



What is WiFi 6?



WHAT IS WIFI 6?

Until recently, WiFi generations were referred to by an arcane naming scheme that required you to understand whether 802.11n was faster than 802.11ac, and whether 802.11ac was faster than 802.11af, and whether any of those names were just made up nonsense.

To fix that, the Wi-Fi Alliance decided to rename WiFi generations with simple version numbers. So the current generation of WiFi, 802.11ac, turned into WiFi 5. This new generation, previously called 802.11ax, is now WiFi 6. WiFi 6 features improvements in throughput, multiple-device support, and WiFi spectrum efficiency.

HOW FAST IS WIFI 6?

Theoretically, WiFi 6 can produce speeds up to 9.6 Gbps, compared to WiFi 5 that topped out at 3.5 Gbps. Reaching these speeds in a real-world environment is unlikely. And if you are able to reach these speeds, keep in mind, the bandwidth provided is split up across all of the devices (computers, smartphones, tablets, wearables, IoT devices, etc...) utilizing the WiFi network. Real-world tests should expect to see an increase of up to 40% data rate (assuming upgrade from WiFi 5 to WiFi 6). The increased speed provided by WiFi 6 means more potential speed for each device. This is important as experts predict a 50% increase in networked devices per person over the next several years that will result in an average of 3.6 connected devices per person.

MORE THAN FASTER SPEEDS

In addition to increased speeds, some of the benefits of WiFi 6 include:

- Range Improvements with the introduction of OFDMA
- Efficiency and Capacity Improvements as a result of 8-stream MU-MIMO, BSS Color, and OFDMA
- Better Battery Life with the use of Target Wake Time

KEY TERMS

Orthogonal Frequency-Division Multiple Access (OFDMA)

Enables your router and devices to use your bandwidth more efficiently by reducing the time between data transmissions. As a result, more bandwidth is available for other devices. This invention allows up to 30 clients to share a channel at the same time, improving efficiency by boosting overall capacity while reducing latency.

High-bandwidth traffic efficiency with 8-stream Multi-User-Multiple-Input Multiple Output (MU-MIMO)

This technology enables your router to communicate with many devices simultaneously. It reduces latency and improves performance during data-intensive activities such as streaming video and teleconferencing. Because the access point never interrupts its connection to the client to communicate with other clients, MU-MIMO minimizes jittery video, freezes and buffering. It also helps to reduce network congestion and improve download speeds.

Access Points with an 8x8 configuration will be fully supported with most WiFi 6 chipsets. This offers increased upstream and downstream throughput and significantly improved reliability due to the additional transmit and receive antennas.

1024 QAM

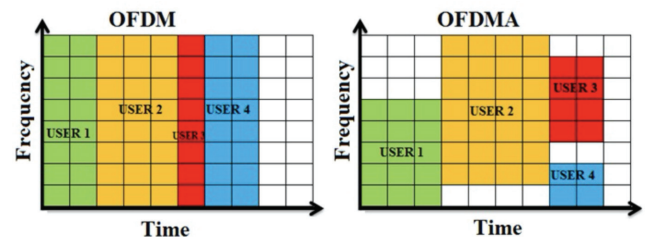
A new modulation scheme that increases data rates by 25% compared to the 256 QAM technology of WiFi 5.

BSS Color

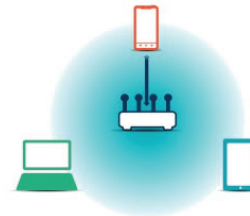
This feature helps WiFi 6 enabled products operate efficiently in dense environments by reducing medium contention by adding a simple color bit to help differentiate between overlapping radios. This allows WiFi access points to ignore frames being sent that are associated with a different color, or radio.

Target Wake Time

A new feature that allows an Access Points and stations to "wake up" at negotiated times. The stations and AP reach a TWT agreement that defines when a station is awake to receive and send data. This will help to improve network performance and battery life for your devices connected to the network.



Single-User MIMO
Serves one device at a time



Multi-User MIMO
Multi-user beamforming (MUBF) serves multiple devices simultaneously

