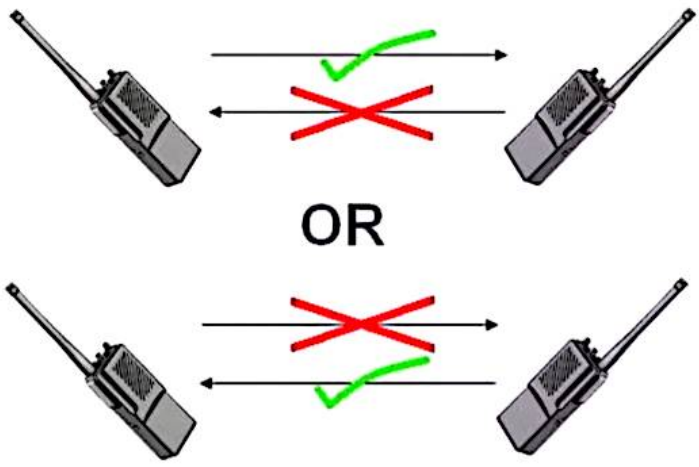
TELECOMMUNICATION SYSTEM

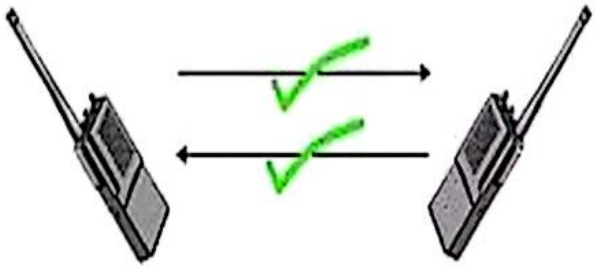
- **Telecommunication** is the transmission of information over significant distances to communicate. In earlier times, telecommunications involved the use of visual signals, such as beacons, smoke signals, semaphore telegraphs, signal flags,

- **Simplex communication** refers to communication that occurs in one direction only

Half duplex

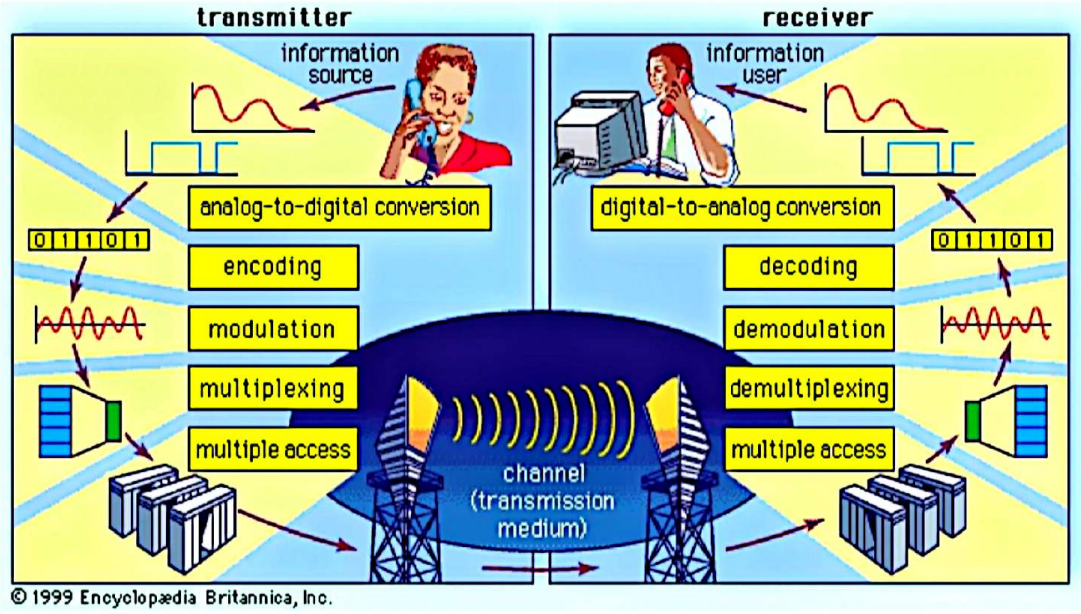


Full duplex



A basic telecommunication system consists of three prima units that are always present in some form

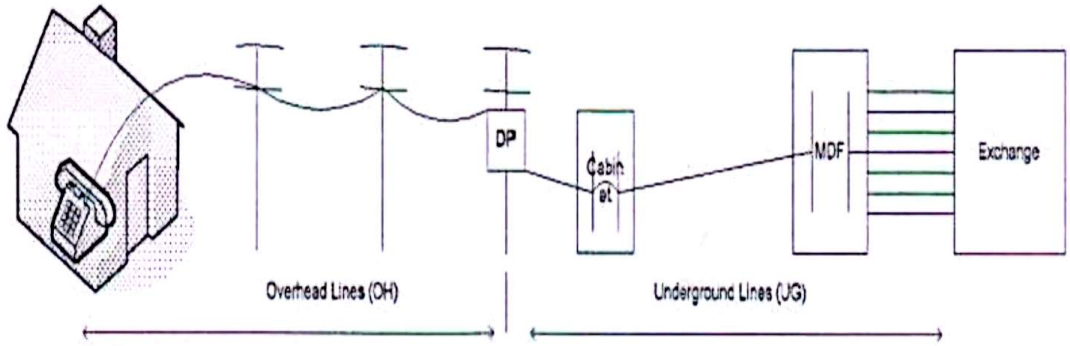
- A transmitter that takes information and converts it to a signal.
- A transmission medium, also called the "physical channel" that carries the signal. An example of this is the "free space channel".
- A receiver that takes the signal from the channel and converts it back into usable information.



Telecom

- The network used to connect the telephone telephone exchange.
- The connection between telephone and exchange can be two copper wire or wave. If copper wires are used it is called wired connection.
- This connection also can be provided by a radio wave. It is called a wireless

Show the path of wired connecti



Stages involved to a wired connecti

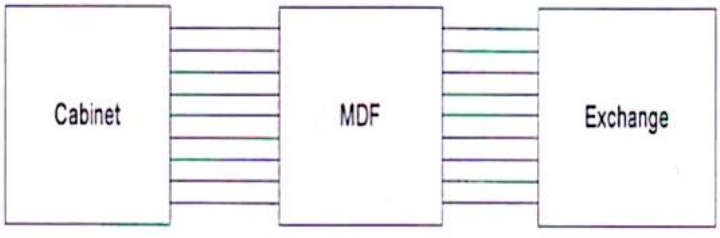
- Telephone exchange
- MDF
- Cabinet
- DP
- Telephone

The function of telephone exchang

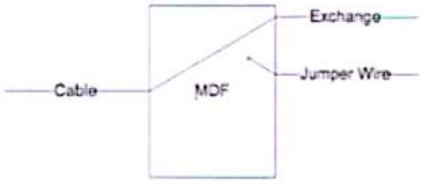
- When a telephone dials a number it is receive by the telephone exchange and analyses the number and connect to the relevant telephone via the remote exchange.
- For the calls received from the remote exchange the originated telephone exchange checks whether the relevant telephone is free or busy. If the telephone is busy the busy tone is sent to the other exchange. If the telephone is not busy the ring back tone is sent to the other exchange.

Main Distribution Frame (MDF

- MDF is the interface between telephone exchange and telephone cables. At the time of installation of exchange all telephone channels are terminated at the MDF

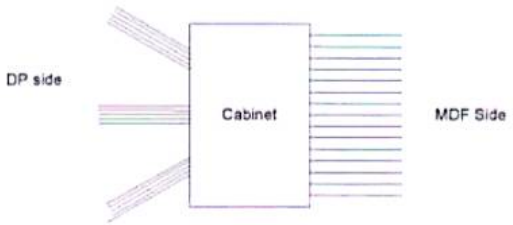


- The multi pair telephone cables are terminates of the side.
- When a new connection is given the exchange side relevant point and cable side relevant point are connected by using another small. This small cable is called a jumper wire.



Cabinet

- MDF to cabinet cable is called primary cabl
- Cabinet to DP cable is called secondary cable
- Primary cable to secondary cable jumpering is done at the cabinet.



Distribution Point

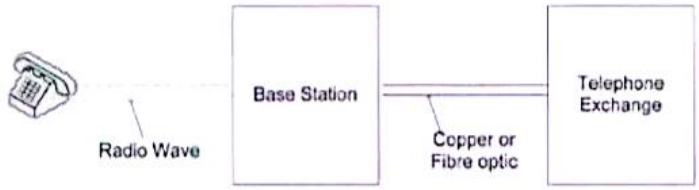
A 10 pair or 5 pair cable is laid from cabinet distribution point (DP). That means there are 10 loops or 5 loops in a DP. When a new connection is provided a pair of cable is drawn from DP to home

The works to be done to provide a telephone new connection

- DP to house cabling (over head cabling)
- Jumpering at MDF
- The telephone exchange identifies a free line.
- Allocate a telephone number from the exchange and program it in the exchange

Base station

- Telephone is connected to Base Station by using a radio wave.
- The Base Station is connected to telephone exchange by using copper or fibre optic

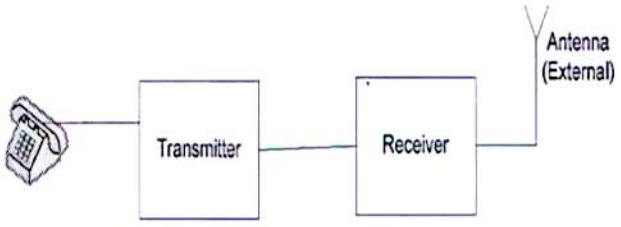


The components in Base Statio

- Transmitter
- Receiver
- Antenna

The components of Customer Premises

- Transmitter
- Receiver
- Antenna
- Telephone



Telephone components

- Microphone
- Earphone
- Dial
- bell

Building characteristic in telephon installation

- Number storey
- The size of cable pairs
- Floor area

Telephone cable incoming size

- Categories 1

  More than 5 storey and the area of floor exceeding incoming 650 m^2. Incoming size cable exceeding of 50 pairs.
- Categories 2

  Less than 5 storey and floor area less than 650 m^2. Incoming size less than 50 pairs of cables.
- Categories 3

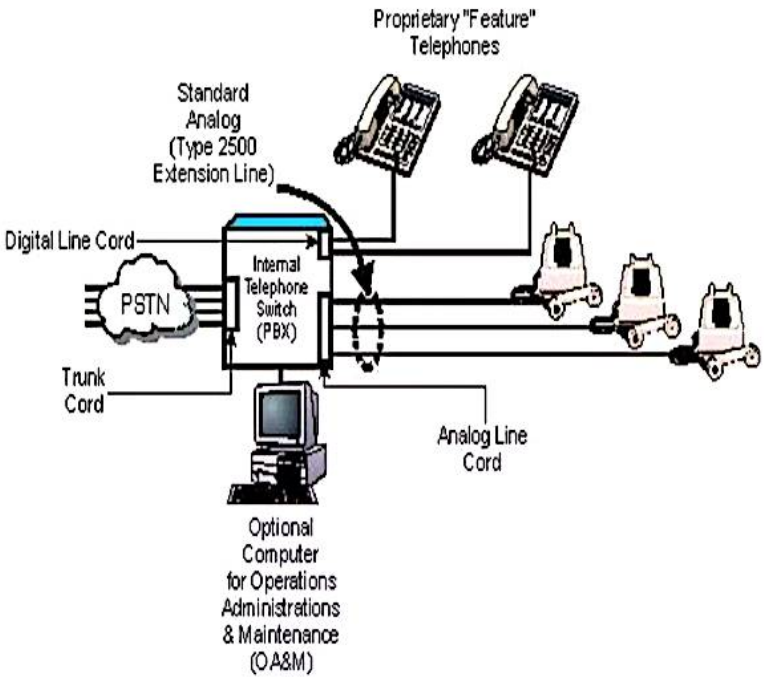
  Detached houses or bungalows for residential. 1 pairs of cable size.

Characteristic for domestic telecommunication wiring

- The grey colored cable should be used for domestic telecommunication system wiring.
- The cable should be protected by a conduit pipe
- The cable should not be exposed to the weather
- The wiring cannot run on the ceiling
- The wiring should be done in horizontal way or vertical way only
- Be precise on cable usage

Private Branch Exchange (PBX) Syst

- This diagram shows a private branch exchar (PBX) system. This diagram shows a PBX witn telephone sets, voice mail system, and trunk connections to PSTN. The PBX switch calls between telephone sets and also provides them switched access to the PSTN. The voice mail depends on the PBX to switch all calls needing access to it along with the appropriate information to process the call.



Digital Subscriber Line (DSL) Syste

- This figure shows a basic DSL system.
- This diagram shows that the key to DSL technologies is a more efficient use of the 1 MHz of bandwidth available on a single pair of copper telephone lines.
- A DSL system consists of compatible modems on each end of the local loop. For some systems, the DSL system allows for multiple types of transmission on a single copper pair.
- This includes analog or ISDN telephone (e.g., POTS) and digital communications (ADSL or VDSL).
- This diagram shows that there are basic trade offs for DSL systems.
- Generally, the longer the distance of the copper line, the lower the data rate. Distances of less than 1,000 feet can achieve data rates of over 50 Mbps.