

EDGE, 3G, H+, 4G, 5G: What Are All These Mobile Networks?

Are you on the fastest mobile network? These mobile network symbols can be confusing. Here's everything you need to know about them.

The speed of your mobile internet can vary considerably. Some countries have more advanced telecom networks than others; remote areas will not necessarily have the same quality of coverage as big cities. Even being indoors can have a significant effect.

Your smartphone lets you know the strength of your mobile internet coverage by using an alphanumeric code near the signal bar. If you've ever noticed something like E, 3G, or H on the notification bar, you'll know what we are talking about.

But what do all those codes mean? Keep reading to find out; we're going to work through them from slowest to fastest.

2G

2G was first launched way back in 1991 and was the technology that ultimately allowed data services such as SMS and MMS to become prolific on mobile phones later in the decade.

It also signified the first time that radio signals became digital rather than analog (1G), thus providing greater spectrum efficiency and helping mobile phones with market penetration.

It only has a maximum speed of 50 kilobits per second, and in large parts of Europe and North America, the 2G networks are now being

turned off. Despite that, it is still the network of choice in vast swathes of the developing world.

G

G is short for General Packet Radio Service (or GPRS). It became widely used in 2000 and earned the unofficial nickname of 2.5G. It is considered to be the first major stepping stone on the way to developing the now ubiquitous 3G networks.

It was the first "always-on" mobile internet network, but it can only transfer data up to a maximum speed of 114 kilobits per second, which makes it the slowest connection that you're likely to come across these days.

That speed means that although the network can support instant messaging services such as WhatsApp, other apps and webpages that are more complex will either timeout, malfunction, or in the best of cases, load extremely slowly.

EDGE

The letter E represents the Enhanced Data rates for GSM Evolution (or EDGE) network. The network started to spread in popularity sometime in 2003 by offering speeds that were almost three times faster than any of its predecessors.

It supports a maximum speed of 217 kilobits per second, so even though it's significantly faster than G network speeds, you'll still struggle to browse a modern website or watch YouTube videos in anything but the lowest resolutions.

That said, there are now 604 EDGE networks in 213 countries, making it one of the most widely-used mobile internet technologies

in the world. It was the final widely-used network before 3G came into prominence, so it's often referred to as 2.75G.

3G

3G technology is actually a lot older than many people realize. The first commercial network was launched in Japan in October 2001, Norway followed suit in December 2001, and most of Europe and South East Asia was online by early 2002. The first 3G network in the United States was Verizon Wireless and went live in July 2002.

The 3G network is based on Universal Mobile Telecommunication Service (UMTS) standards rather than any of its three predecessors mentioned above (GSM, GPRS, and EDGE).

It was the first network that was fast enough to support mobile internet browsing as we know it today, and thanks to its maximum speed of 384 kilobits per second, it's more than adequate for streaming music and even some videos.

It is probably the most well-known of all the mobile internet networks thanks to its widespread usage and the development of the smartphone. Today you'll find 3G technology in everything from wireless voice telephones to mobile television.

H

An H symbol means that you have High-Speed Packet Access (HSPA) connectivity. The HSPA standard is based on the same technology as 3G but replaces 3G's UMTS standard, resulting in a maximum speed of 7.2 Megabits per second.

It can comfortably handle YouTube videos, Spotify streaming, web browsing, and other app usage. It is not good enough, however, to support movie downloads or large torrent files---they would still

take a very long time. Worldwide adoption began in 2010, and it's now available in most developed countries.

H+

H+ refers to Evolved High-Speed Packet Access (HSPA+). There are five releases of this technology, each of which provides significantly greater download speeds than the previous version.

Release 6 brought a maximum speed of 14.4 Megabits per second, Release 7 upped that to 21.1 Megabits per second, Release 8 increased it further to 42.2 Megabits per second, Release 9 took it to 84.4 Megabits per second, before it topped out with Release 10 at a maximum speed of 168.8 Megabits per second.

As you can see, the technology evolved very quickly here, but it's important to remember that one will rarely see these speeds during normal usage. This is the fastest form of connectivity that most people can get right now since global 4G networks are still limited in availability.

4G

Do you see 4G in your notification bar? If so, give yourself a pat on the back, you are one of the lucky few who has access to the latest and greatest mobile network!

The first public 4G networks in the world came online in Stockholm and Oslo in 2009, and other countries slowly joined them in the following years. In the UK, the nationwide rollout occurred in 2014, while in the US, many of the largest cities now have the network.

Most of these networks use the Long Term Evolution (LTE) standard, though some—including Sprint in the US—are using the

less-common Worldwide Interoperability for Microwave Access (WiMAX) standard. In Europe and North America, most carriers dropped WiMAX by the end of 2017.

For the end-user, the differences between the two are negligible. The biggest shortcoming of WiMAX is that not enough carriers adopted it to make it viable, thus making LTE the de facto standard. Why did carriers choose against WiMAX adoption?

- WiMAX networks don't support legacy systems like 2G and 3G, while LTE is compatible and enables co-existence and easier roaming.
- LTE has a higher maximum speed.
- LTE draws less battery power on a handset.

Speeds on 4G can go high as 1GB per second.

5G

5G started its worldwide rollout in 2019 and is expected to serve more than 1.7 billion people by the end of 2025.

The biggest advantage of 5G over 4G is the increased bandwidth. With a potential maximum speed of 10Gbps, it is 100 times faster than 4G's upper limit.

Although we are only seeing 5G on phones at the moment, it is thought that 5G technology could kickstart a revolution in how we get the internet in our homes. Traditional ISPs will come under serious threat as companies become able to offer internet to households without needing to lay down cables.

The downside of 5G is the signal range. Because 5G uses high-frequency radio waves, the geographic cells that phones rely on will be smaller, thus requiring more towers and increasing rollout

costs. In total, three frequency bands will be available: Low-band (600-700MHz), mid-band (2.5-3.7GHz), and high-band 25-39GHz). Most metro areas in the US will use mid-band.

When Will 6G Be Available?!

6G is the planned successor to 5G. It will offer speeds of up to 96Gbps, that's almost ten times faster than 5G.

But don't get too excited. Even though early trials are underway in China, South Korea, and Japan, the technology is not expected to become commercially available until the 2030s.

<https://www.makeuseof.com/tag/edge-3g-h-etc-mobile-networks/>