Wi-Fi 6E

Contents

You see Wi-Fi 6E and your eyes glaze over. "Not another new standard," you say to yourself. But look again. It's not a new standard. So what is it?

The key thing to know is that Wi-Fi 6E is not an entirely new standard, but an extension. But it's still incredibly important. When it comes to your Wi-Fi network, Wi-Fi 6E is a quantum leap in terms of capacity, reliability, and security, not to mention sustainability.

Fine, you say. What is this new important extension then? At its base, Wi-Fi 6E is simply an expansion of Wi-Fi 6 into the 6-GHz spectrum.

You obviously have more questions: What is Wi-Fi 6E? What do I need to do to ready my network? Where is a good place for this technology to be deployed?

No one likes waiting in lines. In contrast, getting ahead of the line is the best. Whether it's with a FastPass at an amusement park, VIP access at a concert or sporting event, or jumping on the express train instead of the local, bypassing the line makes your life easier and more fun.

Wi-Fi 6E means never having to wait for your data. It solves the everyday problem of waiting in line. It's the FastPass, the VIP access, the express train to data.

Since the 6-GHz 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:** The addition of more spectrum allows the network admin to double the channel bandwidth, which provides the additional bandwidth needed in the open space of a new spectrum. This gives you the ability to support a dense environment while keeping device performance at a high level. The additional spectrum—1200 MHz worth or 59 new channels, the largest Wi-Fi spectrum expansion ever— offers unprecedently increased nonoverlapping channels. Wi-Fi 6E can perform exceptionally great especially in high density environments.

  Higher throughput means more channels in the 80-MHz and 160-MHz spectrums and allows users to send and receive data at the highest possible speeds at rates that break 1 Gbps speed barrier on mobile devices. The new 6-GHz band employs fourteen 80-MHz and seven 160-MHz channels. In comparison, today's 5-GHz band uses only six 80-MHz and two 160-MHz channels. That's an increase of more than 100% in 80-MHz and 300% in 160-MHz channels.

- **Reliability:** Wi-Fi 6E provides a new standard of reliability and predictability of connection that shortens the gap between wireless and wired connections. This reliability comes with less interference and more efficiency due to Wi-Fi 6E devices not having to share the 6-GHz spectrum with any devices that are not Wi-Fi 6E capable. Devices from Wi-Fi 1 (802.11b) through Wi-Fi 6 (802.11ax) are not supported on 6 GHz.

- **Security:** Wi-Fi Protected Access 3 (WPA3) is a mandatory requirement for the Wi-Fi 6E network and secures the network better than ever. And since only Wi-Fi 6 products are going to be using this network, there are no legacy security issues to deal with. WPA3 provides new authentication and encryption algorithms for networks and furnishes fixes for issues that were missed by WPA2. It also implements an additional layer of protection from deauthentication and disassociation attacks.

Use cases

To put it simply, all industries will appreciate the benefits of a Wi-Fi 6E network; this is not a niche solution. Any organization considering IoT devices and sensors should take advantage of the new, interference-free spectrum found on Wi-Fi 6E.

Noncarpeted spaces such as manufacturing and warehouses will be able to solve their most pressing challenge of maintaining service-level expectations. For carpeted businesses that are offering a hybrid workplace solution, the increased connectivity will help meet the ever-increasing demands placed on the network. The same can be said for clients that need a super-secure network.

- In **healthcare**, a Wi-Fi 6E network means that more life-saving devices can connect to the network without fear of lagging or slowdown. Also large data packets—such as x-rays or MRIs—can swiftly move through the network.
- In **retail** environments, point-of-sale connections will run faster, removing the frustration of paying customers languishing in long lines.
- Wi-Fi 6E can change the **classroom** via immersive experiences and virtual learning because the large contiguous blocks of spectrum allow for high throughput and concurrent data transmission.
- In the **manufacturing** world, Wi-Fi 6E machines can be deployed on the Wi-Fi 6E spectrum, away from the interference of the day-to-day traffic happening on the 2.4-GHz and 5-GHz spectrums.
- **Hospitality** businesses can advertise a Wi-Fi 6E network to the customers staying in their rooms.
- **Government** needs added security. Thanks to inclusion of the WPA3 standard on Wi-Fi 6E devices, that extra security is now mandatory.

How does this affect my network?

Making sure that the network is ready for Wi-Fi 6E means a bit more than just replacing old access points with Wi-Fi 6E supported APs. You need to make sure that the network has switches that support a gigabit or more. Luckily, Cisco currently has Catalyst switches to meet your needs.

Without these mGig data rate-supported switches, network admins are going to see a bottleneck further upstream, and some of the Wi-Fi 6E features and functions that have been promised—low latency and faster speeds—won't be realized.

Not only does the switching infrastructure need to be updated, but the new Wi-Fi 6E access points are supported on only the Catalyst 9800 controllers.

How does Cisco answer the Wi-Fi 6E call?

[Cisco Catalyst™ 9136](#) The Cisco Catalyst 9136 Series Access Points take advantage of the 6-GHz band expansion to produce a network that is more reliable and secure, with higher throughput and capacity and less device interference.

The Catalyst 9136 is our mission-critical, enterprise-level access point and comes with two 4x4 radios and one 8x8 radio as well as built-in environmental sensors that measure temperature, air quality, and humidity. Plus Smart AP that will automatically change access point power consumption reflecting the device load the network currently has. Fewer clients means a reduction in stream count, saving energy and money. Band Steering allows the Wi-Fi 6E-enabled device to find the 6-GHz spectrum, allowing it to take advantage of the bevy of benefits offered by that radio. As well as a host of other features.

Like the Catalyst 9136 Series, the Cisco Catalyst 9166, 9164, and 9162 Series Access Points allow for broadcast over the 6-GHz band expansion. The difference between the Catalyst 9136 and the 9166, 9164, and 9162 is choice. With the 9166, 9164, and 9162 APs, you choose your deployment, on-premises or cloud—the hardware is the same. These three access points round out the Wi-Fi 6E family by bringing the 6-GHz spectrum to networks of all sizes. Like the Catalyst 9136 Series, they offer a multitude of features while providing a reliable and secure network with higher throughput and capacity and less device interference.

[Cisco Catalyst 9166](#) Series is the next-generation Catalyst 9120, for mission-critical large and medium-sized organizations. Like the Catalyst 9136, the Catalyst 9166 has an environmental sensor. The AP has a dedicated radio for Cisco CleanAir® Pro, can be run with Cisco DNA Center or the Meraki® dashboard, and provides stellar performance and flexibility.

[Cisco Catalyst 9164](#) Series is the next-generation Catalyst 9115, for medium-sized and small organizations. The AP has a dedicated radio for Cisco CleanAir Pro and can be run with Cisco DNA Center or the Meraki dashboard.

[Cisco Catalyst 9162](#) Series is the next-generation Catalyst 9105, for small organizations. The AP has a dedicated radio for Cisco CleanAir Pro and can be run with Cisco DNA Center or the Meraki dashboard. It is the entry-level Cisco solution for Wi-Fi 6E access points.

Learn more

For more information on Cisco Wi-Fi 6E, visit our [Wireless and Mobility page](#).

Printed in USA

C45-745040-01   06/22