

WIFI SPEED

What is the actual speed of your WiFi network? It may not be what you think

The speed of a Wi-Fi wireless network connection depends on several factors. Like most types of computer networks, Wi-Fi supports varying levels of performance, depending on the technology standard.

Wi-Fi standards are certified by the Institute of Electrical and Electronics Engineers (IEEE). Each Wi-Fi standard is rated according to its maximum theoretical network bandwidth. However, the performance of Wi-Fi networks doesn't match these theoretical maximums.

THEORETICAL VS ACTUAL NETWORK SPEEDS

An 802.11b network typically operates no faster than about 50 percent of its theoretical peak, and usually less, around 2-3 Mbps. 802.11a and 802.11g networks usually run no faster than 20 Mbps. Even though 802.11n rates at 600 Mbps compared to wired Fast Ethernet at 100 Mbps, the Ethernet connection can often outperform 802.11n in real-world usage.

Here is a Wi-Fi speed chart that compares the actual and theoretical speeds of most current Wi-Fi networks:

	Theoretical	Actual
802.11b	11 Mbps	2-3 Mbps
802.11a	54 Mbps	20 Mbps
802.11g	54 Mbps	20 Mbps
802.11n	600 Mbps	40-50 Mbps
802.11ac	866+ Mbps	70-100+ Mbps

The 802.11ac standard (Gigabit Wi-Fi) has the following characteristics:

- Maximum theoretical speed of 1.3 Gbps
- Operates in the 5-GHz band
- Connects up to four devices simultaneously using Multi-User, Multi-Input, Multi-Output (MU-MIMO) technology



FACTORS LIMITING WIFI CONNECTION SPEEDS

The disparity between theoretical and practical Wi-Fi performance comes from network protocol overhead, radio interference, physical obstructions on the line of sight between devices, and the distance between devices.

In addition, as more devices communicate on the network simultaneously, its performance decreases due not only to how bandwidth works but also the limitations of the network hardware.

A Wi-Fi network connection operates at the highest possible speed that both devices, often referred to as endpoints, can support. An 802.11g laptop connected to an 802.11n router, for example, networks at the lower speed of the 802.11g laptop. Both devices must support the same standard in order to operate at the higher speed.

WHAT'S NEXT?

The next wireless communications standard will be 802.11ax. It isn't expected to be officially certified by the IEEE until 2019 / 2020. It will be much faster than the 802.11ac standard, and it will be able to function even when the signal encounters heavy interference. Additionally, 802.11ax routers will be MU-MIMO enabled; they will be able to send data to multiple devices (potentially up to 12) at the same time. Most older routers send data to only one device at a time while switching back and forth between devices so quickly the switch isn't noticed.

WANT TO KNOW MORE?

For more information contact us by calling 0207 078 3200 and ask to speak to one of our network engineers about WiFi speeds.

