Cisco Mass Scale IoT

Transform critical infrastructure with Cisco's Mass Scale IoT solution:
Efficient management for expansive smart meter and sensor networks.

Benefits

- Enables secure connectivity for remote monitoring and traffic backhaul over wide geographic areas.

- Facilitates integration of multiple applications onto a single platform, such as Advanced Metering Infrastructure (AMI), distribution automation, asset tracking, and smart city applications.

- Enhances grid reliability with reliable telemetry across energy transmission, distribution, and consumption.

- Supports over-the-air meter firmware upgrades and remote power management.

- Allows for real-time monitoring and alerts, improving response times for critical events.

- Leverages existing cellular infrastructure for smart metering, helping reduce upfront capital outlay.

Imagine a utility network that anticipates demand and optimizes resource distribution in real time. Or a city that responds dynamically to its inhabitants' needs. Critical infrastructure providers are relying on an increasingly massive number of devices to drive positive business outcomes like these. In many cases these devices are small, low-cost, low-power endpoints like sensors, meters, trackers, scanners, and beacons. Built upon Cisco® IoT Control Center, Cisco® Mass-Scale IoT is a powerful solution that streamlines the secure deployment, onboarding, and management of wireless IoT-compliant devices such as smart meters and sensors at massive scale.

Overview

Utility companies and municipalities face increasing pressure to modernize their infrastructure to meet growing demand and regulatory requirements. Smart meters are central to this transformation, offering precise consumption data and enabling dynamic resource management. As an optional capability of Cisco IoT Control Center, Cisco's Mass-Scale IoT solution provides an industry-leading connectivity platform to manage mass scale meter deployments across a variety of industries.

- Cisco IoT Control Center is a market-leading Connectivity Management Platform (CMP). From a single pane of glass, your utility customers can deploy and manage meter and sensor networks at massive scale. As the foundational component of Cisco's Mobility Services Platform, IoT Control Center stands as the industry's leading connectivity management platform, serving over 250 million connected devices today.

- Cloud Connect, an optional add-on feature, tackles the formidable management obstacles posed by large-scale IoT deployments, including the storage constraints of many IoT devices. By centralizing telemetry data from distributed devices in the cloud, it transcends onboard storage limitations, enabling comprehensive data retention, real-time processing, robust security, and seamless vendor interoperability.

Trends and challenges

Industry segments are relying on an increasingly massive number of small, low-cost, low-power devices to drive positive business outcomes. Realizing the full potential of IoT in these markets demands new tools.

First, the sheer scale and complexity of large-scale IoT deployments, often spanning millions of distributed devices, demand robust management platforms and processes.

Second, the critical nature of IoT devices in sectors like utilities and municipalities is the result of aging infrastructure, regulatory requirements, and the need for real-time monitoring and management of resources.

All of these factors point toward the use of existing cellular networks with a robust connectivity management platform to simplify the complex network requirements, relieve data security concerns, and avoid significant initial capital investment costs.

How it works

Building upon Cisco's industry-leading IoT Control Center platform, Cisco Mass Scale IoT is a comprehensive solution designed to empower businesses by automating, managing, and monetizing their low-cost, high-volume devices efficiently throughout the product lifecycle. Unlike traditional Connectivity Management Platforms (CMPs), it serves as a growth engine, enabling utilities and municipalities to scale faster, operate smarter, and provide better protection. With its robust set of capabilities, the platform supports a wide range of industries and use cases, helping over 32,000 enterprises innovate and expand their IoT business while delivering superior customer experiences and optimizing operational costs.

Cisco IoT Control Center

Cisco IoT Control Center is a market-leading CMP, now enhanced to support 5G use cases. From a single pane of glass, your enterprise customers can deploy and manage 3G, 4G, and 5G devices at global scale. It works with all generations of wireless technology because the network core feeds it from 3GPP-compliant network interfaces that have not been customized. Enhancements for 5G include:

- Key network identifiers that help you and your enterprises differentiate your services.

- A default network slice, required for session establishment.

- Real-time session visibility, which simplifies troubleshooting. A subscriber that's live and served by the end-to-end 5G SA network is highlighted in IoT Control Center.

For more information read the "**Deliver 5G IoT Services Faster**" white paper.

IoT Cisco Cloud Connect

IoT Cloud Connect is a turnkey optional add-on for Cisco's IoT Control Center, streamlining the secure connection between IoT devices and IoT hubs. IoT devices, designed with robust security features from the ground up, are equipped with IoT SIMs that store authentication information, enabling secure identification, data integrity protection, and encrypted connections with IoT hubs.

The total number of electricity smart meter devices will grow from 1.1 billion in 2023 to 2.1 billion in 2033.

The total number of water smart meter devices will grow from 296 million in 2023 to 789 million in 2033.

The total number of gas smart meter devices will grow from 245.5 million in 2023 to 509 million in 2033.

– Transforma Insights, August 2024

Centralized authentication and secure onboarding: With IoT Cloud Connect, enterprises can centrally manage all authentication elements for IoT devices, including certificates, certificate authorities, and security policies. When a new IoT device is powered on, it automatically connects to IoT Control Center, which provisions the device with the necessary authentication credentials. Armed with these credentials, the device can then securely connect to the designated IoT hub, seamlessly offloading its telemetry data stream.

Streamlined, secure IoT device connectivity: Connecting an IoT device to a remote IoT hub requires establishing secure communication, such as TLS encryption, to protect proprietary data. Traditionally, provisioning individual SIM cards and configuring each one securely has been a cumbersome, error-prone, and time-consuming process. IoT Cloud Connect simplifies this secure onboarding and connection process, empowering enterprises to efficiently deploy IoT devices at scale while maintaining robust security, centralized management, and end-to-end visibility across their IoT ecosystems.

Use cases

IoT devices, such as smart meters, have become invaluable assets across diverse industries due to their role in enabling the secure collection, transmission, and management of critical data streams. These robust and secure devices find numerous applications, driving operational efficiency, sustainability, and informed decision-making. However, IoT devices often have limited storage space, necessitating the offloading of data.

The Cisco Mass-Scale IoT solution empowers customers to securely capture and centrally manage the valuable telemetry data from IoT devices, enabling informed decision-making, optimized operations, and data-driven innovation across industries. The table below lists key industry use cases.

Table 1.   Industry use cases for Mass scale IoT

Industry	Use case description
Energy management and utilities	Smart meters securely capture real-time data on energy consumption, enabling utilities to optimize distribution, detect anomalies, and offer tailored services such as demand response programs.
Smart cities	IoT devices such as smart meters gather data on consumption of utilities (e.g., electricity, water, gas), providing insights for urban planners to enhance resource allocation, reduce waste, and promote sustainability.
Industrial IoT	Industrial meters securely monitor parameters like temperature, pressure, and flow rates, generating data for optimizing manufacturing processes, improving equipment efficiency, and ensuring regulatory compliance.
Agriculture	Smart agricultural sensors securely collect data on soil moisture, weather conditions, and crop health, empowering farmers to optimize irrigation, fertilization, and pest control practices for increased yields and resource efficiency.
Transportation and logistics	Asset-tracking sensors capture real-time data on the location and condition of goods during transit, enabling efficient supply chain management, inventory optimization, and loss prevention.
Environmental monitoring	IoT devices for environmental monitoring gather data on air quality, water quality, and wildlife movement, providing valuable insights for researchers and environmental agencies to detect hazards and protect ecosystems and public health.

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Learn more

To learn how Cisco IoT Control Center can propel your organization's IoT initiatives to new heights, click here.

To learn more about Cisco's Mobility Services Platform, click here.

To schedule a demonstration of the Cisco Mobility Services Platform, contact your Cisco sales representative.

The Cisco Advantage

Cisco is a market leader in IoT connectivity management. Our global experience, reach, and track record of success are second to none. We connect more people, places, and things than any other platform on the planet. With our scale and reach, we have the most comprehensive understanding of the market and your needs. From the complexity of connected cars to the massive scale of smart meters, Cisco has helped over 50 communication service providers and 32,000 businesses in every industry build and scale their IoT business. At Cisco we are constantly innovating to solve tomorrow's IoT challenges today, giving you a competitive edge by helping you focus on what matters most— growing your business.