

As companies roll out 5G, it will not immediately be available everywhere. Big cities will see it first, if they haven't already, and rural areas may have to wait several years for full coverage. New technologies also will likely experience hiccups, which could further limit the coverage.

Unfortunately, trees and tall buildings obstruct the high-frequency radio waves that carry 5G connection, thus decreasing the network's broadcast distance. Ultimately, this means more cellular towers will be necessary to achieve the extensive coverage we expect with 5G networks. It's possible to place small transmitters on buildings to increase coverage, though this could take a while to implement.

As with any emerging technology, 5G networks will face new cybersecurity risks. The software used to manage the network might be more vulnerable to hackers. Additionally, with more devices connected, there are more opportunities for cybercriminals to attack.

It will likely take several years to achieve effective 5G coverage across all urban and rural areas. While the possibility of putting smaller transmitters on buildings and other city spaces could provide coverage for cities sooner, the relative lack of tall buildings in rural areas means it will take significantly longer for their residents to receive coverage. To compensate, companies must construct new cell towers to reach all rural areas of the world.

The most notable distinction between these two generations of cellular networks has to do with speed and capacity. While 4G was innovative when it launched in 2010, technology continues to advance and requires more efficiency, giving 5G advantages over 4G. 5G networks' speed and bandwidth capabilities set it apart from 4G. For example, while 4G connections have a standard latency of around 20 to 30 milliseconds, 5G networks can reach below 10 milliseconds of latency.

5G has the potential to be 100 times faster than 4G, with a top theoretical speed of around 20 Gbps and current, real-world speeds from 50 Mbps to 3 Gbps. The so-called low-band 5G is somewhat faster than 4G with a performance of around 50-250 Mbps. The fastest version of 5G, called high-band 5G, is the version that reaches 3 Gbps.

Additionally, there is a difference between 4G and [5G network architecture](#). 4G networks rely on large cell towers to provide coverage for users. 5G networks aim to use smaller, widely dispersed cell transmitters to provide a reliable connection to more users. While 5G will try to make up for the areas where 4G was lacking, it will likely take some time to work out all the kinks.

5G is already beginning to impact technology in some industries and applications like smart homes. As the 5G network evolves, it will play a critical role in the Fourth Industrial Revolution. Though these possibilities are still at least [four or five years away](#), 5G will allow for effective

augmented and virtual reality in the medical industry, smart factories and eventually smart cities and agriculture.

5G technology could help production operations in the manufacturing industry become more flexible and efficient while enhancing safety. This would enable manufacturers to build “smart factories” that rely on automation, augmented reality, and IoT. With 5G powering large amounts of IoT devices and sensors around the factory, artificial intelligence can be integrated more deeply with operations.

Overall, 5G's impact on society could provide value to citizens' well-being, enhanced infrastructure, innovation and sustainable manufacturing. While it could take several years to fully implement, and will almost surely have some downfalls, 5G will continue to impact [future technology and technological innovation](#) for years to come.

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