver for smart meters worldwide, through both incentives and mandates. For example, in the U.S., most large utility providers have installed smart electricity meters. These deployments have been initiated by the federal government, with assistance from state utilities. In contrast to top-down rollouts managed by government authorities, deployment in some countries is led by energy suppliers and distribution system operators (DSOs).

**Smarter, more automated metering:** The limitations of traditional meters have also driven the transition to smart meters. Traditional devices require a visit from professionals in the field to manually read them for billing. This process is slow, costly, and prone to errors. Smart meters not only eliminate these manual reading costs but can provide customers with detailed feedback on electricity usage to help them reduce their electricity bills.

Power theft is also encouraging the use of smart meters, especially in parts of Africa and Asia. In India, for example, power theft reduced the country's GDP by 1.5 percent in 2019.<sup>2</sup> The sensors on smart meters can mitigate these issues, providing real-time consumption information to alert utilities about theft.

**Load balancing and new consumption models:** Load balancing is another emerging driver as the Internet of things (IoT) matures and the world becomes more connected. People are embracing more smart appliances, electric vehicles, and heating systems. These devices can connect to the smart metering system to access pricing data, enabling consumers to program them to take advantage of cheaper rates. This demand-side management also plays an essential role in supporting smart grid applications.

The diversity of power consumption models is also promoting changes, with prepaid utilities in some parts of the world that require smarter meters.

## 2.2 billion

Analysts estimate that by 2030, this many electricity smart meters will be deployed.<sup>3</sup>

These changes are all taking place against a background of smart grid innovation happening at the network edge and data center. Metering devices are becoming smarter, with more capabilities. These advances are empowering utilities to increasingly use more sophisticated analytics within their power management applications.

To support the deployment of smart metering, utilities use a variety of deployment models, depending on the region. Some use a highly distributed system based on subscriber identity modules (SIMs) within the meters, and others employ a radio-frequency (RF) mesh architecture for data collection and transmission.

<sup>2</sup> [Electricity Smart Meters: government sustainability initiatives will drive 2.2 billion connections in 2030](#), Transforma Insights, July 2022.

<sup>3</sup> [Electricity Smart Meter market is set for a geographic switch](#), Transforma Insights, May 2023.



# Strong potential, but challenges remain

The business, consumer, and environmental benefits of smart meters have been proven through years of use, but utilities still face challenges in deploying and managing them.

**Deployment at scale:** Smart meters by definition require a scalable approach. Even a utility in a small country will need to support millions of meters, and manual maintenance processes simply will not work for massive numbers of devices.

Network connectivity must be ready for service at the time of deployment, and utilities must ensure that each deployment works smoothly and dependably from the start. Deploying massive numbers of field professionals for troubleshooting is slow and cost prohibitive.

**Dependable connectivity is essential:** Smart meters use a variety of wireless communication methods, including RF mesh, 2G, 3G, 4G, and 5G. Local radio conditions or issues arising from mobile network operators can disrupt wireless connectivity. Utilities must also ensure connectivity of multiple components at scale between SIMs and meters and their own IT systems. If a problem occurs, they need immediate alerts to support troubleshooting.

**Regulatory challenges:** Because utilities are considered critical national infrastructure, smart meters must meet regulatory compliance requirements that don't apply to other IoT use cases.



# Delivering essential smart metering capabilities with Cisco IoT Control Center

Cisco® IoT Control Center positions utilities to unlock the full potential of smart metering and the smart grid. As a key element of the Cisco Mobility Services Platform, IoT Control Center is the industry's premier connectivity management solution, currently serving over 250 million subscribers. It delivers essential capabilities today, built on an architecture that is flexible and capable of being scaled and modified when utility requirements change in the future.

Cisco IoT Control Center						
Support for wireless standards	Full automation	Flexible billing	Global scale	Operations tools	Integrated security	Support for eSIM
<p>Cisco IoT Control Center supports wireless standards, enabling capabilities such as these:</p> <ul style="list-style-type: none"> <li>• Dependable, high-performance communication over cellular networks</li> <li>• Connectivity for gas, water, and electricity meters</li> </ul>	<p>Cisco IoT Control Center offers a comprehensive set of automation capabilities extending across the lifecycles of smart grids and their components, including the following:</p> <ul style="list-style-type: none"> <li>• Automated provisioning</li> <li>• Lifecycle-aware configuration</li> <li>• Business-process automation</li> <li>• Data warehouse report feeds</li> <li>• Custom report creation and associated APIs</li> <li>• Comprehensive Simple Object Access Protocol (SOAP) and representational state transfer (REST) APIs</li> <li>• Event-based push APIs</li> </ul>	<p>Flexible billing capabilities provide the agility needed to support a variety of service partners and quickly update billing rate plans at any time:</p> <ul style="list-style-type: none"> <li>• Variety of rate plans</li> <li>• Split and multiparty billing</li> <li>• Event-based incentives and credits</li> </ul>	<p>Designed for large organizations, Cisco IoT Control Center enables global IoT deployments with agility:</p> <ul style="list-style-type: none"> <li>• More than 50 service providers in 120 countries</li> <li>• More than 20 million smart meters</li> <li>• Same integration for all service providers</li> <li>• Localization tools</li> </ul>	<p>Advanced operations tools, including Spotlight diagnostics, provide in-depth insights while helping reduce risk. Cisco IoT Control Center delivers these benefits:</p> <ul style="list-style-type: none"> <li>• Real-time diagnostics</li> <li>• Machine learning (ML) applications</li> <li>• Real-time network visibility</li> </ul>	<p>Cisco IoT Control Center features integrated security to help safeguard sensitive utility and consumer data:</p> <ul style="list-style-type: none"> <li>• Multi-factor authentication (MFA)</li> <li>• Platform-level security features, including control of users and access privileges</li> <li>• Device-side security features (SIM), such as International Mobile Equipment Identity (IMEI) lock-in</li> </ul>	<p>Cisco is continually optimizing IoT Control Center to support components such as embedded SIMs (eSIMs), which can give utilities additional operational flexibility to do the following:</p> <ul style="list-style-type: none"> <li>• Remotely provision and manage smart meter devices over the air</li> <li>• Build integrations with partners for eSIM support</li> </ul>

# Support for a variety of use cases

With its comprehensive set of features, flexible architecture, and powerful automation capabilities, Cisco IoT Control Center can support a wide range of smart metering use cases.

## **Connectivity visibility and management at carrier scale**

Cisco IoT Control Center supports deployment and monitoring of millions of smart meters, providing seamless connectivity back to billing systems and utility IT infrastructure.

The solution helps utilities gain insight into connectivity status in real time. In the event of an issue, troubleshooting tools help utilities and mobile network operators accelerate root cause analysis. The solution can also help support detection of rogue devices, which increase billing costs and introduce security and compliance issues.

Supporting a robust set of security and compliance capabilities, Cisco IoT Control Center helps utilities stay compliant with government and industry standards such as the European Union (EU) Network Information Systems (NIS) directive. It also enables utilities to implement allow/deny lists to authorize SIMs and eSIMs at massive scale.

## **Automation for rapid provisioning and lifecycle support at scale**

Automation is essential for business agility and administration of thousands or millions of smart meters. Cisco IoT Control Center enables utilities to energize and de-energize meters remotely, without time-consuming field visits.

The solution also provides insight into meter data usage, to facilitate cost management and enhance reliability. If data use is excessive, a utility may choose to move its meter to another price plan. Cisco IoT Control Center also offers APIs and reporting capabilities to help utilities ingest the large amounts of data needed to manage deployments at vast scale.



## **Lifecycle management for device manufacturers**

Supply chains for large utility operations are complex and massive. With Cisco IoT Control Center, utilities can acquire precise insight into where a SIM is in the supply chain. Its test-ready and activation-ready features support testing during the manufacturing process. Roaming capabilities support shipping and testing to align with a utility's specific deployment processes. The solution helps utilities ensure that billing won't start until the meter is fully deployed.

# Why Cisco?

Cisco occupies a uniquely strong position to empower utilities to deploy and support smart metering with confidence. Vendor stability is essential for long-life utility deployments. For decades, the company has demonstrated its stability and market leadership. Today, approximately 20 million smart meters (8 percent of the market) are supported by Cisco IoT Control Center.

Cisco has long been a leader in wireless innovation. The company introduced the world's first Standalone 5G (5G SA), serving tens of millions of subscribers through its highly optimized networking infrastructure—

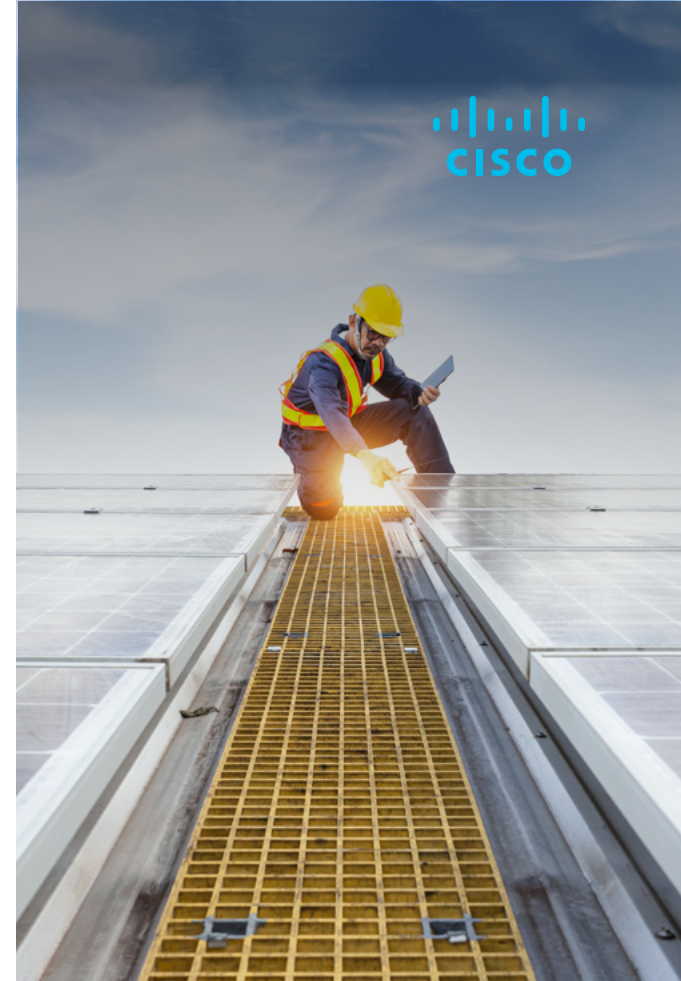
and more innovation is continually in development. The company leads as an industry “Pace-setter” in Counterpoint Research’s Global 2025 IoT Connectivity Management Platform (CMP) Ranking.<sup>4</sup> Its global experience, reach, and track record are second to none, and Cisco has connected more than 270 million IoT devices, processing more than 15 TB of data each day and 3 billion events.

Cisco’s scale and reach provide deep insight into a wide range of industries, enabling the company to better understand your specific challenges and requirements—and deliver the outcomes you expect.

“Cisco has a significant lead over its competitors in terms of platform capability as well as execution capability”

—Akshara Bassi, Senior Research Analyst, Counterpoint

<sup>4</sup> IoT Connectivity Management Platform Rankings Report, Counterpoint Research, 2025.



Cisco IoT Control Center can help you unleash the full promise of smart metering.

[Learn more](#)

Learn more about the Cisco Mobility Services Platform.

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