

# 5G- ADVANCED MOBILE TECHNOLOGY

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## ABSTRACT

5G is the next latest technology of mobile communications. 5G is faster than the 4G standards. It can overcome many limitations of the earlier technologies people will use their mobile phones in a changed manner. We can put so many features in just a small electronic piece. The 5G technology and its upcoming features will become the competitors of laptops and PC. 5G has put the aim forward to make the world wireless that can remove the drawbacks of earlier generations.

**Keywords:** High Speed Downlink Packet Access (HSDPA). It provides a desired way for UMTS networks to higher data rates in the same way as Enhanced Data rates for Global Evolution (EDGE).

## I INTRODUCTION

In the present world, the 5G technology will provide a new revolution in the way international cellular plans are offered the 5G technology is more advanced than its earlier versions. The latest 5G technology will provide the phones to the mobile market that will be use in china and are able to access and call on local phones in Germany. We can have the complete command on our office work just in a mobile phone with the use of 5G technology. Usually there are phones with gigabytes of memory storage and latest operating systems like window 7, Mac Os. But 5G technology will give a tough competition to the laptops and other communicating devices. In the upcoming years the will have everything like smallest size of phone large memory, all multimedia features along with the advanced features of Pico nets and Bluetooth ,people can use all these features like a child play.

## II PREVIOUS GENERATIONS OF 5G TECHNOLOGY: 2G-5G

The first generation of mobile technology was evolved in 1980S. It was the beginning of the generations of mobile technology. In 1990s, the second generation emerged with the first digital mobile network.

- The data rate of 2G was 9.6kbps to 19.2kbps which was very low as compared to 5G technology.
- Next extension of 2G technology was 2.5G which is known as General packet radio service (GPRS).
- 2.5G networks use the circuit switching for voice and packet switching for data transmission which increases the demand of 2.5G because packet switching utilizes bandwidth much more efficiently.

3G networks eliminated so many limitations of 2G and 2.5G like slow speed and incompatible technologies like TDMA and CDMA.

The 3G offered bandwidth of 128kbps for mobile stations and 2Mbps for fixed applications which is better than previous generations. The main focus is on high speed in mobile systems i.e. to support the high bit rate data services at the downlink via High Speed Downlink Packet Access (HSDPA). It provides a desired way for UMTS networks to higher data rates in the same way as Enhanced Data rates for Global Evolution (EDGE) do in Global Systems for Mobile communication (GSM). HSPDA uses shared channels that allow different users to access the channel resources in packet domain

### III NETWORK ARCHITECTURE

It is the architecture of wireless mobile system which consists of a mobile phone connected to the wired world with a single hop wireless connection to a Base Station (BS), which is responsible for carrying the calls within its region called cell (Figure 1).because of limited coverage provided by a BS, the mobile hosts change their connecting base stations as they move from one cell to another.

Technology / Features	1G	2G/2.5G	3G	4G	5G
<b>Start/ Deployment</b>	1970/ 1984	1980/ 1999	1990/ 2002	2000/ 2010	2010/ 2015
<b>Data Bandwidth</b>	2 kbps	14.4-64 kbps	2 Mbps	200 Mbps to 1 Gbps for low mobility	1 Gbps and higher
<b>Standards</b>	AMPS	2G: TDMA, CDMA, GSM 2.5G: GPRS, EDGE, 1xRTT	WCDMA, CDMA-2000	Single unified standard	Single unified standard
<b>Technology</b>	Analog cellular technology	Digital cellular technology	Broad bandwidth CDMA, IP technology	Unified IP and seamless combination of broadband, LAN/WAN/ PAN and WLAN	Unified IP and seamless combination of broadband, LAN/WAN/PAN /WLAN and www
<b>Service</b>	Mobile telephony (voice)	2G: Digital voice, short messaging 2.5G: Higher capacity packetized data	Integrated high quality audio, video and data	Dynamic information access, wearable devices	Dynamic information access, wearable devices with AI capabilities
<b>Multiplexing</b>	FDMA	TDMA, CDMA	CDMA	CDMA	CDMA
<b>Switching</b>	Circuit	2G: Circuit 2.5G: Circuit for access network & air interface; Packet for core network and data	Packet except circuit for air interface	All packet	All packet
<b>Core Network</b>	PSTN	PSTN	Packet network	Internet	Internet
<b>Handoff</b>	Horizontal	Horizontal	Horizontal	Horizontal and Vertical	Horizontal and Vertical

Table 1: Comparison of 1G-5G

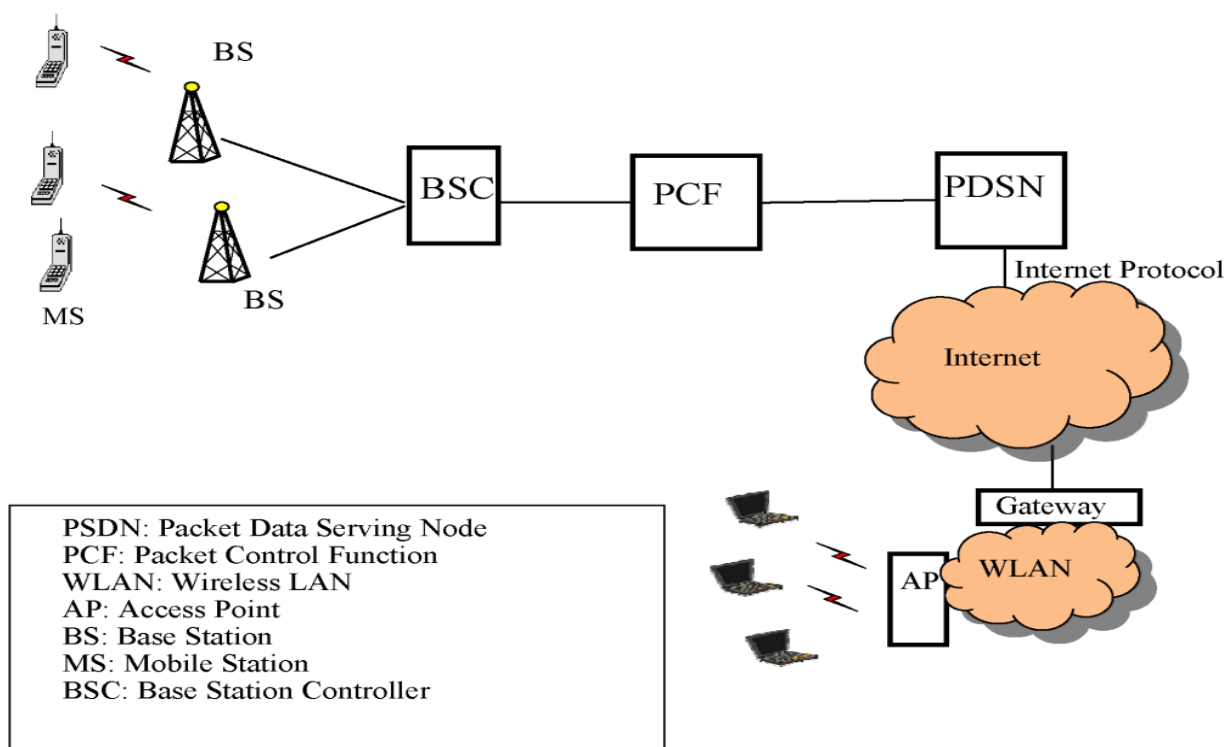


Figure 1: Network Architecture

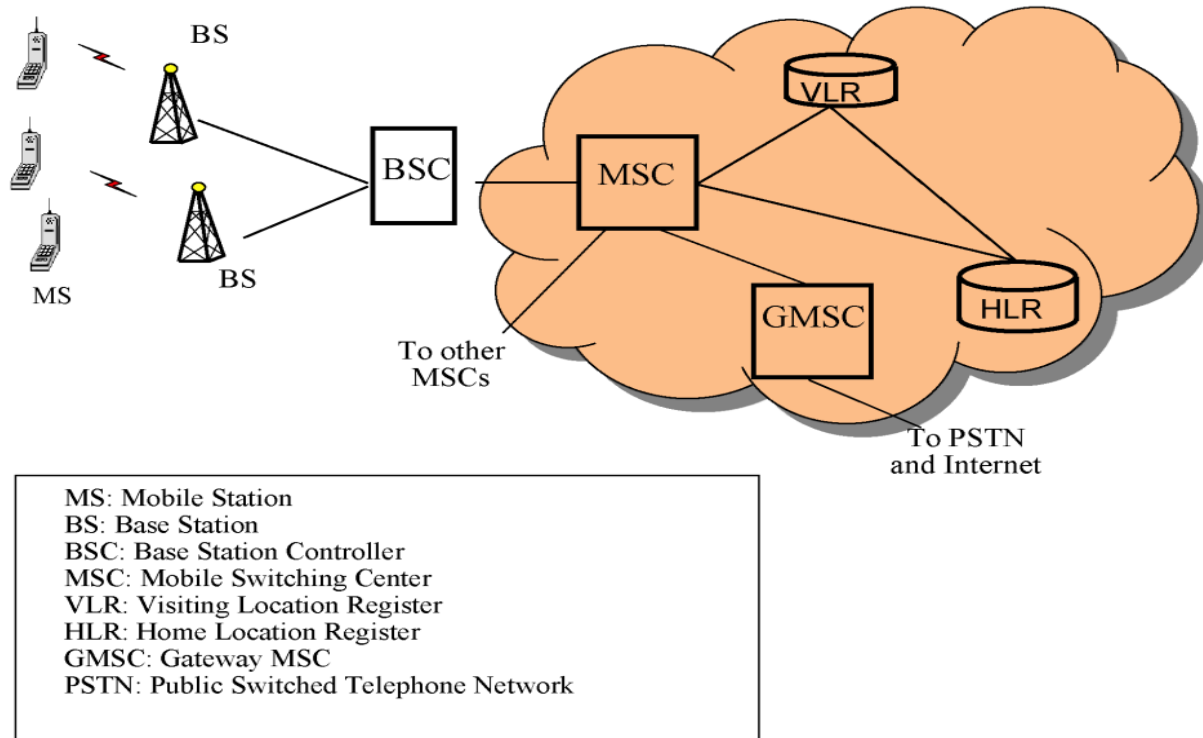


Figure 2: Mobile System

#### IV CONCLUSION

There are many improvements from 1G, 2G, 3G and 4G to 5G in the mobile communications. This 5G technology will be at economic charges and much reliable than its preceding technologies. There are many projects which are based on 5G technology. This time 3G mobiles are working and 4G are coming but in future get ready to face 5G technology and some of its features we have shown in this research paper.

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