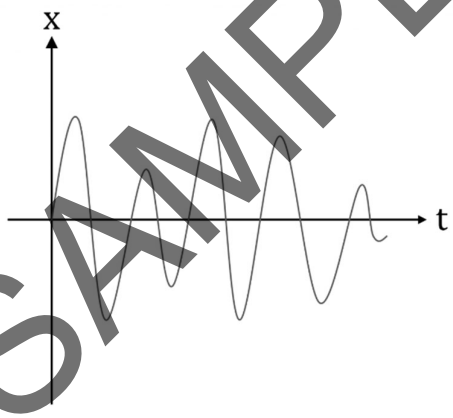
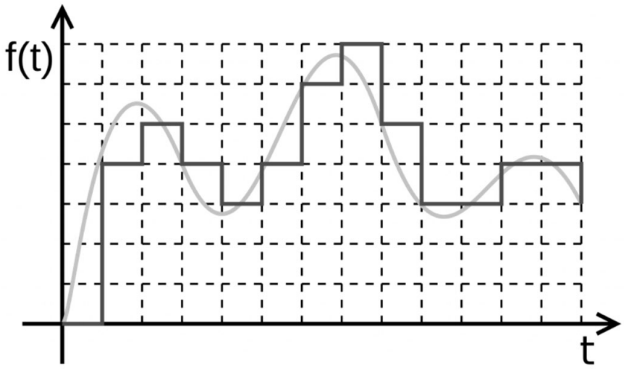
Signal Types

Analog and digital signals are different types which are mainly used to carry the data from one apparatus to another. Analog signals are continuous wave signals that change with time period whereas digital is a discrete signal is a nature.

What is Analog and Digital Signal?

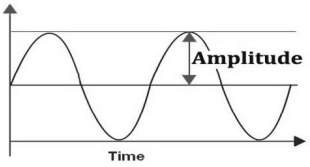




Digital signals are more resistant toward the noise; therefore, it barely faces some distortion. These waves are simple in transmitting as well as more dependable while contrasted to analog waves. Digital signals include a limited variety of values which lies among 0-to-1.

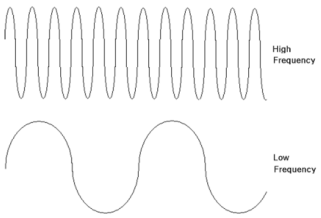
Properties

Amplitude



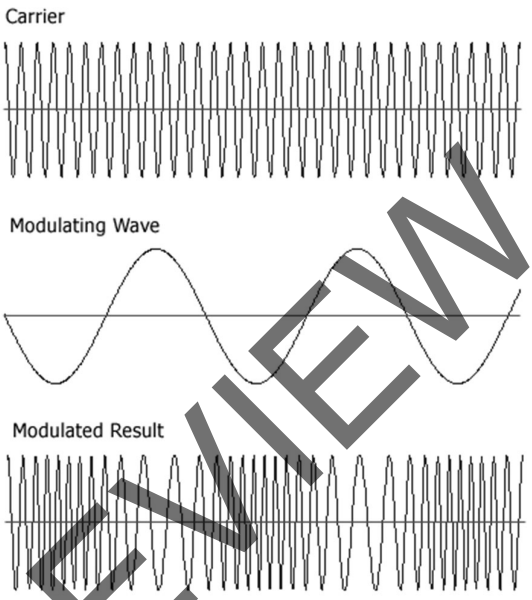
Amplitude: The height of the wave measured in meters

Frequency



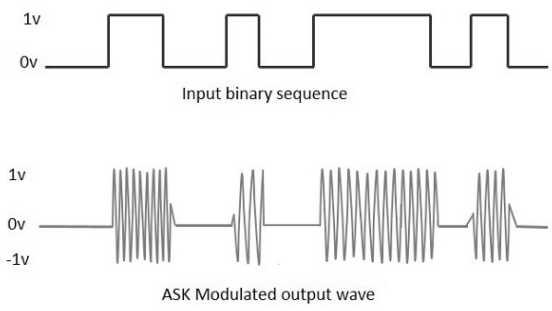
Frequency: The number of complete waves that pass a point in one Second, Measured in Hertz (Hz)

Phase modulation



Digital-to-Analog Conversion

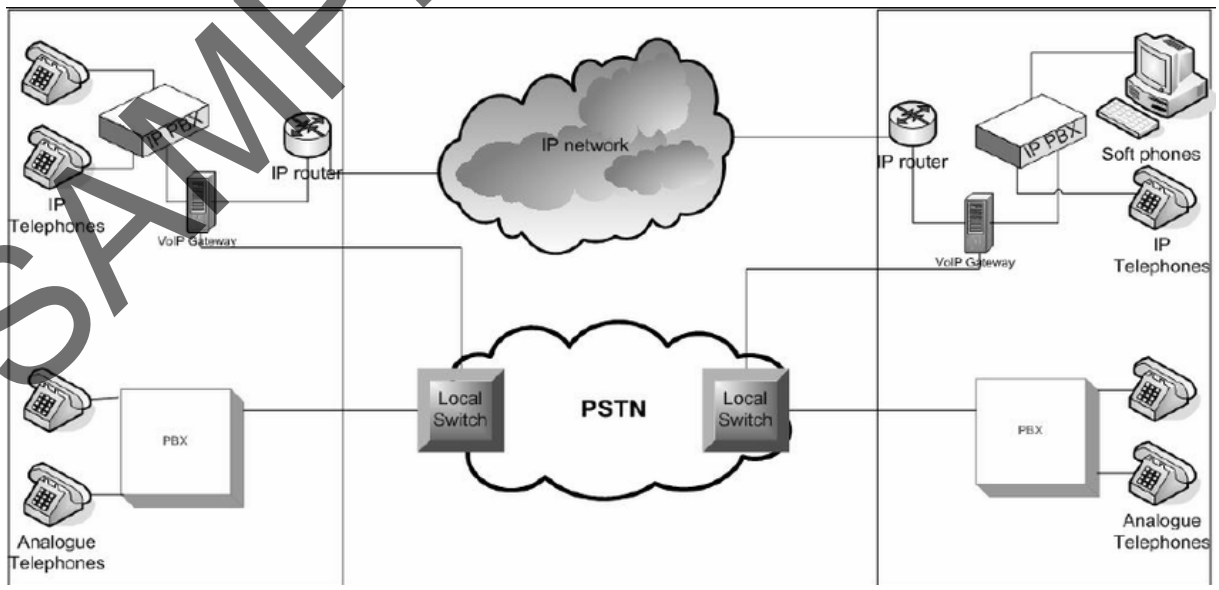
Amplitude Shift Keying (ASK)



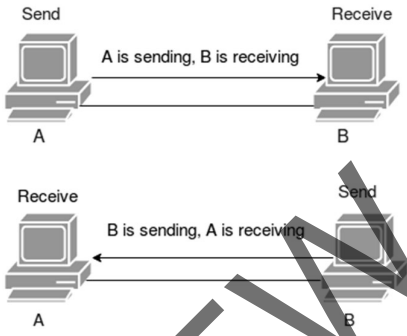
The traditional structure of the Public Switched Telephone Network

SO HOW DOES THE PSTN WORK? SOMEONE PICKS UP THE PHONE, DIALS, AND…

The circuit switched PSTN opens a continuous connection between two phones, that begins with a dial tone and ends when the phone is hung up.



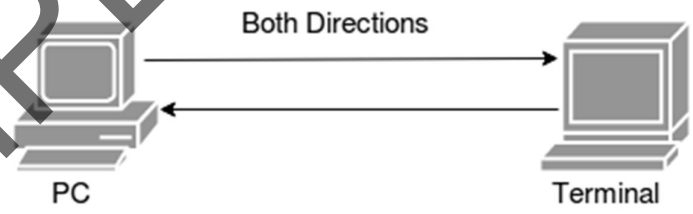
Half-Duplex Mode



Full-Duplex Mode

- Either the link must contain two physically separate transmission paths, one for sending and other for receiving.
- Or the capacity is divided between signals travelling in both directions.

Full-duplex mode is used when communication in both directions is required all the time. The capacity of the channel, however, must be divided between the two directions.
Example: Telephone Network in which there is communication between two persons by a telephone line, through which both can talk and listen at the same time.

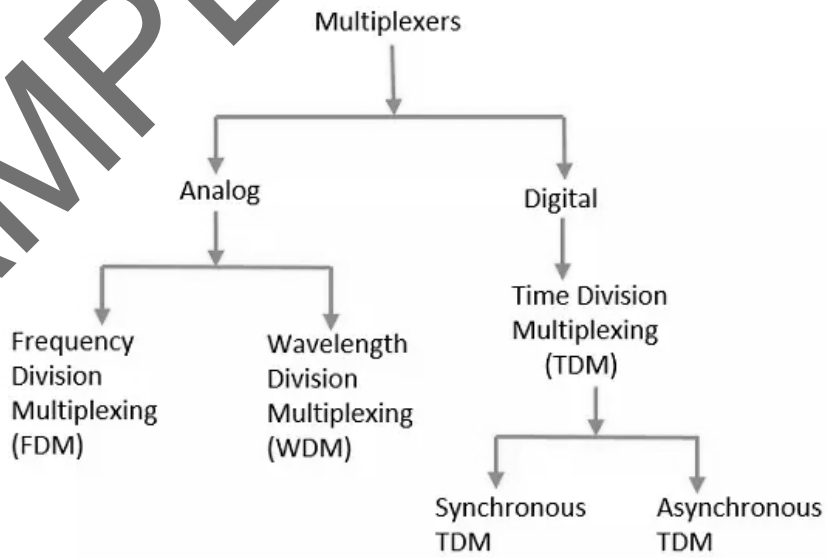


Multiplexing

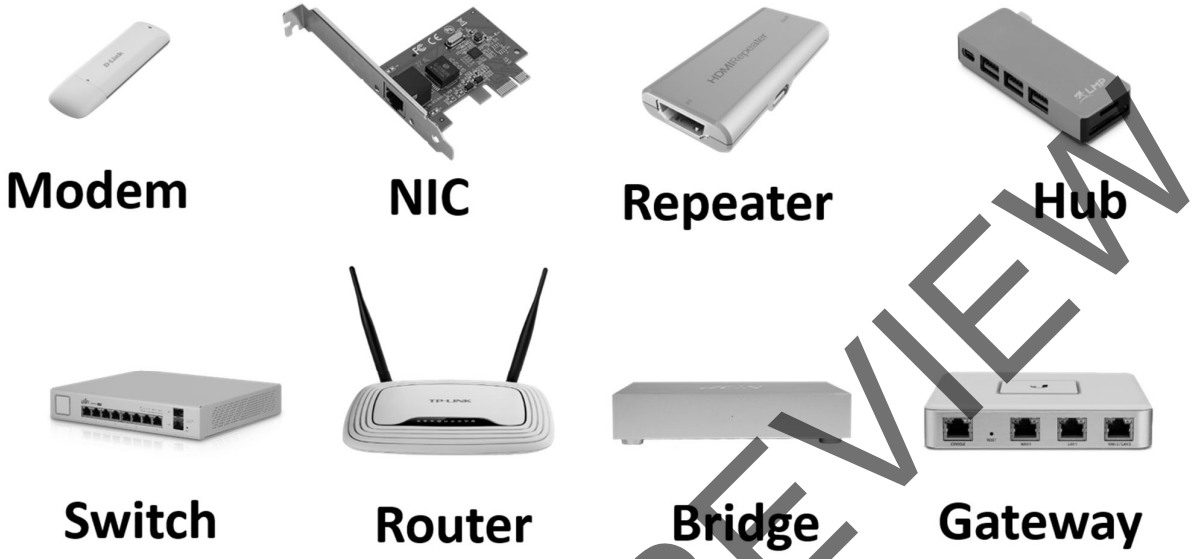
Multiplexing and Demultiplexing

Types of Multiplexers

There are mainly two types of multiplexers, namely analog and digital. They are further divided into FDM, WDM, and TDM.



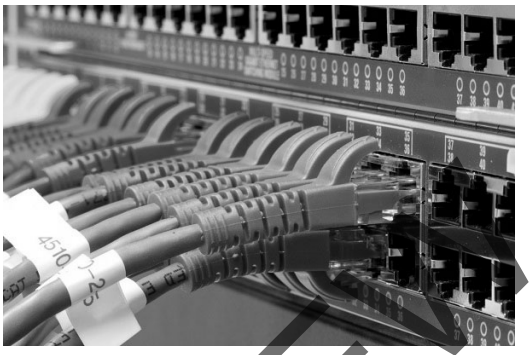
Networking Devices



Network devices, or networking hardware, are physical devices that are required for communication and interaction between hardware on a computer network.

Hub

Switch



Routers

Routers help transmit packets to their destinations by charting a path through the sea of interconnected networking devices using different network topologies. Routers are intelligent devices, and they store information about the networks they're connected to.

- **Dial-up**: This is generally the slowest type of Internet connection, and you should probably avoid it unless it is the only service available in your area. Dial-up Internet uses your **phone line**, so unless you have multiple phone lines you will not be able to use your landline and the Internet at the same time.
- **DSL**: DSL service uses a **broadband connection**, which makes it much faster than dial-up. DSL connects to the Internet **via a phone line** but does not require you to have a landline at home. And unlike dial-up, you'll be able to use the Internet and your phone line at the same time.
- **Cable**: Cable service connects to the Internet **via cable TV**, although you do not necessarily need to have cable TV in order to get it. It uses a broadband connection and can be faster than both dial-up and DSL service; however, it is only available where cable TV is available.
- **Satellite**: A satellite connection uses broadband but does not require cable or phone lines; it connects to the Internet **through satellites orbiting the Earth**. As a result, it can be used almost anywhere in the world, but the connection may be affected by weather patterns. Satellite connections are also usually slower than DSL or cable.
- **3G and 4G**: 3G and 4G service is most commonly used with mobile phones, and it connects **wirelessly** through your ISP's network. However, these types of connections aren't always as fast as DSL or cable. They will also **limit the amount of data** you can use each month, which isn't the case with most broadband plans.

Choosing an Internet service provider

Most ISPs offer several tiers of service with different Internet speeds, usually measured in Mbps (short for megabits per second). If you mainly want to use the Internet for email and social networking, a slower connection (around 2 to 5 Mbps) might be all you need. However, if you want to download music or stream videos, you'll want a faster connection (at least 5 Mbps or higher).

You'll also want to consider the cost of the service, including installation charges and monthly fees. The faster the connection, the more expensive it will be per month.

Although dial-up has traditionally been the least expensive option, many ISPs have raised dial-up prices to be the same as broadband. This is intended to encourage people to switch to broadband. We do not recommend dial-up Internet unless it's your only option.

Education

Better Awareness

Good Practices

1. Use a firewall

One of the first lines of defense in a cyber-attack is a firewall. In addition to the standard external firewall, many companies are starting to install internal firewalls to provide additional protection. It's also important that employees working from home install a firewall on their home network as well. Consider providing firewall software and support for home networks to ensure compliance.

2. Document your cybersecurity policies

While small businesses often operate by word of mouth and intuitional knowledge, cyber security is one area where it is essential to document your protocols.

3. Plan for mobile devices