

Cellular and Wi-Fi Networks

Smart phones and portable devices use cellular networks for both phone calls and Internet access. Wi-Fi networks use radio signals to provide Internet access wirelessly to nearby devices through a wireless router. This can lead to some confusion over the naming standards used for these two different types of Internet access.

Cellular Network History

Cellular networks have gone through many revisions and are now changing to a 5th Generation network standard. The history is:

Name	Year	Uses	Speed
1G - 1st Generation	1983	cellular phone service	2.4 kbps
2G - 2nd Generation	1991	phone and text messaging	0.2 Mbps
3G - 3rd Generation	2001	phone, messaging, streaming	2 Mbps
4G - 4th Generation	2009	phone, messaging, streaming	12.5 Mbps
5G - 5th Generation	2019	phone, messaging, streaming	20 Gbps*

* The 20 Gbps is for a 5G base station which is shared between all the devices attached to it but you should expect at around 500 Mbps or better on a new smartphone. You should expect at least 50 Mbps everywhere it is supported. Another advantage of 5G is much lower latency which measures how fast your device can start transmitting data. This should be around 5 times faster than 4G networks.

Wi-Fi Network History

Wi-Fi networks use radio signals to provide broadband speeds to portable devices. The history of Wi-Fi is:

Name	Year	Frequency	Speed
802.11	1997	2.4 Ghz	1-2 Mbps
802.11b	1999	5 Ghz	1-11 Mbps
802.11a	1999	2.4 Ghz	6-54 Mbps
802.11g	2003	2.4 Ghz	6-54 Mbps
WI-Fi 4 (802.11n)	2008	2.4/5 Ghz	72-600 Mbps
WI-Fi 5 (802.11ac)	2014	5 Ghz	433-6933 Mbps
WI-Fi 6 (802.11ax)	2019	2.4/5 Ghz	600-9608 Mbps
WI-Fi 6E (802.11ax)	2019	6 Ghz	600-9608 Mbps

The Wi-Fi protocol you are using depends on both your Wi-Fi router and your devices. Newer routers can support the older protocols so if your router is newer than your computer, phone or tablet, the speed will probably be based on the protocol supported by your computer, phone or tablet device. If your router is older, it may not support the newer and faster protocols.

Bluetooth Networking

Another type of networking is Bluetooth which is used for connecting devices to computers, tablets and smartphones. It is not normally used to connect to the Internet but instead replaces the cables that we used to use to plug keyboards, mice and other devices into our computers.

There are also a number of devices like wireless earphones and earbuds that only work through Bluetooth connections.

This the the history of Bluetooth versions:

Name	Year	Speed	Range
Bluetooth 1.0	1999	0.7 Mbps	33 feet
Bluetooth 2.0 + EDR	2004	1 Mbps (3 Mbps with EDR)	100 feet
Bluetooth 3.0 + HS	2009	3 Mbps (24 Mbps with HS)	100 feet
Bluetooth 4.0 + LE	2013	3 Mbps (1 Mbps low energy)	200 feet
Bluetooth 5.0	2017	3 Mbps (2 Mbps low energy)	800 feet

The newer versions have a low energy option and longer range.

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