

# Wi-Fi 6E expands Wi-Fi® into 6 GHz



## Spectrum allocation extends Wi-Fi® capability

The United States Federal Communications Commission (FCC) has announced the availability of the 6 GHz frequency band for unlicensed spectrum use. The announcement heralds a milestone in the Wi-Fi era. Unlicensed spectrum, where Wi-Fi operates, is one of society's most valuable resources. Wi-Fi industry innovation, promotion, and good stewardship of unlicensed spectrum has delivered significant benefits to users, and driven immense [economic value worldwide](#) – generating more than \$2 trillion USD to the current global economy. Availability of 6 GHz will unlock more value from Wi-Fi and bring even greater economic contributions.

Wi-Fi is foundational to consumer and enterprise networks, as well as the Internet of Things (IoT). It is recognized as an essential part of delivering the promise of 5G cellular service, an important tool that brings connectivity to underserved areas, and a strong contributor to global economies.

While demands on Wi-Fi networks have grown steadily for the past 20 years, the amount of [available unlicensed spectrum](#) has remained static—until now. The addition of the 6 GHz band to the unlicensed spectrum available for Wi-Fi use creates new opportunities for tremendous innovation and the continued success and economic growth enabled by Wi-Fi.



## Introducing Wi-Fi 6E

Wi-Fi 6E is the industry name for users to identify Wi-Fi devices that will operate in 6 GHz. Wi-Fi 6E offers the features and capabilities of Wi-Fi 6—including higher performance, lower latency, and faster data rates—extended into the 6 GHz band. Rapid development of products has already begun, with Wi-Fi 6E devices expected to become available quickly following 6 GHz regulatory approvals. This additional spectrum capacity enables more Wi-Fi innovation and delivers valuable contributions to consumers, businesses, and economies.<sup>1</sup>

### Wi-Fi 6E capabilities

Due to its similar characteristics and proximity to the 5 GHz band, where Wi-Fi already operates, 6 GHz brings additional spectrum capacity, provides contiguous spectrum blocks to accommodate 14 additional 80 MHz channels or 7 additional 160 MHz wide channels, and spectrum less congested from legacy Wi-Fi 4 or Wi-Fi 5 devices. Wi-Fi 6E utilizes the capabilities of 6 GHz to enable high-bandwidth applications that require faster data throughput such as high-definition video streaming and virtual reality, as well as lower latency connectivity for online gaming applications. With such high speeds and low latency, Extreme Networks CTO, Eric Broockman, predicts that Wi-Fi 6E will “have a significant impact on both enterprises and consumers.”<sup>2</sup>

## Wi-Fi CERTIFIED 6™ introduces Wi-Fi 6E for optimal performance

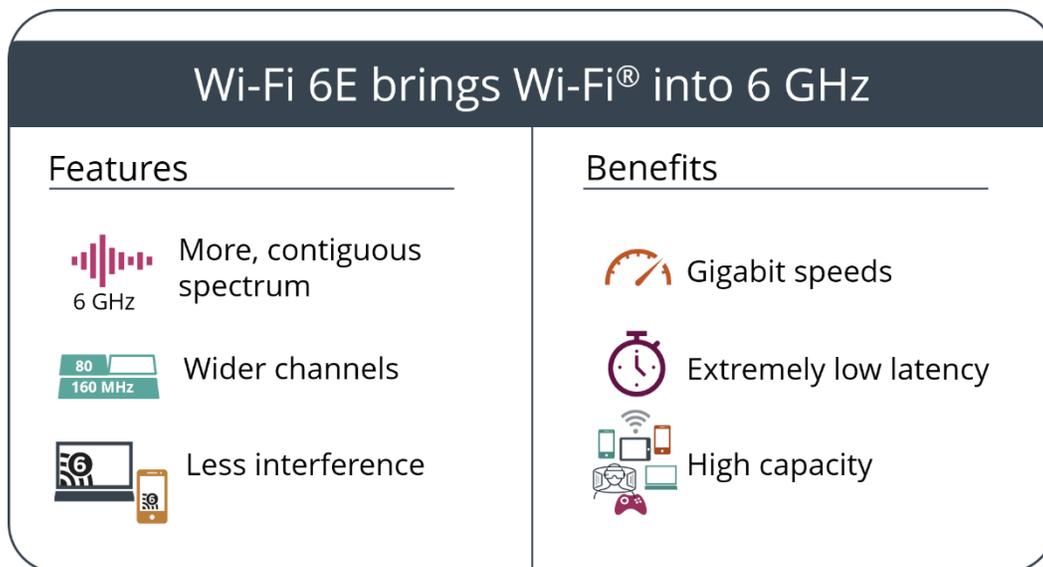
The [Wi-Fi CERTIFIED 6™](#) certification program from Wi-Fi Alliance® will be extended into 6 GHz to include certification for Wi-Fi 6E devices. Devices certified for Wi-Fi 6E provide the advanced features of Wi-Fi CERTIFIED 6 and [Wi-Fi CERTIFIED WPA3™](#) security to offer substantially greater overall Wi-Fi network performance in challenging environments with many connected devices such as stadiums, airports, and industrial parks. As 6 GHz

<sup>1</sup>A study by WifiForward estimates Wi-Fi use in the 6 GHz band could add more than \$154 billion USD to the U.S. economy by 2025

<sup>2</sup>RCR Wireless News, 2020

becomes available outside the U.S., Wi-Fi Alliance certification will enable worldwide interoperability of Wi-Fi 6E devices. The Wi-Fi industry has worked hard to ensure certification is delivered in early 2021 as Wi-Fi 6E devices come available. Wi-Fi 6E delivers these advanced capabilities of Wi-Fi CERTIFIED 6:

- **Multi-user multiple input multiple output (MU-MIMO):** allows more downlink data to be transferred at once and enables an access point to transmit data to a larger number of devices concurrently
- **160 MHz channels:** increases bandwidth to deliver greater performance with low latency
- **Target wake time (TWT):** significantly improves battery life in Wi-Fi devices, such as Internet of Things (IoT) devices
- **1024 quadrature amplitude modulation mode (1024-QAM):** increases throughput in Wi-Fi devices by encoding more data in the same amount of spectrum
- **Transmit beamforming:** enables higher data rates at a given range resulting in greater network capacity
- **Orthogonal frequency division multiple access (OFDMA):** effectively shares channels to increase network efficiency and lower latency for both uplink and downlink traffic in high demand environments



## Wi-Fi CERTIFIED: Technology to trust

Since 2000, Wi-Fi Alliance has been driving the adoption and evolution of Wi-Fi through the Wi-Fi CERTIFIED program. The Wi-Fi CERTIFIED logo designates products with proven interoperability, backward compatibility, and the highest industry-standard security protections in place. Wi-Fi CERTIFIED devices can communicate with previous and future generations of Wi-Fi technologies, enabling a seamless, interoperable experience with a multitude of other Wi-Fi devices for years to come.



Learn more: [www.wi-fi.org/discover-wi-fi/wi-fi-certified-6](http://www.wi-fi.org/discover-wi-fi/wi-fi-certified-6)