

# 5G Wireless Mobile Network

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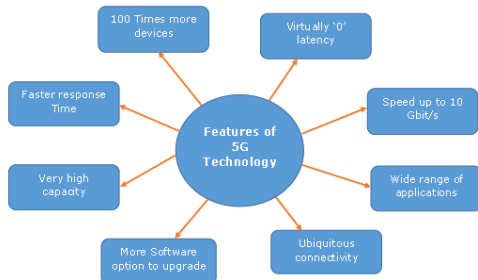
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**Abstract:--** “5th generation mobile network” or simply 5G is the forthcoming revolution of wireless technology. It is beyond the thinking of normal human. With its ultra-high speed, it changes the usability of a mobile phone.

**Keyword-5G, super speed, WCSM.**

## I. INTRODUCTION

Radio technologies have evidenced a rapid and multidirectional evolution with the launch of the analogue cellular systems in 1980s. Thereafter, digital wireless communication systems are consistently on a mission to fulfil the growing need of human beings (1G, ...4G, or now 5G). fig.1 shows the 5G technology.

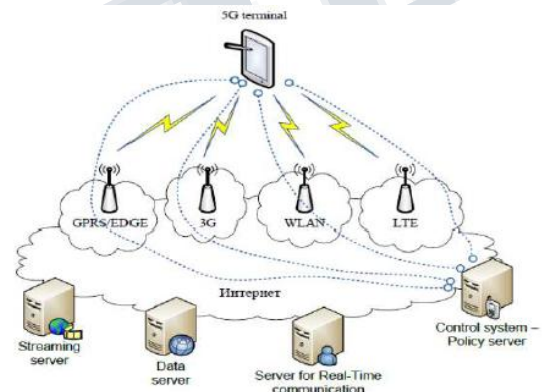


**History:** If we look back, we will find that every next decade, one generation is advancing in the field of mobile technology. Starting from the First Generation (1G) in 1980s, Second Generation (2G) in 1990s, Third Generation (3G) in 2000s, **Fourth Generation (4G)** in 2010s, and now Fifth Generation (5G), we are advancing towards more and more sophisticated and smarter technology. **Fig.2. shows evolution of wireless technology.**



## II. ARCHITECTURE OF 5G:

As shown in the following image, the system model of 5G is entirely IP based model designed for the wireless and mobile networks. **Fig.3. shows 5g architecture**



The system comprising of a main user terminal and then a number of independent and autonomous radio access technologies. Each of the radio technologies is considered as the IP link for the outside internet world. The IP technology is designed exclusively to ensure sufficient control data for appropriate routing of IP packets related to a certain application connections i.e. sessions between client applications and servers somewhere on the Internet. Moreover, to make accessible routing of packets should be fixed in accordance with the given policies of the user (as shown in the image given below).

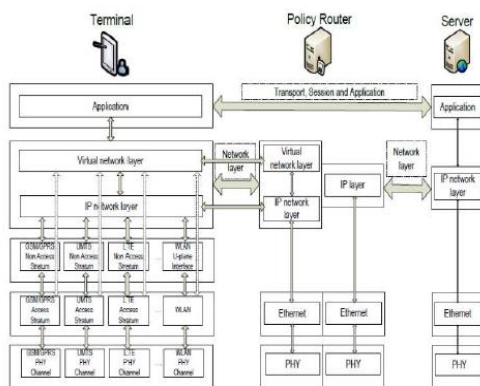


fig.4.shows the enhanced architecture 5G .

The most fundamental component of this technology is the CPU pen. It acts as a central device which connects all other pen devices. It performs functions similar to the central processing unit of a laptop or a desktop because it is a computation engine which handles all the processing and calculation tasks. OS is already preloaded in this pen and it cannot be altered. It works with Windows OS and is embedded with a dual core micro-processorchip. Whether the CPU pen supports USB is still in doubt.

**IV. 5G – ADVANCEMENT:**

In comparison to previous radio technologies,has following advancement –

- ♣ Practically possible to avail the super speed i.e. 1 to 10 Gbps.
- ♣ Latency will be 1 millisecond (end-to-end round trip).
- ♣ 1,000x bandwidth per unit area.
- ♣ Feasibility to connect 10 to 100 number of devices.
- ♣ Worldwide coverage.
- ♣ About 90% reduction in network energy usage.
- ♣ Battery life will be much longer.
- ♣ Whole world willbe in wi fi zone.

**V. 5G – APPLICATIONS:**

Some of the applicationsare –

- ♣ It will make unified global standard for all.
- ♣ Network availability will be everywhere and will facilitate people to use their computer and such kind of mobile devices anywhere anytime.

- ♣ Because of the IPv6 technology, visiting care of mobile IP address will be assigned as per the connected network and geographical position.
- ♣ Its application will make world realWi Fi zone.
- ♣ Its cognitive radio technology will facilitate different version of radio technologies to share the same spectrum efficiently.
- ♣ Its application will facilitate people to avail radio signal at higher altitude aswell.

**VI. 5G-ADVANTAGES :**

- ♣ Technology to gather all networks on one platform.
- ♣ More effective and efficient
- ♣ Most likely, will provide a huge broadcasting data (in Gigabit), which will support more than 60,000 connections.
- ♣ Easily manageable with the previous generations.
- ♣ Technological sound to support heterogeneous services (including private network).
- ♣ Possible to provide uniform, uninterrupted, and consistent connectivity across the world.
- ♣ High resolution and bi-directional large bandwidth shaping.
- ♣ Technology to facilitate subscriber supervision tools for quick action.

**VII. 5G-DISADVANTAGES:**

- ♣ Technology is still under process and researchon its viabilityis going on.
- ♣ The speed, this technology is claiming seems difficult to achieve (in future, it might be) because of the incompetent technological support in most parts of the world.



*Fig.5. shows improvements to be done in 5G.*

communication. With 5g ultra-high speed networks, it is possible to transfer data at a very faster rate.

#### REFERENCES:

- [1] 5g mobile and wireless communication technology by Affif osserian, Jose F. Monserrat, Patrick Marsch.
- [2] Wikipedia.

#### VIII. FUTURE SCOPE IN 5G:

5<sup>th</sup> generation technology is designed to provide incredible and remarkable data capabilities, unhindered call volumes, and immeasurable data broadcast within the latest mobile operating system. Hence, it is more intelligent technology, which will interconnect the entire world without limits. Likewise, our world would have universal and uninterrupted access to information, communication, and entertainment that will open a new dimension to our lives and will change our life style meaningfully.

#### IX. NEW DEVELOPMENT:

The main disadvantage of 5g is traffic management. i.e. in comparison to the traditional human to human traffic in cellular networks, a great number of Machine to Machine (M2M) devices in a cell may cause serious system challenges. i.e. radio access network (RAN) challenges, which will cause overload and congestion. This issue can be solved by using wireless mesh networks. U.S. military forces are now using wireless mesh networking to connect their computers, mainly ruggedized laptops, in field operations. It is an efficient medium access control which can also solve medium access issues.

#### X. CONCLUSION:

Continuous advancement in technologies has brought about many changes in the field of cellular mobile