

Wireless/Mobile Communication Protocol

- Mobile communication protocols use multiplexing to send information. Multiplexing is a method to combine multiple digital or analog signals into one signal over the data channel.
- This ensures optimum utilization of expensive resource and time. At the destination these signals are de-multiplexed to recover individual signals.



Wireless/Mobile Communication Protocol

- **GSM**

- (Global System for Mobile Communication)

- **CDMA**

- **Code Division Multiple Access**

- **WLL**

- **Wireless Local Loop**

Global System for Mobile Communication (GSM)

- It is one of the most widely used digital wireless telephony system.
- It was developed in Europe in 1980s
- Now it is an international standard in Europe, Australia, Asia and Africa.
- Any GSM handset with a SIM card can be used in any country that uses this standard. Every SIM card has a unique identification number.
- GSM uses TDMA (Time Division Multiple Access) to support up to eight calls simultaneously. It also uses encryption to make the data more secure.

GPRS

- It stands for General Packet Radio Services.
- It is a packet based wireless communication technology that charges users based on the volume of data they send rather than the time duration for which they are using the service.
- GPRS is the mobile communication protocol used by second (2G) and third generation(3G) of mobile telephony). Its speed upto 56kbps to 114kbps, however the actual speed may vary depending on network traffic.

Wireless Local Loop(WLL)

- It is wireless local telephone service that can be provided in homes or offices.
- The subscribers connect to their local exchange instead of the central exchange wirelessly.
- A data is transferred over very short range, it is more secure than wired network.
- WLL system consists of user handset and a base station. The base station is connected to the central exchange as well as antenna.
- The antenna transmits to and receives call from users through microwave links

Code Division Multiple Access

- It was first used by the British military during world war II.
- After the war its use spread to civilian areas due to high service quality.
- As each user gets the entire spectrum all the time, voice quality is very high.
- CDMA phones were not using the SIM card, it comes with built in technology.
- In India CDMA technology was used by Tata Docomo and Reliance, but now its services are stopped and only GSM network is working.

Mobile Communication Technologies

● The popular network nowadays is Mobile phone Network. It is cellular based network which gave mobile phone name “cell phone”. Popular mobile technologies:

- 1G
- 2G
- 3G
- 4G
- 5G

First Generation (1G)

- ◉ Used for voice calls as analog signal
- ◉ No data was transmitted
- ◉ Technology used as AMPS (Advanced Mobile Phone System)
- ◉ An AMP was a voice-only network operating on 800MHz.
- ◉ Speed upto 2.4 kbps
- ◉ Poor voice quality
- ◉ Large phone with limited battery life
- ◉ No data security

Second Generation (2G)

- In this generation, few features like simple text messaging were added.
- New services such as text messaging, packet data (for MMS and internet access), called ID and also introduced SIM (Subscriber Identify Module) card.
- Data transfer rate upto 64kbps
- Disadvantage was low network range, slow data rates.
- To overcome these two problems two new network – CDMA and EDGE (Enhanced Data Rate for GSM evolution) were introduced.

Third Generation(3G)

- In this generation Web browsing, email, video conferencing, video downloading, picture sharing and other smartphone technologies were introduced.
- Devices are called smartphones
- Fast communication, data speed between 144kbps to 2Mbps
- High quality voice transmission
- Supported multimedia(playing music, viewing videos, video calls etc)
- Mobile TC, Mobile internet

Fourth Generation(4G)

- The speed of this generation is from 100 Mbps to 1Gbps
- Based on LTE-Advanced (Long Term Evolution)
- Voice as VoIP (Voice over Internet Protocol (VoLTE))
- Better Video calling than 3G, Video conferencing etc.

Fifth Generation(5G)

- It is yet to be implemented in India which promises superfast data transfer rate upto 20Gbps along with energy saving.

THANKS