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Benefits of Upgrading to Cisco Wi-Fi 6/6E Access Points

Why upgrade to Cisco Catalyst 9100 Access Points?

Today's focus is on access and making sure that the network can offer an experience that's truly unplugged and uninterrupted. Every year more devices are connected, more data is transmitted, and more

cloud-driven apps are being used; the network needs to be fast and secure and never waver. Moving to a Wi-Fi 6 (802.11ax) network is a must because only this standard can support how your network needs to run.

With a Wi-Fi 6E device, your customers are going to get their data faster than ever.

But how does it work? At its base, Wi-Fi 6E is simply an extension of Wi-Fi 6 into the 6-GHz spectrum. Since the spectrum is new and accepts only Wi-Fi 6E devices, it doesn't have any of the old issues that are clogging up current networks. It offers better:

- Capacity.

- Network reliability.

- Security with mandatory WPA3.

The Wi-Fi 6 standard offers:

- Higher capacity: Up to four times more than the previous standard.

- Reduced latency: Deterministic and uplink resource scheduling.

- Power efficiency: Up to one third the power consumption on end devices.

- Greater IoT coverage: IoT devices no longer have to be right next to your access points.

- Improved interference mitigation: Get a better quality of experience.

And upgrading to a Wi-Fi 6E network is a must because it means never having to wait for your data.

The Cisco Catalyst 9100 Access Points are perfect for this foray into Wi-Fi 6/6E. The Catalyst 9100 family has access points that meet the needs of any sized network. They come equipped with up to four client-serving radios and Orthogonal Frequency-Division Multiple Access (OFDMA) and multiuser Multiple-Input Multiple-Output (MU-MIMO) support, and will lead the charge into the next generation of wireless. With AI/ML and advanced analytics baselining the network performance, Cisco wireless products are equipped to provide intelligent root-cause analysis and the ability to delve deeper into the network for greater visibility.

The Cisco Catalyst 9136 Series Access Points come with two 4x4 radios and one 8x8 radio. These access points have many of the same features as the Wi-Fi 6 Catalyst 9100 APs, but also come equipped with built-in environmental sensors, Smart AP, Band Steering and more.

The Cisco Catalyst 9166, 9166D1, 9164 and 9162 combines the power of Catalyst with the simplicity of Meraki giving customers the deployment flexibility of managing their network on-premises or in the cloud. This choice of deployment ensures network investment protection while unlocking the power of flexible hybrid work.

Adding to the list of Cisco wireless Wi-Fi 6E access points is the Cisco Catalyst 9166D1. Designed for use cases and areas with high ceilings such as auditoriums, warehouses, and other large open space areas, the Catalyst 9166D1 should be leveraged where external antennas would typically be required. And because the Catalyst 9166D1 uses a built-in directional antenna, it eliminates the need for additional hardware to achieve ideal wireless coverage.

The Cisco Catalyst 9100 Access Points:

- Scale to growing demands of mobile users, IoT, and cloud applications and deliver end-to-end policy, automation, and analytics across all domains, allowing for seamless and secure connection from anywhere to anyone at any time.

- Will get a boost as Wi-Fi 6/6E allows support for new and emerging applications while providing a higher grade of service to older applications.

- While recognizing that no network is guaranteed to be 100% safe, have policies in place that are one step ahead of attackers by enabling a network that has deep visibility into traffic patterns and the latest intelligence to protect and defend businesses.

- The Catalyst 9136 Series supports the latest in network security and enforces denial of all network access by default—in other words zero-trust security. With WPA3 security now mandatory, the network is even more secure.

- Provide the agility of operational mode choice—on-premises or cloud (Catalyst 9166, 9164 and 9162 only).

The Cisco Catalyst 9100 Access Points can handle the network demands of any sized organization:

- Cisco Catalyst 9105, 9115 and 9162 Series Access Points for small to medium-sized organizations.

- Cisco Catalyst 9120 and 9164 Series Access Points for medium-sized to large organizations.

- Cisco Catalyst 9130 and 9166 Series Access Points for large, mission-critical organizations.

- Cisco Catalyst 9166D1 Series Access Points for large mission-critical organizations that require a directional antenna.

- Cisco Catalyst 9136 Series Access Points for large enterprise organizations.

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Table 1.   Comparison of features and benefits of Aironet and Catalyst access points

Network requirements for the digital organization	Feature	Wi-Fi 3 Cisco Aironet Access Points	Wi-Fi 4 Cisco Aironet Access Points	Wi-Fi 5 Cisco Aironet Access Points	Wi-Fi 6/6E Cisco Catalyst Access Points	Benefits
		1600/2600/ 3600 Series	1700/2700/ 3700 Series	1800/2800/ 3800/4800 Series	9100 family	
Insights and experiences	Maximum data rate	450 Mbps (3600 Series)	1.3 Gbps (2700 and 3700 Series)	5.2 Gbps (2800, 3800, and 4800 Series)	Up to 9.6 Gbps (Wi-Fi 6) Up to 10.2 Gbps (Wi-Fi 6E)	Users will gain a better experience through a better-performing network.
	Built-in environmental sensors	No	No	No	Wi-Fi 6E (9136 and 9166D1 APs only)	Feature added to certain Wi-Fi 6E access points to measure temperature, air quality, and humidity.
	Wi-Fi 6E Band steering	No	No	No	Wi-Fi 6E only	Helps clients that are 6-GHz capable to leave the 5-GHz radio and connect to the 6-GHz one.

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	Smart AP	No	No	No	Wi-Fi 6E only	The access point will change its power consumption to reflect the load it currently has. If there is a small enough number of clients, the access point will automatically reduce the radio stream count, saving power.
	Clean Air	Yes	Yes	Yes	Yes (CleanAir Pro for Wi-Fi 6E, see below)	CleanAir provides spectrum management and RF visibility. As a spectrum intelligence solution it is designed to proactively manage the challenges of a shared wireless spectrum.
	Cisco Clean Air Pro	No	No	No	Wi-Fi 6E only	Zero-wait DFS support on Catalyst Wi-Fi 6E Access Points, updated for the 6GHz spectrum. No more one-minute channel available checks are needed as AI/ML-driven scanning radio Channel Availability Check DFS channels for radar activity. If no radar is found, the channel is added to a list so that the AP can change to that channel and operate on it immediately.

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	Artificial Intelligence/ Machine Learning (AI/ML)	No	No	✔	✔	Unfolding AI/ML over your wireless deployment, Cisco DNA Center provides your 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.
	Cisco Spaces	✔	✔	✔ (Supports Cisco Spaces BLE feature)	✔ (Supports Cisco Spaces BLE feature)	Analyze visitor behavior, make guest Wi-Fi access easier, track assets quickly and accurately, and provide visitors with a better experience. Cisco Spaces expands its location cloud platform beyond Wi-Fi to BLE tags, beacons and other IoT sensors. With gateway-enabled Cisco Wi-Fi 6 access points, it can easily scale advanced use cases while lowering TCO. (Available second half of calendar year 2020.)

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	Cisco Application Visibility and Control (AVC)	No	✔	✔	✔	Visibility into 1000+ applications for capacity planning and prioritization.
	Future-ready technology	3600 Series only	3700 Series only	3800 Series only	✔	Prepare for next-generation technology today.
	OEAP	✔	✔	✔	✔	Any Cisco Aironet or Catalyst access point can function as an OfficeExtend Access Point (OEAP). With an OEAP, an employee at home or in a temporary micro-office will have access to the corporate SSID and the corporate network without the need to set up a VPN or have any advanced technical know-how.
	OFDMA	No	No	No	✔	Allows scheduling which splits the bandwidth into smaller chunks called Resource Units (RU). These RUs can be allocated to individual clients only in the downlink direction to reduce overhead and 50% less latency resulting in faster working apps.

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	Target Wake Time	No	No	No	9130 (9115 and 9120 future)	A power savings mode called this lets users determine pre-scheduled times to exchange data with the AP. This allows for significant energy savings for battery-operated devices, up to 3-4x versus prior 802.11n and 802.11ax.
	Multi gigabit uplink support	No	No	3800 and 4800 only	✔	Supports up to 5Gbps with NBase-T and IEEE 802.3bz Ethernet compatibility to seamlessly offload network traffic without bottlenecks. Existing Cat 5e or Cat 6 cabling to achieve speeds up to 5 Gbps which provides higher throughputs and saves money by conserving existing cabling.
	Intelligent Capture	No	No	✔	✔	Probes the network and provides the Cisco DNA Center with deep data analysis.

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Automation and Assurance	Flexible, software-defined, dual radios, 5 GHz	No	No	2800 and 3800 Series only (4800 has four radios)	9120 and 9130 Series only	Automated support for client surges with dual 5-GHz radios.
	Apple FastLane	No	✔	✔	✔	Enables iOS devices to intelligently communicate and fast-track a connection to the best-suited access point, quickly and efficiently, all while saving battery power.
	FastLane+	No	No	No	✔	In collaboration with Apple, FastLane+ builds on the current FastLane QoS capability by adding advanced scheduling intelligence to optimize the application experience.
	Cisco DNA Center	No	✔	✔	✔	Simplifies network management by reducing risk and allowing for automating device deployment. Not only that but it lowers costs too.
	Samsung and Intel Analytics	No	✔	✔	✔	Allows Samsung and Intel clients to send alerts and error codes to Cisco DNA Center for increased insight into the health and user experience of clients on the network.

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Security and compliance	Cisco Identity Services Engine (ISE)	✔	✔	✔	✔	A next-generation identity and access control policy platform that enforces compliance, enhances infrastructure security, and streamlines service operations.
	NetFlow	No	✔	✔	✔	Provides a key set of services for IP applications, including network traffic accounting, usage-based network billing, network planning security, denial-of-service monitoring capabilities, and network monitoring.
	Cisco Secure Network Analytics (formerly Stealthwatch)	No	✔	✔	✔	Enables advanced network visibility, analytics, and protection by showing everything that happens across your network and data center.

Learn more at **https://www.cisco.com/go/wireless**.

See more on controllers.

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The following table will assist you in finding models for the transition to next-generation wireless with end-to-end intent-based networking.

Table 2.   Upgrade path to Wi-Fi 6/6E

Aironet 11ac Wave 2	Catalyst 9100 Wi-Fi 6 series	Applications
AIR1815	C9105 and CW9162	Small and medium-sized deployment
AIR 1830/1840/1850	C9115 and CW9164	Small and medium-sized deployment
AIR2800	C9120, CW9166, and CW9166D1	Medium-sized to large deployment
AIR3800	C9130 and C9136	Large deployment, mission-critical
AIR4800	C9136	Large deployment, enterprise
AIR1560	C9124	Outdoor deployment