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Need and Advantages of 5G wireless Communication Systems

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***Abstract:** As user becomes more interested in wireless communication technology, he/she will look for a desired package which includes all the leading features of a wireless communication technology can have. Therefore, the chase for advanced technology is forever the prime objective of the leading wireless communication technology provider to out innovate their rivals. Accessory, the prime aim of the 5G wireless networks is projected to architecture the supreme wireless world which is free from disadvantages and difficulties of the preceding generations. 5G technologies will replace the style max high bandwidth customers connect their Mobile Radio Communication (MRC). Thus, this paper covers, introduction to 5G technologies, need for 5G, their advantages, exceptional applications and architecture of 5G network.*

***Keywords:** 5G; Architecture; Mobile Phone; MRC; Wireless Communication Technology.*

I. INTRODUCTION

We are exists in a twenty-first century science world where no one can even imagine a one second without technology. Technology makes our existence relaxed and comfortable. Today world is being compact on account of advancement of science and its technologies. During last two decades, the world has seen rapid evolution of mobile communication technologies from GSM to LTE-A systems. These evolutions were based on need for more bandwidth, lower latency, radio access and switching schemes. Collectively related performance enhancement and parameters like inter channel, interference, compatibility with networks, energy efficiency, connectivity and jitter are need to kept in mind when developing new wireless communication technology. In correspondence to, we are researching the most leading mobile technology, could be 5G [1]. 5G Technology stands for 5th Generation cellular Technology. 5th Generation technology will replace the use of mobile phones within real high bandwidth. 5G is a packet switched wireless application with advanced area broadcasting and high throughput. 5th Generation communications use CDMA and BDMA and millimetre wireless which authorizes seed is higher than 100Mbps at full speed and greater than1Gbps at low speed. The 5th generation technologies contain all kind of leading qualities which shape the 5G technology most effective and in extreme large demand in forthcoming time. It is not astonishing, such a large accumulation of technology being computed into a little device. It provides cellular phone customers additional features and effectiveness. A customer of cellular phone can comfortably fix their 5G technology device with laptops or tablets to receive broadband internet connectivity [2]. As far as following characteristics of the 5G have come into the market are High resolution is presented by 5G for acute mobile users, it also presents bidirectional large bandwidth and higher data rates. Today, all wireless and mobile networks are based on IP principle, that means all data and signalling will be communicated through Internet Protocol on network layer. The objective of IP Network (AIPN) is to entirely change the decades old legacy network framework into a streamlined and standardized network with a common framework for all kind of services. Fig 1 describes the architecture of the 5G [3].

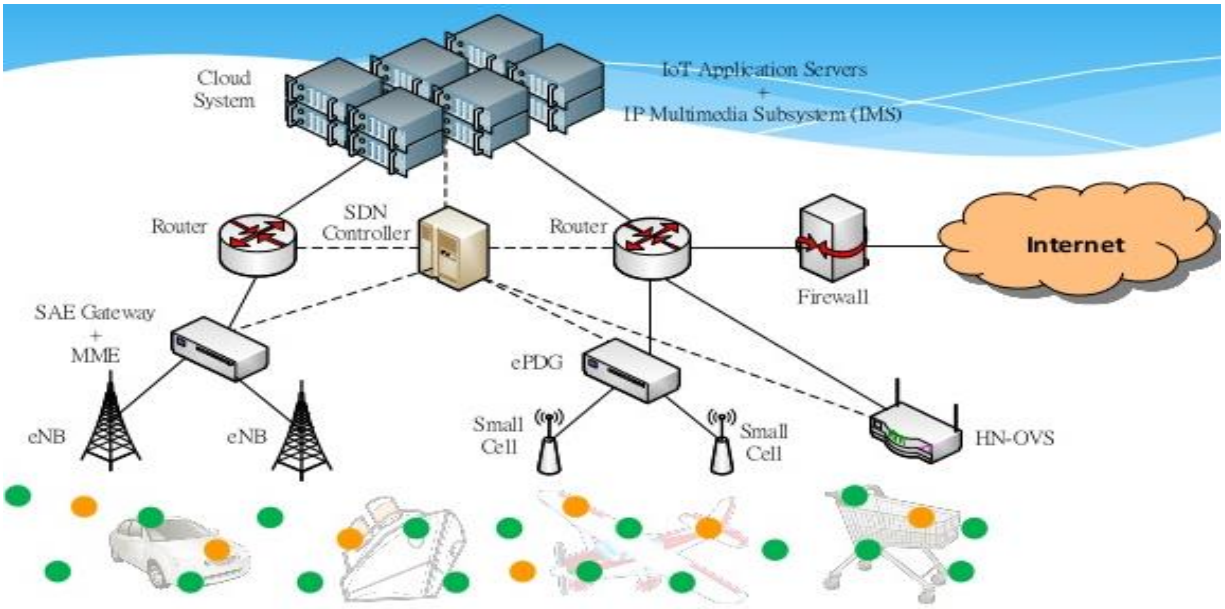

Fig. 1: Architecture of 5G.

II. 5G Wireless Communication System

5G is a Fifth Generation wireless communication technology. 5G is an unused network system that has undoubted high data rate, trustworthy and low latency than the preceding generations. 5th generation technology framed on the footing created by 4G, the technologies to be used in 5G, are still being outlined. The 5th generation networks works on encoding type known as OFDM [4]. The air interface outlined for considerable lower latency and better adaptability. 5G networks can work as low frequencies and high as "millimetre wave" and that frequency can communicate huge quantity of information/data, but few blocks at a moment of time. 5G networks are further probably to be networks of mini cells such as size of a house router than to be big tower; it is to extend network scope. The objective is to have great speed accessible and large scope at low latency than 4G. The latency rate of 4G is close to 50 milliseconds, but 5G cut down to almost one millisecond. This is specifically valuable for driverless vehicles and automated applications. The purpose of 5G is to achieve transmission speed to 20-30Gbps, which is 50 times speedy than 4G networks. And its speed has been being tested uninterrupted up to 1.5Gbps while traveling 100km/h and max up to 7.5Gbps. 5th generation network is determine to provide up to a million of connections per square kilometer. It also implies the whole wireless world interconnection together with very high data rates [5].

III. Need for Fifth Generation Wireless Communication System

This paper primarily aimed on what a Fifth generation network can provide for smooth access to a ordinary person in utilizing his accessible control in an splendid manner to make him to sense the actual development. As a customer point of view, the main dissimilarity among present generations and coming 5G techniques should be as follows [6]:-

- Lower Latency
- To Support Devices in the Internet of Things
- Higher Capacity then 4G
- Latency Reduced Significantly Compare to LTE
- Improved Coverage
- Simultaneous Large Number of Connections for Wireless Sensors
- Data Rates approx 100Mbps

- Enhanced Signalling Efficiency
- Improved and Innovative Data Coding Techniques
- Millimetre Waves Frequencies for Wireless Access and Back Haul Use
- Smart Beam Antenna Systems
- Lower Outage Problem
- Not Harmful for Health
- Cheaper Traffic Fees
- World Wide Wireless Web
- More Secure and SDR Security
- Lower Battery Consumptions
- Multiple Concurrent Data Transfer Paths
- Helpful in use of Artificial Intelligent in Human Life for Securing Communications

Above discussed points figure out the need for 5G. Fifth generation is to be a new technology that will provide all the accessible applications, by utilizing only one worldwide device, and joining nearly the entire previously alive communication infrastructure. Fifth generation stations will be enabled of an improbable multimode and cognitive radio. Fifth generation cellular networks will emphasis on the evolution of the user stations where stations will have entry to various wireless technologies at the same time and will combine different issues from different technologies. In addition, the station will create the best option between various wireless/cellular access network providers for likely service [7].

IV. Advantages of 5G Wireless Communication System

Fifth generation objective is at providing countless of utility to the consumer at high speed. The applications developed to use these utilities are highly customer companionable; curtail the intercommunication among the application and the customer. For example, unification of speech recognition technology in the user interfaces would ease the use of the applications for each user [8].

- 5G targets at providing a unified global standard which will facilitate global mobility and service portability.
- 5G stations and networks will provide common services independent of their capabilities. This is also called as service personalization.
- It is expected to provide wireless download speeds of above 1Gbps in local area network (LAN) and 500 Mbps in wide area network (WAN), about 40 times greater than the 4G wireless networks.
- Its focus at lower power consumption.
- It would provide users access to large repository of data and services where he would have flexibility to filter these data and services as per his preferences by configuring the operational mode of their devices.
- Better Network Convergence
- Provide Higher Bandwidth
- More effective and efficient
- Most likely, will provide a huge broadcasting data (in Gigabit), which will support more than 60,000 connections.

- You can control your PCs by handsets.

V. Conclusion

In this paper we have presented the future wireless communication generation and mobile systems aiming on four prime important issues: switching schemes, bandwidth, data rates, and radio access, also 5G prime evolution challenges and discussed the need for fifth generation. Fifth generation wireless communication technology will be started at the end of the progression decade. We believe that this Paper will cater need to elevate healthy connect among persons active in various areas creating likely approaches of cellular communication, Internet services, Quality of Service, IP networks and Nanotechnologies. The upcoming fifth generation technology will be accessible in the bazaar to accomplish user demands at cheaper rates.

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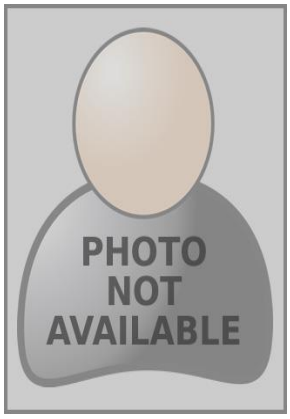
Author(s) Profile



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