5G and its difference with other generations

December 30, 2020

In news

The country's tryst with 5G is expected to commence in the second half of 2021 with a network rollout by Reliance Jio.

What is 5G?

- 5G refers to the 5th generation mobile network. When rolled out, it will represent a quantum leap over the current 4G mobile networks.
- If successfully implemented, it can deliver 10 times faster internet and more than 10 times improvement in latency (the time difference between sending and receiving messages) over 4G
- 5G is expected to reduce latency to 1 millisecond (one thousandth of a second).
- 5G also comes with substantially more capacity and hence will enable more connected devices without issues of network congestion.

Major Difference between 5G and 4G

With respect to speed:

- 4G can currently reach top speeds of up to 100 Mbps, though real-world performance is generally no more than 35 Mbps.
- 5G has the potential to be 100 times faster than 4G, with a top theoretical speed around 20 Gbps and current, real-world speeds from 50 Mbps to 3 Gbps.

With respect to latency:

- Latency is a measure of the time it takes a packet of

information to travel between two points

- Latency in 4G networks is currently about 50 milliseconds, while 5G networks are expected to shrink that to an impressive 1 ms.

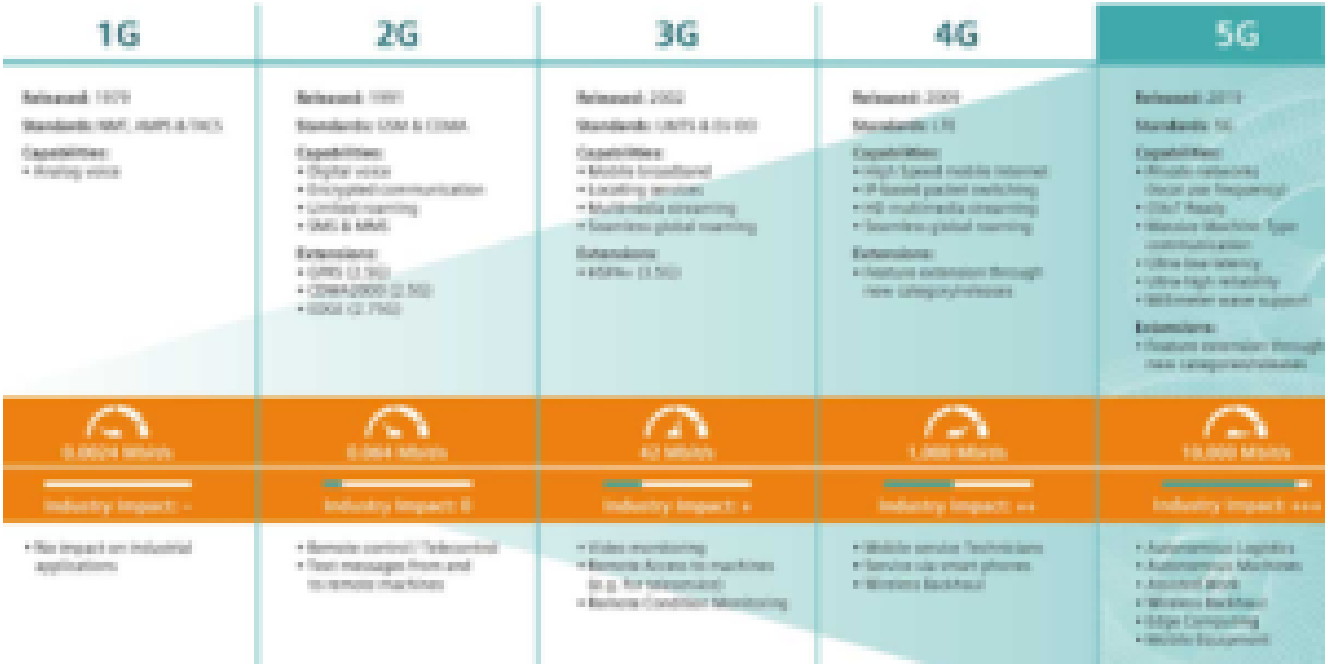
With respect to coverage:

5G will take several years to reach a level of coverage similar to 4G, and it will have different implementations (high-, medium-, and low-band 5G), each with its own speed and bandwidth.

With respect to bandwidth:

5G is expected to have significantly more bandwidth, or capacity, than 4G as well. In part, this is because 5G will make much more efficient use of available spectrum. 4G uses a narrow slice of the available spectrum from 600 MHz to 2.5 GHz, but 5G is divided into three different bands. Each band has its own frequency range and speed, and will have different applications and use cases for consumers, businesses, and industries

Difference between 5G and other generations



Importance of 5G

It has the potential to unleash a whole range of services and capabilities that are not possible today in terms of scale and precision mass deployment of autonomous cars, using drones for delivery, remote healthcare (even for critical cases and robotic surgery), precision agriculture (real-time management of crops and fields), virtual reality and industrial automation.