The evolution of a wireless revolution

Wi-Fi 4

IEEE 802.11n

Bands:

2.4 GHz, 5 GHz

Channel Bandwidths

20, 40 MHz

64 QAM

KEY ADVANCES:

- WPA2 Security
- 4x4 MIMO
- LDPC Error Correction

~300 Mbps

2007

Wi-Fi 5

IEEE 802.11ac

Bands:

5 GHz

Channel Bandwidths

20, 40, 80, 160 MHz

256 QAM

KEY ADVANCES:

- Up to 8x8 MIMO
- DL MU-MIMO
- Beamforming

~1.7 Gbps

2013

Wi-Fi 6 / 6E

IEEE 802.11ax

Bands:

2.4 GHz, 5 GHz

Channel Bandwidths

20, 40, 80, 160 MHz

1024 QAM

KEY ADVANCES:

- Best-in-class WPA3 security
- UL and DL MU-MIMO, OFDMA
- Target wait time (TWT)

~2.4 Gbps

2019 **Wi-Fi 6E, 6 GHz BAND ADDED (JAN 2021)**

Wi-Fi 7

IEEE 802.11be

Bands:

2.4 GHz, 5 GHz, 6 GHz

Channel Bandwidths

20, 40, 80, 160, 320 MHz

4096 QAM

KEY ADVANCES:

- Multi-link operation (MLO)
- Multi-RU and puncturing
- Managed QoS & Restricted Service Periods

~5.8 Gbps**

2024

Max. PC data rates

1 Includes PHY and multi-link data rate improvements
* Theoretical maximum data rates based on the latest draft of the IEEE 802.11be standard.
** ">5 Gbps Wi-Fi 7 2x2 client speed" - is based on the current draft of the 802.11be specification which specifies the theoretical maximum data rate for a 2x2 device that supports 320 MHz channels, 4096 QAM, and Multi-Link Operation is 5.76 Gbps. Based on an industry-standard assumption of 90% efficiency for new Wi-Fi products operating in the exclusive 6 GHz band, the resulting estimated maximum over the air 2x2 client speed would be 5.19 Gbps.