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Performance Enhancement in 5G the future of wireless communication: Review

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Abstract: As a subscriber becomes more aware of the mobile phone technology, he/she will seek for an appropriate package all together, including all the advanced features of a cellular phone can have. Hence, the search for new technology is always the main intention of the prime cell phone giants to out innovate their competitors. The wireless industries are busy with the standardization of the '4G' cellular networks. The 4G concept shave already moved to the standardization phase, we must begin to work on the building blocks of the 5G wireless networks. The major difference from a user point of view , between current generation and expected 5G techniques must be something else than increased maximum throughput, other requirement s include low battery consumption , more secure we refer to this goal as enabling the 4 A's paradigm that is ,"Any rate", "Any time", "Anywhere", "Affordable". 5G stands for 5thGeneration mobile technology. 5G is used to denote the next major phase of mobile telecommunication standards beyond the 4G standards. In particular, this paper focuses on the features such as broadband internet in mobile phones, with a possibility to provide internet facility in the computer by just connecting the mobile and with a speed of 10 GB/s and more.

Keywords: 4G, 5G, cloud computing, Bandwidth, Dynamic Adhoc Wireless Network.

I. INTRODUCTION

Modern world is being compressed due to the development of science and its technology, during the last few decades, the world is being compressed due to the development of science and its technology. We have different mobile and wireless communication technologies such as, Wi-max, Wi-Fi, LTE (long term evolution), 3G mobile networks, 4G networks now a day as well as accompanying networks, such as personal area network or sensor network. Mobile terminals include variety of interfaces, such as GSM is one, which are based on old-fashioned circuit switching. The technology that is going into its last decade of existence. These technologies differ from each other based on four main aspects: - "radio access, data rates, bandwidth and switching schemes.

"These differences have been noticed in previous generations. In accordance to the most advance cellular technology could by 5G.5G technology stands for 5th generation mobile technology. 5G technology has changed to use cell phones within very high bandwidth. 5G is a packet switched wireless system with wide area coverage and high throughput. 5G technology use CDMA and BDMA and millimeter wireless that enables seed is greater than 100 Mb/s at fully mobility. The 5G technology includes all type of advanced features which make 5G technologies most powerful and in huge demand in the near future. A user of mobile phone can easily hook their 5G technology gadgets with laptops or tablets to acquire broadband internet connectivity. Also it offers bidirectional huge bandwidth. The objective of this research paper is to identify and mention the 4G and 5G technology and also compare 5G to 4G.

Different authors mentioned their views on 4G and 5G technologies, in the research paper [1], it mentioned about different generations technologies. In 5G technology it was mentioned that the data bandwidth of 5G is about 1 Gb/s and higher which is much more higher than 4G. Also the frequency bandwidth is about 3-300 GHz which is again better than 4G.The multiple access of 4G is CDMA but of 5G is CDMA as well as BDMA. 'Architecture of 5G' is mentioned in the research paper [2]. A brief note on "cloud computing" is considered.

The cloud computing is a model for enabling ubiquitous, convenient on demand network access to a shared pool of configuration computing resources that can be rapidly provisional and released with minimal management efforts or services provider interaction that is
Cloud computing is a technology that uses the internet and central remote server to maintain data and application.
In 5G network this central remote server could be a content provider. The cloud computing allows consumers and business to use applications without installation and access their personal files at any computer with internet access. The same concept is going to use in multi-core

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technology where the user tries to access his private account from a global control provider through cloud computing. Also paper [3] mentioned 5G networks which is very fast and reliable. It also mentioned the concept of hand held devices which are going to be revolutionized with the advent of 5G. It also supports for the services and applications are going to be accessed by single IP as telephony, gaming and many other multimedia applications. Research paper [4] describes 5G technology as "The Nano core", by supporting the different phenomenon which may be done by using 5G technology.

The key concepts suggested in this paper are 5G and beyond 4G wireless communication are as follows:-

•Dynamic Adhoc Wireless Network (DAWN), essentially identical to Mobile Mesh Network (WMN) or wireless grids, combined with smart antennas and flexible modulation.
•Real wireless world with no more limitation with access and zone issues.
•High altitude stratosphere platform station system.
•Internet protocol version6 (IV6) where a visiting care of mobile IP address is assigned according to location and connected network.

II. BEYOND 4 G NETWORK

4G usually refers to the successor of the 3G and 2G standards. The existence of 4G network's in today's technology driven society is important indicators of advancement and change. 4G or 4th generation networks are designed to facilities improved wireless capabilities, network speeds and visual technologies. It is anticipated that these network continue to thrive, the demand for advanced related technologies will also grow, thereby creating new users to exceed their desired expectation. The basic feature of 3G technology is fast data transfer rate. However this feature is not currently working properly because ITU 200 is still making decisions to fix data rates. 4G is a conceptual frame work and a discussion point to address futures need of a high speed wireless network. It is expected to emerge around this year completely too all networks. 4G should be able to provide very smooth global roaming ubiquitously with lower cost. A 4G system may upgrade existing communication networks and is expected to provide a comprehensive and secure IP based solution where facilities such as voice, streamed multimedia and data will be provided to users on an "Anytime, Anywhere" basis and at much higher data rates compared to previous generations. One common characteristic of the new services to be provided by 4G is their demanding requirements in terms of QoS. Applications such as wireless broadband access, Multimedia Messaging Service (MMS), video chat, mobile TV, HDTV content and Digital Video Broadcasting (DVB) are being developed to use a 4G network. Some of the applications are: - mobile TV, video on demand, video conferencing, location-based-services, mobile ultra-broadband, mobile WI-Max.

III. LTE ADVANCED

LTE release 10, also referred to as LTE-Advanced, is claimed to be the true 4G evolution step. Earlier releases of LTE are included as integrated parts of LTE release 10, providing a more straightforward backwards compatibility and support of legacy terminals, for example. The main requirement specifications for LTE advanced are:

•Peak Downlink data rate: 1 Gb/s, Peak Uplink data rate: 500 Mbps.
•Transmission bandwidth: Wider than approximately 70 MHz in DL and 40 MHz in UL.
•User throughput at cell edge 2 times higher than that in LTE.
•Average user throughput is 3 times higher than that in LTE.
•Spectrum efficiency 3 times higher than that in LTE; Peak spectrum efficiency downlink: 30 bps/Hz, Uplink: 15 bps/Hz.
•Mobility: Same as that in LTE.
•Coverage should be optimized or deployment in local areas/micro cell environments with Inter Site Distance (ISD) up to 1 km.

IV. THE NEW AGE 5G

5 G technology has changed the means to use cell phones within very high bandwidth users never experienced ever before such a high value technology. The 5G technologies include all type of advanced features which make 5G technology most powerful and in huge demand in near future. 5G technologies which are on hand held phone offering more power and features than at least 1000 lunar modules. A user can also look their 5G technology cell phones with their laptop to get broadband internet access. 5G technology including camera, MP3 recording, video player, large phone memory, dialing speed, audio player and much more you never imagine. Next Generation Networks (NGN) consists of support functionalities for data transport, and control transport, as well as functionalities for support of services and applications. The measurement of traffic is a basic control activity in order to provide Quality of Service. In addition 5G communication system is designed by the finest Quality of Service (QoS). (QoS) refers to a network's ability to achieve maximum bandwidth and deal with other network performance elements like latency, error rate and uptime. Quality of service also involves controlling and managing network resources by setting priorities for specific types of data (video, audio, files) on the network. QoS is

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exclusively applied to network traffic generated for video on demand, IPTV, VoIP, streaming media, videoconferencing and online gaming. The primary goal of quality of service is to provide priority to networks, including dedicated bandwidth, controlled jitter, low latency and improved loss characteristics. Its technologies supply the elemental building blocks that will be used for future business applications in campus, wide area networks and service provider networks

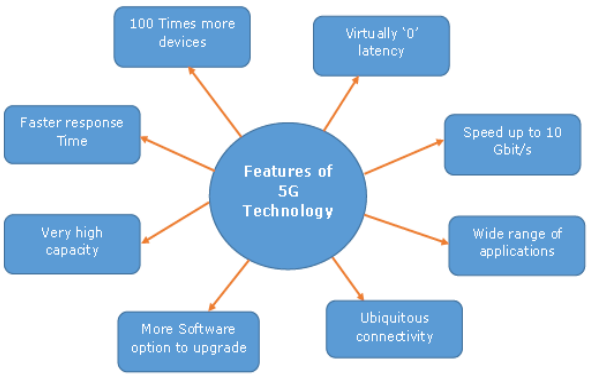

Fig 1- Features of 5G technology

V. ADVANTAGES OF 5G NETWORK OF THE MASTER CORE TECHNOLOGY

The Master Core technology has been designed for boundless wireless service; so that computer, entertainment devices and mobile phone may all share the same wireless network and can be connected with internet anytime, anywhere. It's designed for 5G communication system to fulfill the limitless target up to the next two centuries, the common features as following;

• Files can be downloaded (even movies) within seconds.
• Pages will upload almost instantly.
• Can play easily online games.
• 5G devices are comparatively less expensive than 3G and 4G devices.
• Using 5G the battery runs out very fast.
• Finest Quality of Service (QoS).
• All Networks can be gathered on a platform.
• Easily support previous generations.
• New deployments of 5G can be connected directly with The Master core by 5G -IU (5G Interfacing Unit) without All IP concept.
• No limitation as user demands.
• Ability to support the new services.

VI. CLOUD COMPUTING

Cloud computing is a model for enabling ubiquitous, convenient; on-demand network access to a shared poolof configurable computing resources (e.g., networks, servers, storage, applications,and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Hence, cloud computing is a technology that uses the internet and centralremote server to maintain data and applications. In 5G networks this central remote server could be a contentprovider. Cloud computing allows consumers and business to use applications without installation and accesstheir personal files at any computer with internet access. The same concept is going to be used in multi-coretechnology where the user tries to access his private account form a global content provider through cloud computing.

From 1G to 5G

CONTENT	1G	2G	3G	4G	5G
START	1970	1990	2004	NOW	SOON (2020)
DATA BW	2kbps	64kbps	2Mbps	1Gbps	>1Gbps
MULTIPLEX	FDMA	TDMA	CDMA	CDMA	CDMA
SWITCHING	CIRCUIT	CIRCUIT	PACKET	ALL PACKET	ALL PACKET
CORE NETWORK	PSTN	PSTN	PACKET N/W	INTERNET	INTERNET

COMPARISON OF 5G and 4G NETWORK

- 5G have very high capacity and low cost per bit as compared to 4G.
- It supports interactive multimedia, voice, video, internet and other broadband services, more effective and more attractive and has bi-directional accurate traffic statistics.
- 5G technology offer global access and service portability.
- It offers the high quality services due to high error tolerance.
- 5G technology use remote management that user can get better and fast solution.

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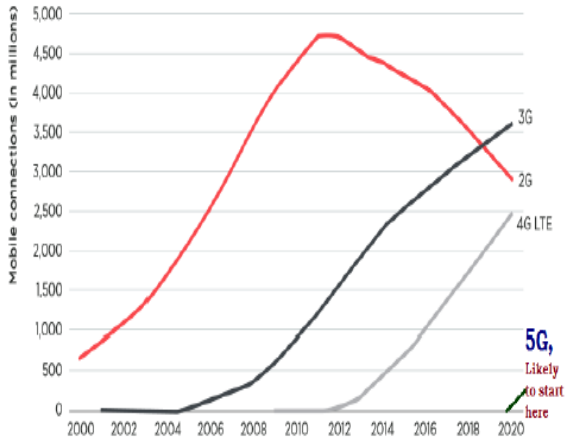

Fig.2 Year wise Distribution of Different Network

VI. CONCLUSION & FUTURE SCOPE

The idea of WWWW (World Wide Wireless Web) is started from 4G technologies, 5G evolution will based on 4G. Thus 5G should make an important difference and add more services and features to the world over 4G. 5G should be more intelligent network and technology that interconnects the entire world without limits. Therefore I propose a multiband width data path scheme for 5G real wireless world, completed WWWW, I refer to this goal as enabling the 4 A's paradigm. The future enhancement of Nano-core will be increased as it combine s with artificial intelligent. One can able to control his intelligent robot using his mobile phone. The mobile can automatically type the message what the brain thinks.

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