



5G Wireless Technology

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ABSTRACT:

New challenges initiative new resolutions and involve changed plans in the network positioning, management, and operation of future 5G wireless networks equated to those of current wireless networks. One of the key purposes of future 5G wireless networks is to compliantly provide service customized networks to a wide variety of services using integrated cloud reserve and wireless/wired network possessions, which may be presented by several infrastructure providers and/or operators.

The 5G technology is growing worldwide and has a drastically changed our life. The 5G technology will decide upcoming future devices and Industry Automation. The 5G technology is one of the most powerful sources for mobile data traffic and has led to development of different Technologies such as access technology,

INTRODUCTION: -

Wireless systems using Orthogonal Frequency Division Multiplexing (OFDM) with extensive area coverage, high amount at millimetre waves (10 mm to 1 mm) covering a frequency range of 30 GHz to 300 GHz, and permitting a 20 Mbps data rate to distances up to 2 km. The millimetre wave band is the most active solution to the current surge in wireless Internet usage. These provisions are capable of providing wireless world wide web (WWW) applications.

This is in line with the combined annual growth rate (CAGR) of 57% for the period 2014-2019. Following the diagram Figure 1 also shows the proportion of this data, which estimates that > 30 EB / month is transferred beyond 2020. Most of this mobile data traffic (up to 69%) is expected to combine video and media by the end of 2018. .In recent years, the global growth of mobile data traffic has led to the latest technological advancement of high-end communication systems.

Huawei Technology Co. owns the utmost copyrights on the next-generation of 5G technology, confirming the Chinese company will get paid despite Trump administration exertions to erase it from the supply chain, according to a new study. No one company or person owns 5G, but there are numerous companies in the mobile ecosystem that are causative to bringing 5G to life. Qualcomm has played a major role in originating the many introductory technologies that drive the industry forward and make up 5G, the next wireless standard.

5G Technology stands for 5th generation mobile technology. 5G represent the next major phase of mobile telecommunication ethics beyond the upcoming 4G standards. 5G technology is contribution the service in Product Manufacturing, Documentation, supporting electronic communications, etc. As the purchaser become more and more aware of the mobile phone technology, he or she will look for a decent package all together including all the advanced features a cellular phone can have. Hence the search for new technology always the main motivation of the top cell phone colossuses to out innovate their competitors. The aim of a 5G based telecommunication network would perfectly answer the challenges that a 4G prototypical would present once it has entered ubiquitous use.

	4G	5G
Bandwidth	200mbps	>1 gbs
Latency	20-30 ms	<10 ms
Average Speed	25 mbps	200-400 mbps

Technology	Wi-Max, LTE	Developing
Features	Incredibly fast download speeds paved the way for HD Streaming	Ultra-fast internet, low-latency, and improved reliability

How fast is 5G?

5G speed max out at 10 gigabits per second (Gbps).

Similar other networks, 5G will integrate and divide into categories and transmit data by radio waves. One cell is connected to the network core via a cable or wireless connection. 5G can transmit data via unauthorized frequencies are currently used on Wi-Fi. It promises a smart, fast, and efficient network. The goal of 5G is to

have the best speed available, with the highest potential in each sector, and with much lower latency than 4G. in order to expand the network to function properly, the cell is divided into smaller cells and pico cells.

5G technology has the following advanced features:

- Architecture will be device-centric, distributed, it is organized, and it supports the cloud
- High data rates
- Single connection up to 10 Gbps to complete points 1 millisecond travel time delay. Low battery usage
- Better communication regardless of location
- Large number of support devices
- Low cost of infrastructure development

Key enablement technology

5G development will not start from scratch but will begin is gradually relying on 4G LTE. Major technologies that allow 5G include:

MIMO:

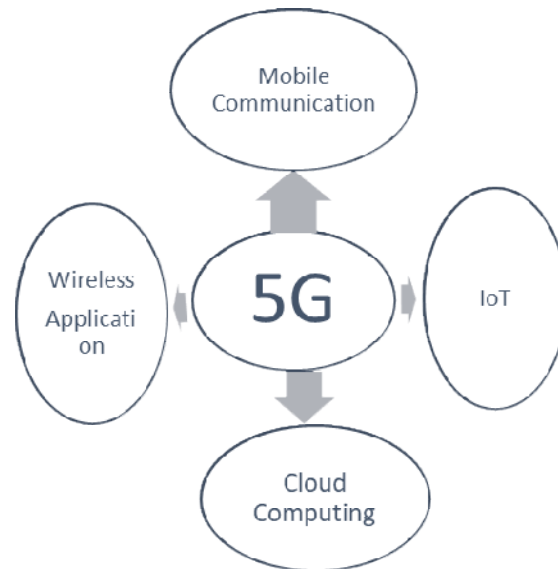
Multiple-in-multiple-output (MIMO) technology plays an important role in 4G and is predicted to play a significant role in 5G. Massive MIMO maximizes the benefits of MIMO by increasing the efficiency of the spectrum. Other approved 5G technologies include mm Wave communication, ultra-dense network (UDN), all-spectrum access (ASA), OFDM (orthogonal frequency division multiplexing), and Internet of Things.

D2D connection: Direct connection

achieved by device technology on device (D2D). 5G the mobile network will use a D2D mm wave communication technology to come up with a high level, improve availability, and provide peer-to-peer services. Very much a research effort has been invested to demonstrate D2D communication as part of LTE.

M2M connection:

While D3D connection direct portable radios, machine to machine (M2M) are growing width and helps to attach the whole area in the middle mobile devices.



5G ARCHITECTURE

5G implements package change and its continuous emergence offers improved functionality and price. The fifth-generation specification is in line with the user experience (which includes an important role within the new building) as well as a variety of autonomous, radio access technology (RAT). With 5G specification all IP-based mobile applications and services such as Mobile Sites, Mobile Marketing, Mobile Health Care, Mobile Government, Mobile Bank et al, are provided by Cloud Computing Resources (CCR). Cloud computing can be an example of easy network access to configurable computer devices (e.g., networks, servers, storage, applications, and services).

CCR connects Reconfigurable Multi-Technology Core (RMTC) with remote control data from RRD attached to reset data models (RDM). RMTC's biggest challenge is to tackle the proliferation of radio access technology. The key can be the integration of nanotechnology, cloud computing and radio, and is supported by All IP Platform. The theme changes its communication functions based on network status and / or user needs. RMTC is connected to a variety of radio access technology from 2G / GERAN to 3G / UTRAN and 4G / EUTRAN over 802.11x WLAN and 802.16x WMAN. Other standards are also enabled such as IS / 95, EV- DO, CDMA2000 etc.

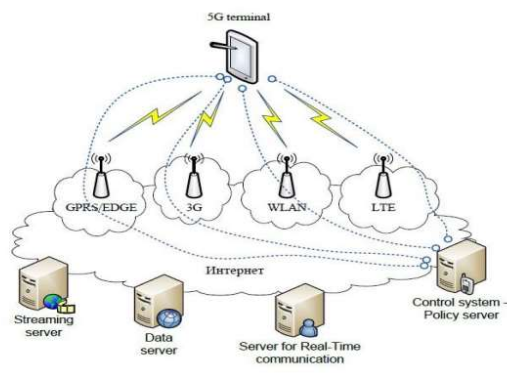


Fig: 5G Network Architecture

Advantages of 5G Technology

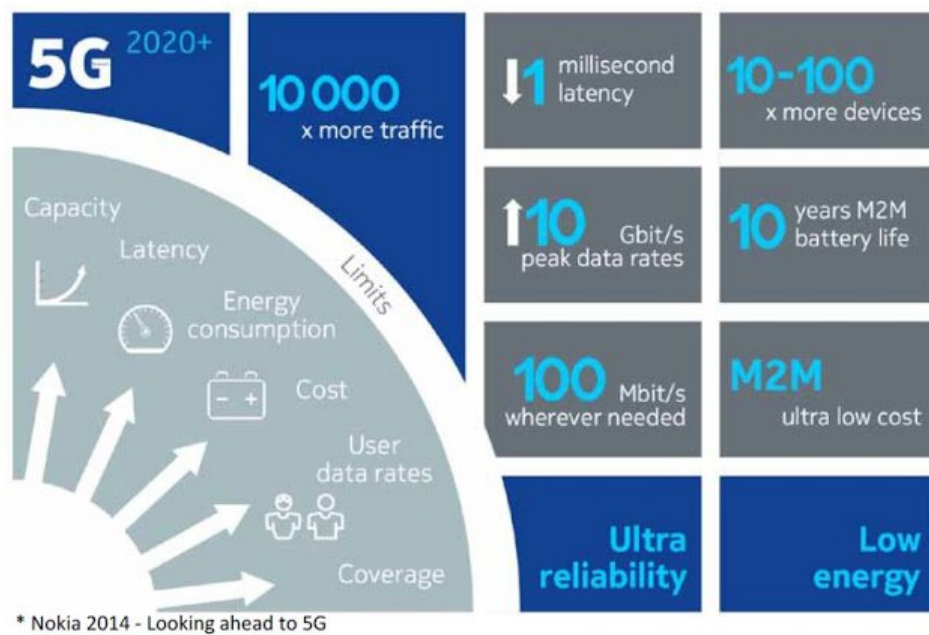
- Easily manageable with the previous generations.
- Technological sound to support heterogeneous service area (including private network).

- Possible to afford uniform, uninterrupted, and unfailing connectivity across the world.
- Technology to wrinkle all networks on one platform.
- More active and effective.
- Technology to simplify subscriber administration tools for the quick action.
- Most likely, will provide a vast broadcasting data (in Gigabit), which will support more than 60,000 connections.

Disadvantages of 5G Technology

- Technology is silent under process and research on its possibility is going on.
- The speed, this technology is pleasing seems tough to achieve (in future, it might be) because of the useless technological support in most parts of the world.
- Many of the old devices would not be able to 5G, hence, all of them need to be swapped with a new one expensive deal.
- Developing infrastructure needs high cost.
- Security and privacy problems yet to be solved.

APPLICATIONS:



- Office based on cloud / cloud computing video conference
- Integrated international standard
- Network access anywhere and anytime
- Blockchain
- 3D and Ultra HD videos
- Smart band
- Smart surgery and remote sensing

In addition, 5G will allow a person to pay all the bills at once paying with his cell phone and voting on his cell phone.

CONCLUSION:

Improvement of mobile and wireless networks to higher data rates and the overall purpose of IP. Mobile terminals get the ability to process more on-board memory, and longer battery life for similar systems. 5G incorporates the latest technologies such as digital radio, SDR, nanotechnology, cloud

computing and All IP Platform based. Nowadays mobile users have much awareness of the cell phones (mobile) technology. The 5G technologies include all the types of innovative structures which makes 5G mobile technology most powerful and in a huge demand in near future. 5G wireless technology is a versatile service network for wireless, focused and business applications. Includes all kinds of advanced features that are dynamic and much needed in the near future. More testing and testing needs to be done before using 5G. 5G technology is always in the development phase. It embodies a bright future and is a revolution within the mobile market.

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