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Wireless Solution Overview

Your wireless future begins now

Introduction

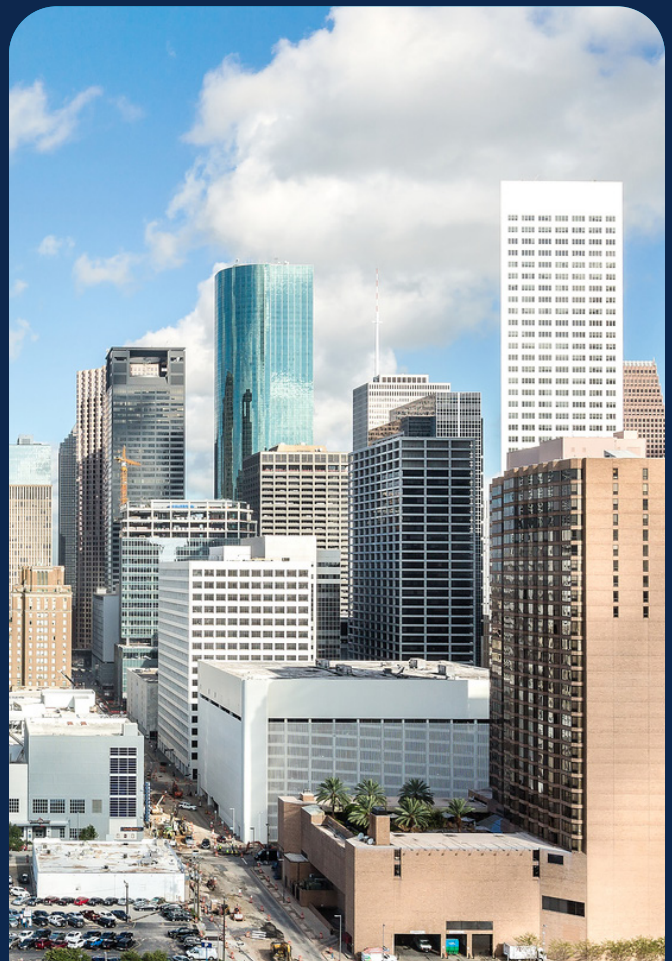
Today's work is hybrid, and hybrid work empowers people to work from home, the office, and anywhere in between, safely and securely at any time.

When everyone and everything is connected, work is no longer a place we go, it's what we do.

Connected THINGS (like IoT and OT) are vital in driving a hybrid work evolution forward in many sectors—including healthcare, education, and manufacturing.

By connecting things to people, and things to businesses, and connecting it all with data that's coming from sensors and machines, we can create a multiplier effect on productivity that's going to change the way we know the world. It provides more freedom and flexibility for users to work efficiently and effectively from anywhere, whether it's remote monitoring of or performing remote surgeries on patients in healthcare or remotely monitoring and managing the operation of robotics and machines in manufacture.

As the world shifts into a new way of working, customers need access networking solutions that offer security, speed, and agility for users as well as for IoT devices. In 2022, Wi-Fi 6 products will represent 79% of all Wi-Fi product shipments.[1] By 2023, there will be 29 billion IoT devices.[1] In addition, by 2025, the Ethernet switching and wireless WAN Total Addressable Market (TAM) will grow to $18.4B and $2.7B, respectively.[2] SaaS-delivered software will make up 58% of total software revenue by 2025.[3] These trends point to new priorities for the network that include the need for greater wireless bandwidth, better support for IoT, and a more cloud-friendly access architecture.



[1] "Wi-Fi 6 shipments to surpass 5.2 billion by 2025"- Wi-Fi Alliance, March 2021

[2] Cisco Annual Internet Report

[3] IDC - Worldwide Digital Business Models and Monetization, 2021

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Key benefits

With powerful, customizable solutions for companies of all sizes, the Cisco wireless portfolio helps you manage the growing number of connected wireless devices. From IoT to a growing inventory of applications, the Cisco wireless network provides an always-on, always-available solution with the following benefits:

Comprehensive security:

- Encrypted Traffic Analytics (ETA) to detect encrypted threats.
- Multilingual access points that provide visibility and communications with not only Wi-Fi but Zigbee and BLE.
- Cisco SD-Access, providing automated end-to-end segmentation and group-based policy that is used to separate user, device, and application traffic without completely redesigning the network. The group-based policies are also automated so that organizations can make sure that the correct policies are set up for any user or device with any application across the network.
- Trustworthy solutions, which allow for security to be implemented holistically. These solutions enable constant security enhancements of the network to protect against ever-evolving cyber attacks.

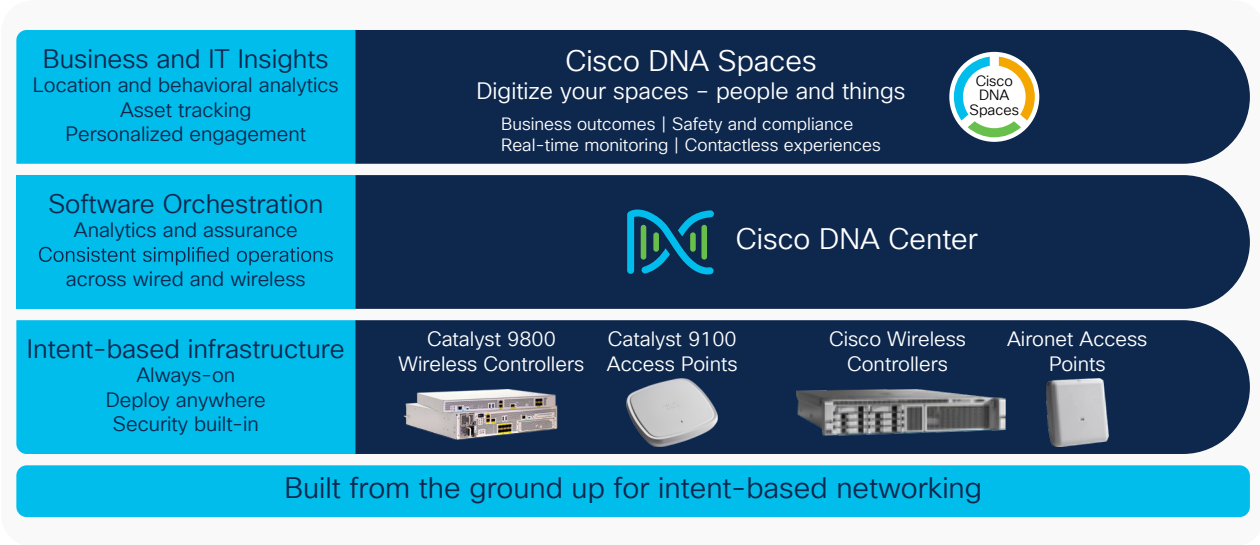
To meet these priorities, organizations need a network that is scalable, reliable, and secure, so that IT can work smarter, not harder. Now more than ever, visibility, automation and assurance are critical for securing your data and applications. Cisco® Access Networking, switching, wireless, and Wi-Fi 6/6E solutions can help your customers deliver the best IT experience by automating services for faster workflows, enabling visibility from access to cloud for better troubleshooting, and providing policy-driven security for the campus network.

In order to achieve all those, we will become more dependent and reliant on the network than ever.

Overview: Cisco next-generation wireless stack

Cisco wireless solutions are resilient, have the integrated security you need, and employ adaptive and insightful intelligence providing useful insight into your network. With intent-based networking built on Cisco Digital Network Architecture (Cisco DNA), our wireless solutions go beyond the latest Wi-Fi 6/6E (802.11ax) standard and are ready for the growing user expectations, IoT devices, and next-generation cloud-driven applications. With the ability to handle the increased mobile traffic as well as support IoT at scale, Cisco's first Wi-Fi 6 access points with superior RF innovations will expand wireless access with intelligence and provide a secure, reliable high-quality wireless experience for all networks. Cisco DNA Spaces IoT Services for the Cisco Catalyst Wi-Fi 6 access points and Catalyst 9000 switches allow you to deploy IoT devices and activate partner apps for outcomes at a significantly lower TCO.

Figure 1. Unlock the power of your network and drive IoT outcomes at scale



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Key benefits (continued)

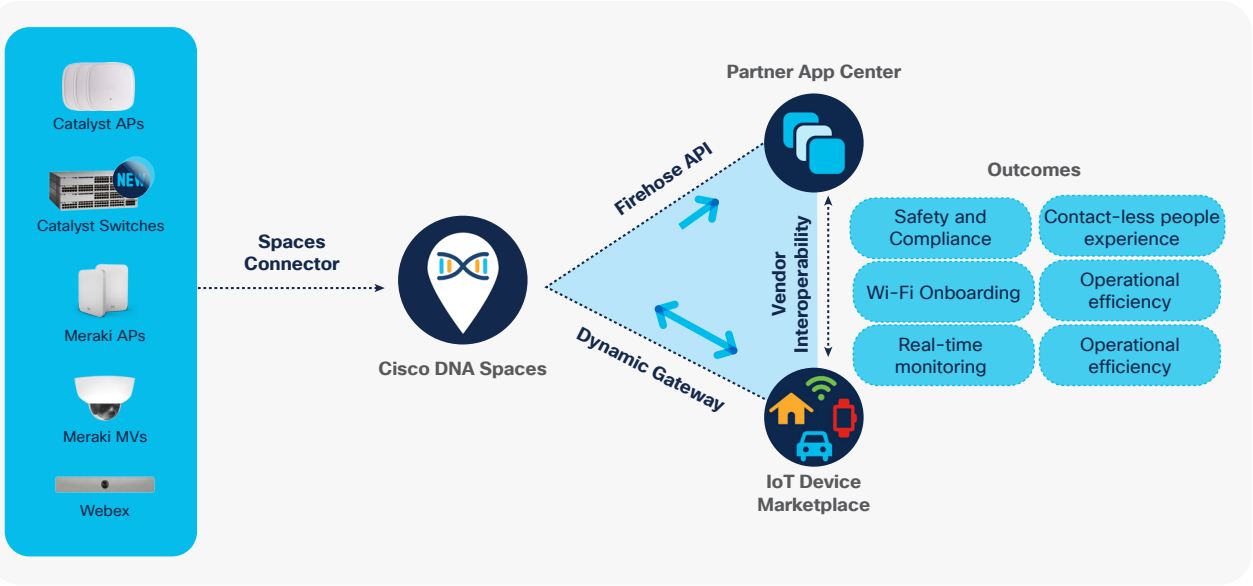
Data-optimized intelligence:

- Streaming telemetry and contextual data from every access point and controller on the network, providing complete visibility.
- Wi-Fi 6E-enabled Catalyst® access points, which provide the Smart AP feature, available only from Cisco. This feature allows the access point to automatically change its power consumption to reflect the load the network currently faces. The reduction in radio stream count saves power.
- Band steering, which causes clients that are Wi-Fi 6E compliant to automatically connect to the new 6-GHz spectrum, instead of to the 5-GHz or 2.4-GHz radios.
- Automatic detection and prioritization of issues with complex event processing, with a series of analytics engines to find anomalies instantly.
- Correlated insights and contextual cognitive analytics to accurately pinpoint root cause.
- Guided remediation, allowing for single-click resolution, enabling automation to close the loop.

Cisco wireless solutions

Cisco DNA Spaces

Figure 2. Whether Cisco Catalyst or Meraki, all location data is able to by synthesized via Cisco DNA Spaces to deliver location-based services.



The network has traditionally been used only for connectivity. Cisco DNA Spaces lets you take your existing network beyond connectivity and drive digitization for your physical spaces.

How? By synthesizing location data from access points, switches, Cisco Meraki® cameras, Webex® devices, and Wi-Fi and IoT devices to deliver location-based services at scale. This information can be used to drive workplace safety, space optimization, behavior analytics, contactless experiences, operational efficiency, and much more.

Cisco DNA Spaces, with gateway-enabled Catalyst 9000 family access points and switches, along with Catalyst 9800 Series wireless controllers, acts as middleware that supports multiple vendors, allowing customers to choose end devices suitable for their intended use cases. Customers can easily order these devices from the IoT Device Marketplace, onboard them, manage them, and make them work with partner applications from the App Center to realize industry-specific outcomes. These devices include not just Wi-Fi, but also BLE beacons and lighting and environment sensors. As a result, customers can deploy a large range of devices and use cases with greater scalability and lower TCO.

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Key benefits (continued)

IoT services for smart buildings:

- Ability to discover, deploy, and monitor IoT devices and activate partner apps, all from Cisco DNA Spaces as a single cloud dashboard.
- Wi-Fi 6E-enabled Catalyst access points that provide built-in environmental sensors, unique to Cisco, that measure temperature, air quality, and humidity.
- Use cases including asset management, environmental monitoring, space utilization, and indoor wayfinding.
- Availability of a wide variety of IoT devices, suitable for multiple industries and use cases, in the IoT Device Marketplace

Reliability beyond Wi-Fi 6/6E:

- Wi-Fi 6E-enabled access points that bring added capacity, reliability, security, and sustainability to your network.
- Custom RF ASIC, providing Flexible Radio Assignment (FRA), Cisco CleanAir®, Wireless Intrusion Prevention System (WIPS), and DFS detection
- Deterministic capacity at scale with Wi-Fi 6, the newest generation of Wi-Fi that adds both flexibility and scalability while allowing new and existing networks the ability to power next-generation applications
- Software updates with minimal disruption. Being always on allows for bug fixes, access point deployments at multiple sites, network upgrades and more to be handled without rebooting the controller or impacting network operations

Cisco DNA Center

Figure 3. Pictured, the command center for Cisco DNA Center and the features provided.

The command center for your wireless network needs to be as reliable and secure as the devices it controls. From management to automation to analytics to security, Cisco DNA Center runs your network, provisioning and configuring all of your network devices in minutes. No more making sure that each device is up-to-date with what you need it to do; Cisco DNA Center takes care of all that, automatically.

That automation occurs as a result of the Artificial Intelligence/Machine Learning (AI/ML) that Cisco DNA Center provides your network. It's the next step in terms of increased performance, better efficiency and greater cost savings. This allows for considerable network improvements in visibility, troubleshooting and even cybersecurity. AI/ML literally turns data into intuition, resulting in time savings and greater efficiency.

But Cisco DNA Center does so much more.

Cisco DNA Center uses advanced analytics via Cisco DNA Assurance to proactively monitor, troubleshoot, and optimize the network. And by integrating it with third-party systems, you can improve your operational processes. It provides a 360-degree contextual view of user, network and applications that allows it to isolate an issue and tell IT where to focus. If a malady slips by, you can go back in time so you don't have to wait for the problem to occur again and follow guided remediation to fix the issue.

For organizations that utilize a shared network, Cisco DNA Center makes it easier for IT staff to provide end-users their own partitioned piece of the network. Cisco User Defined Network allows end-users the ability to remotely and securely deploy their devices on the network via an easy-to-use app. From there they have the ability to control who can and can't access their devices.

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Cisco wireless access points

Cisco Access Points

Cisco Catalyst® 9100 Access Points: Going beyond the Wi-Fi 6/6E standard, the Cisco Catalyst 9100 access points provide integrated security, resiliency, and operational flexibility, as well as increased network intelligence. These access points extend Cisco's intent-based network and scale to the growing demands of the Internet of Things (IoT) while fully supporting the latest innovations and newest technologies, making them perfect for organizations of all sizes.

Table 1. Catalyst 9100 Access Points

Catalyst APs	Description
Cisco Catalyst 9136 Series	• Designed for large, enterprise-level deployments • Wireless quad radio architecture: 6 GHz (4x4:4), 5 GHz (8x8:8), dual 5GHz (4x4:4), and 2.4 GHz (4x4:4), perfect for a Wi-Fi 6E network. • Comes standard with integrated environmental sensors, Smart AP, band steering, dual PoE power redundancy, IoT radio, full Cisco DNA Center and Cisco DNA Spaces support.
Cisco Catalyst 9130 Series	• Designed for large, mission-critical deployments • With four radios (2.4 GHz and 5 GHz), FRA, unified RF engine and IOT-ready (BLE and Zigbee) and optimized for Wi-Fi 6 standard • Equipped with Cisco RF ASIC to deliver Cisco CleanAir®, WIPS, DFS detection and supports up to 200 clients per radio * (The Catalyst 9130 has three Wi-Fi interfaces in Tri-Radio mode)
Cisco Catalyst 9130 Series with integrated 9104 antenna	• Designed for use in large venues such as stadiums (both indoor and outdoor), concert halls and other large facilities • Software configurable beam-steering to customize wireless coverage patterns • Integrated design simplifies deployments and reduces points of failure
Cisco Catalyst 9120 Series	• Designed for midsize to large deployments • With four radios (2.4 GHz and 5 GHz), FRA, unified RF engine and IOT-ready (BLE, Zigbee, Thread) and optimized for Wi-Fi 6 standard • Equipped with Cisco RF ASIC to deliver CleanAir, WIPS, DFS detection and supports up to 200 clients per radio
Cisco Catalyst 9115 Series	• Ideal for small or midsize deployments • With three radios (2.4 GHz, 5 GHz, and BLE), it adheres to the Wi-Fi 6 standard • Supports up to 200 clients per radio and is available with either an internal or external antenna
Cisco Catalyst 9105 Series	• Designed for small or midsize deployments • With three radios (2.4 GHz, 5 GHz, and BLE), it adheres to the Wi-Fi 6 standard • Supports up to 200 clients per radio and is available in two mounting options: ceiling and wall
Cisco Catalyst 9124 Series	• Designed with a casing resistant to the elements for an outdoor deployment • With three radios (2.4 GHz, 5 GHz, and BLE), it adheres to the Wi-Fi 6 standard • Supports up to 200 clients per radio and is available with either an internal, external, or internal directional antenna

Cisco Wireless Controllers

Cisco Controllers

Cisco Catalyst 9800 Series Wireless Controllers: The Catalyst controllers streamline the best of RF excellence with open, programmable Cisco IOS® XE benefits, meaning you no longer have two operating systems to manage. These modular, reliable, and highly secure controllers are flexible enough to deploy anywhere—including your choice of cloud.

Table 2. Catalyst 9800 Controllers

Catalyst Controllers	Description
Cisco Catalyst 9800-80	• Great for large enterprise and service provider networks • Adheres to Wi-Fi 6 standard with 80 Gbps throughput • Supports 6,000 access points and 64,000 clients
Cisco Catalyst 9800-40	• Ideal for midsize to large enterprises • Supports Wi-Fi 6 standard with 40 Gbps throughput • Supports 2,000 access points and 24,000 clients
Cisco Catalyst 9800-L	• Perfect for small to medium-sized deployments and offers two different versions: copper and fiber uplinks • Supports Wi-Fi 6 standard with 5 Gbps throughput • Supports 250 access points and 5,000 clients
Cisco Catalyst 9800-CL	• A virtual wireless controller that has multiple scale options, deployment on either on public or private cloud and is available VMWare ESXi, KVM, Cisco ENCS, Amazon Web Services and Google Cloud Marketplace • Wi-Fi 6 compliant with 2 Gbps throughput • Can support up to 6,000 access points and 64,000 clients
Cisco Embedded Wireless Controller on AP	• Zero footprint option with no physical appliance • Easy to deploy and manage via WebUI or mobile app • Can support up to 100 access points and 2,000 clients