

SCENARIO OF MOBILE TRAIN RADIO COMMUNICATION & LTE ON INDIAN RAILWAYS

AVAILABLE MOBILE TRAIN RADIO COMMUNICATION & LTE ON INDIAN RAILWAYS

- Provision of emergency sockets in RE area.
- 5/25 Watt VHF sets.
- GSM-R (very less percentile)
- Mobile phones available with driver, guard and staff

VERY HIGH FREQUENCY (VHF) MOBILE RADIO COMMUNICATION

- The frequency allotted by WPC (Wireless Planning and Coordination wing of ministry of communication) for Indian Railways is in the band 146 -174 MHz.
- Communication Range: Depends upon terrain.
 - i. The average range of a Walkie – Talkie (Hand Held set) – 1 to 2 KM.
 - ii. 25W VHF Mobile Set upto 25 KM when antenna is fixed at height of 15 - 20M

TETRA NETWORK

- Terrestrial Trunk Radio (TETRA) works on an international open standard architecture that improves performance heightens reliability and increases efficiency. It provides an infrastructure that is able to support both voice and data traffic.
- The system consists of only two basic elements in the Network Architecture
 - a. Radio Access;
 - b. Network Transport Layers.

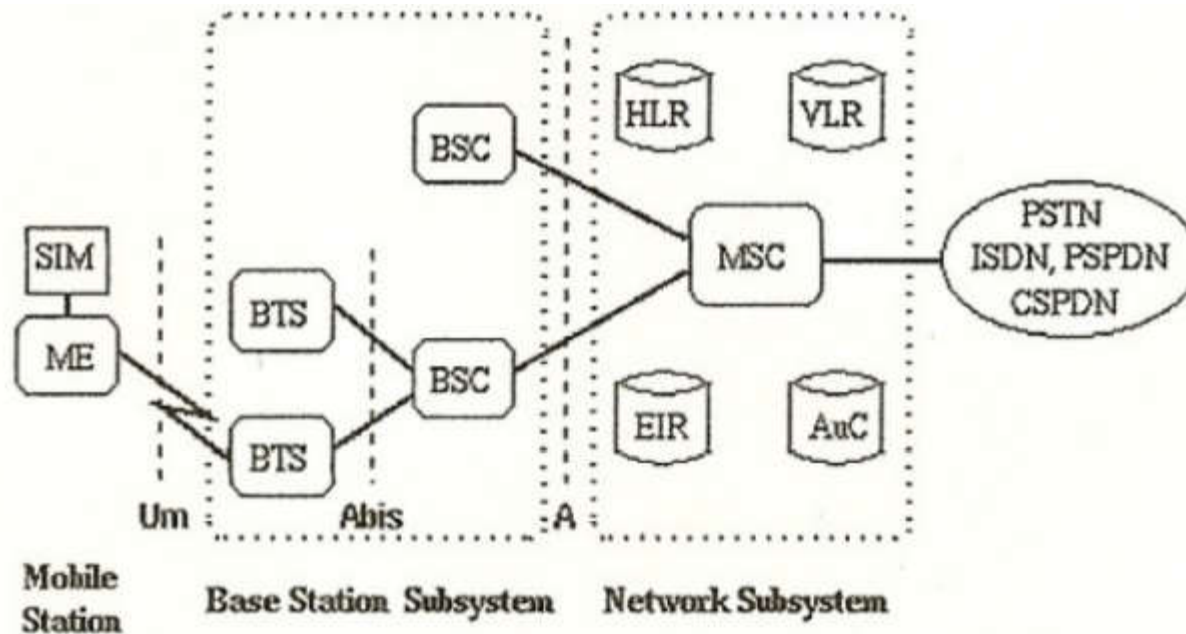
There is no hierarchy within the switching network so capacity of the network can be matched effectively to the traffic demand. It is seen that the network transport layer consists of private network exchange, which is in turn connected to the Radio Access network. Depending upon the amount of traffic to be handled by the various Radio site equipment's a decision can be taken to include more number of switches in the system

- The main features of the TETRA based systems are:
 - a) Frequencies for Tetra based systems in 380-400 MHz & 410-430 MHz bands are available.
 - b) The system does not support railway-signaling applications like AWS, ATS etc.

CELLULAR MOBILE RADIO COMMUNICATION SYSTEMS

- The Federal Communication Commission (FCC) has defined a cellular system as “A high capacity land mobile system in which assigned spectrum is divided into discrete channels which are assigned in groups to geographic cells covering a cellular geographic service area. The discrete channels are capable of being reused in different cells within the service area.”

GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATION)



SIM	Subscriber Identity Module	BSC	Base Station Controller	MSC	Mobile services Switching Center
ME	Mobile Equipment	HLR	Home Location Register	EIR	Equipment Identity Register
BTS	Base Transceiver Station	VLR	Visitor Location Register	AuC	Authentication Center

GSM-R (GLOBAL SYSTEM FOR MOBILE COMMUNICATION)

- GSM for railways, a communication system for railway networks utilizing GSM technologies and specific applications for railway operations.
- GSM-R is the communication standard chosen by EIREN (European Integrated Railway Radio Enhanced Network) to meet the railway requirements.

BASIC FEATURE OF GSM-R:-

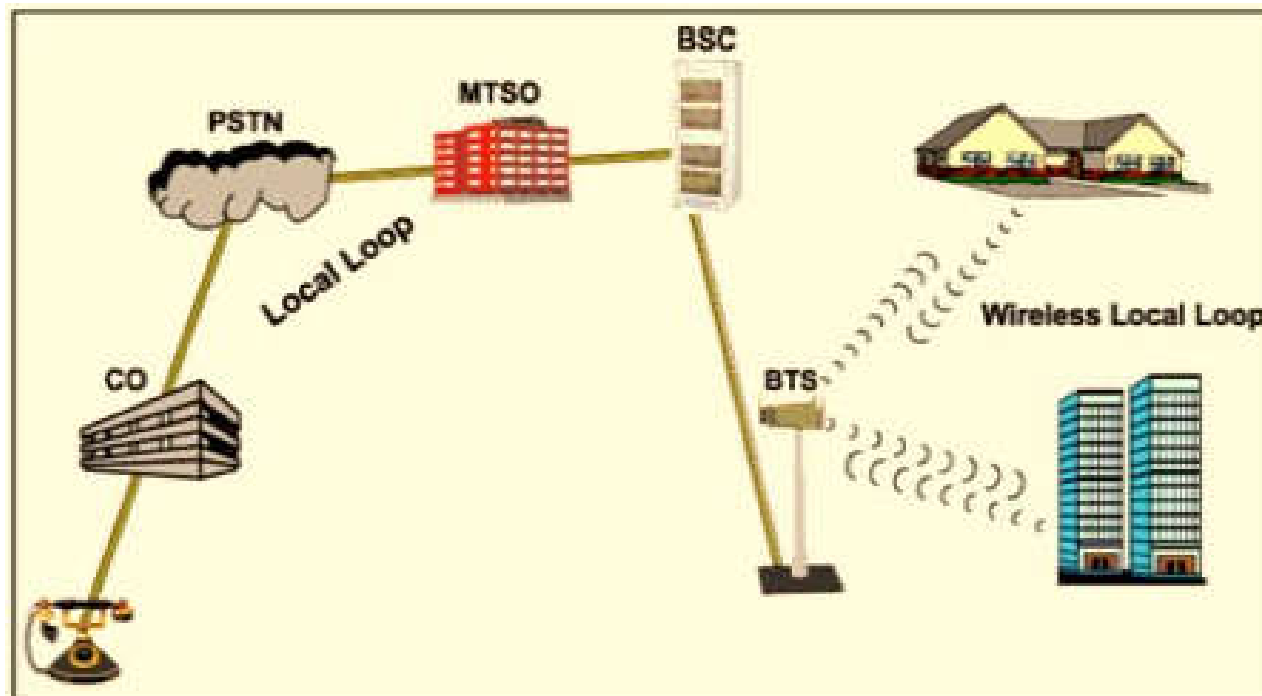
- 1.Point to Point call
- 2.Voice Broadcast call
- 3.Voice Group call
- 4.Emergency call
- 5.Functional addressing
- 6.Location dependent addressing
- 7.eMLPP (enhanced Multi-Level Precedence and Preemption)

4 G-DATA SERVICES

- 4G is a loose term for the fourth generation of cellular communications, offering speeds that are about 10 times faster than they are on current third-generation, or 3G, networks.
- Its higher data speeds could make smart phones much more comparable to PCs, giving them better multimedia and gaming capabilities.
- The first-release Long Term Evolution (LTE) standard was commercially deployed in Oslo, Norway, and Stockholm, Sweden in 1998, and has since been deployed throughout most parts of the world. It has, however, been debated whether first-release versions should be considered 4G LTE.

WIRELESS LOCAL LOOP (WLL) SYSTEMS

- In a telephone network, a wireless local loop (WLL) is a generic term for an access system that uses a wireless link to connect subscribers to their local exchange in place of conventional copper cable. Using a wireless link shortens the construction period and also reduces installation and operating costs.



ANNEXURE-1 (WPC)

- The wireless planning & coordination (WPC)Wing of the Ministry of Communications, created in 1952, is the National Radio Regulatory Authority responsible for Frequency Spectrum Management, including licensing and caters for the needs of all wireless users (Government and Private) in the country. It exercises the statutory functions of the Central Government and issues licenses to establish, maintain and operate wireless stations.
- WPC is divided into major sections as -
 - (I)Licensing and Regulation (LR)
 - (II) New Technology Group (NTG)
 - (III)Standing Advisory Committee on Radio Frequency Allocation (SACFA).