

The Development and Superiority of the Fifth Generation LTE Network

Posted on March 24, 2018

Abstract:

Technology has made lives beautiful, and thus, mobile technology plays a vital role. Mobile technology provides so many advanced features to the public; thus, people enjoy different mobile company services. Along with other features, internet facilities have made lives easier and more enjoyable. Different internet services have been introduced out of which 3G and 4G are the most common internet networks. Mobile phones support 4G networks for data downloading and data transmission. It provides many facilities to users, such as messaging, video calling, and other activities via the Internet. However, now there is the requirement for high-speed data transmission, for which mobile companies are trying to provide mobiles with 5G LTE networks, which will not only provide a better experience to [users but also allow faster data](#) downloading and faster data transmission. This study will help the individual understand the advancement of the 5G network and will explain how it is better than a 4G mobile network.

Introduction:

Mobile wireless technology started in the 1970s and has evolved from the first generation to the fifth generation. The fifth generation, also known as 5G, provides the best experience and high bandwidth to the users they have never experienced before. It offers different new features that make it a demanding and powerful technology. Different mobile and wireless technologies such as LTE and Wifi are present. 5G provides different facilities, such as MP3 recording, camera, large phone memory, video player, audio player, etc.

The fifth-generation wireless mobile technology provides the best internet experience, which makes for the perfect wireless world. 5G is based on 4G, but it adds more benefits and services to the world over 4G which makes an important difference. It provides tremendous data capabilities, infinite broadcast, and unrestricted call volumes within mobile operating systems.

The difference between 4G and 5G:

4G generation provides a data bandwidth of 1Gbps. It uses WiMax LTE Wifi technology. It provides many facilities like multimedia newspapers, fast downloading speed, faster data sending, HD streaming, wearable devices, global roaming, multimedia messaging service, digital video

broadcasting, and video calling. It uses Orthogonal frequency division multiplexing (OFDM) as frequency modulation, providing a frequency range of 2 to 8GHz to the 4G version. However, this technology has some limitations. It does not support a higher range's frequency band or provide higher-speed data downloading and transmission. For this purpose, new technological advancement is required, which can be provided by 5G.

Technology is developing daily, and thus, new advancements are required. 5G has also provided more facilities for people, which is expected to allow more data transmission and download to users. It provides a data bandwidth of more than 1Gbps. It uses unified IP, seamless broadband combination, and WWW (World Wide Wireless Web) technology. 5G will not only provide advanced features to the public but also will provide great frequency bandwidth. 5G will use different frequency modulations, such as Filter Bank Multi-Carrier (FBMC), Universal Filtered Multi-Carrier (UFMC), Generalized Frequency Division, Multiplexing (GFDM), and filtered OFDM. These modulations will support the frequency band range up to 300GHz [1].

5G will undoubtedly be a new revolution for all the world's devices. Many users use wireless services, and 5G will be a great advancement for them. It will provide many features to users and support many of the latest applications. However, the major drawback of this technology is that it is quite expensive and we need to make it affordable. In this way, every user can enjoy this great technological advancement. Nowadays different mobiles are coming with the latest features, such as camera, mp3 player, and others so 5G will be a great feature for the new mobile phones.

Use of the current version of LTE:

Commercial 5G services began rolling out in 2019 and are now widely available; in 2025, 5G networks covered an estimated 55% of the world's population and accounted for about 3 billion mobile-broadband subscriptions. However, many mobile companies have started creating 5G products to attract the public, and they have also established fields to test the 5G service for users. The great advancements in 5G technology have come from Samsung, Qualcomm, Nokia, BT, and Ericsson. Samsung and Qualcomm have focused their 5G efforts on hardware by producing 5 G-enabled home routers and 5G modems. Nokia launched the "5G First" to provide end-to-end 5G support for mobile carriers. Along with these companies, Ericsson has also created the 5G platform to provide a 5G radio system.

LTE in Mobile Phones:

Nowadays mobile phones are using the previous LTE version, 4G. The iPhone and other advanced mobiles support it. 4G LTE network also indicates UMTS connection including T-Mobile's and AT&T's high-speed network in the United States of America, such as my mobile is iPhone6 and I am using 4G-LTE network in my mobile phone. However, mobile companies are now trying to launch mobiles with

the 5G network to attract the public and to provide advanced services to the users. However many advancements are required; thus, the companies are designing mobile phones with 5G and testing them to bring them into the market. By 2020, 5G-capable phones were commercially available to consumers [2].

Technology on Cellular Antenna:

Different technologies have been supported by cellular antennas such as Wifi, Bluetooth, GSM, GPS, 4G, or 3G phones, which my home's closest cellular antenna has supported. The phones that support the 4G network are expected to have approximately six narrow-band antennae, which may prove costly and inefficient regarding space occupation in the device [3].

Conclusion:

Although the 4G LTE network technology has provided so many facilities to mobile users still there is a demand for high-speed data transmission for which there is a requirement for new advancements in mobile technology. The 5G LTE network is designed to provide users with the best services and high-speed data transmission. From this study, it can be concluded that the 5G LTE network will revolutionize mobile technology, giving mobile users a real wireless experience.

Work Cited

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