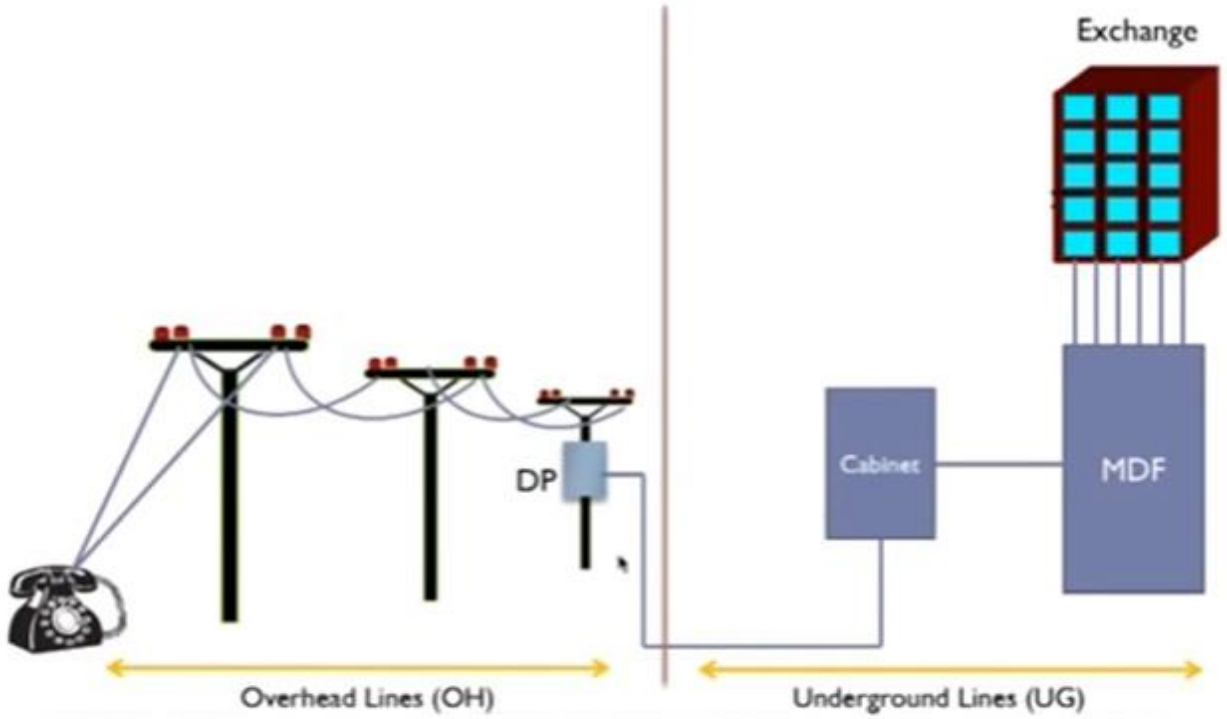
6.4 Explores the use of Public Switched Telephone Network (PSTN) to connect two remote devices

What is a Public Switched Telephone Network (PSTN)?

The PSTN (Publicly Switched Telephone Network) is the worldwide collection of interconnected public telephone network that **carries your voice calls (Analog Telephone calls)** when you call from a landline or cell phone.

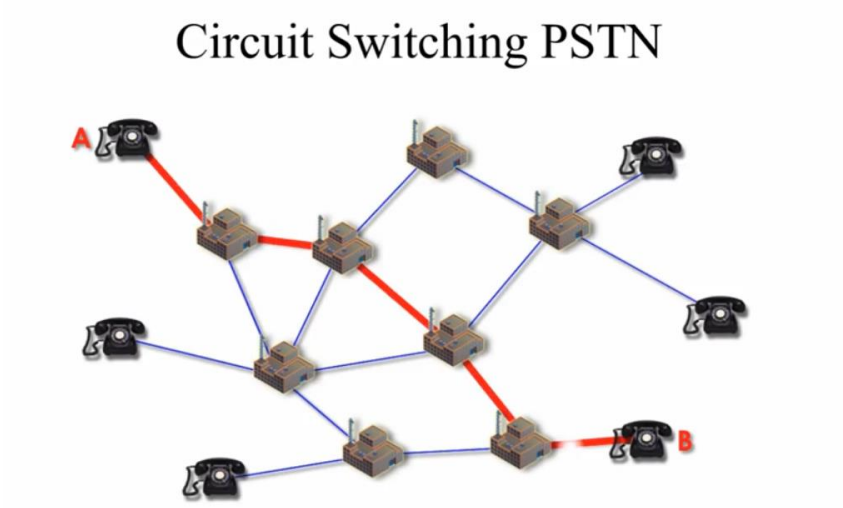
It refers to the worldwide network of voice-carrying telephone infrastructure, including privately-owned and government-owned infrastructure.

That was designed primarily for analog telephone calls.



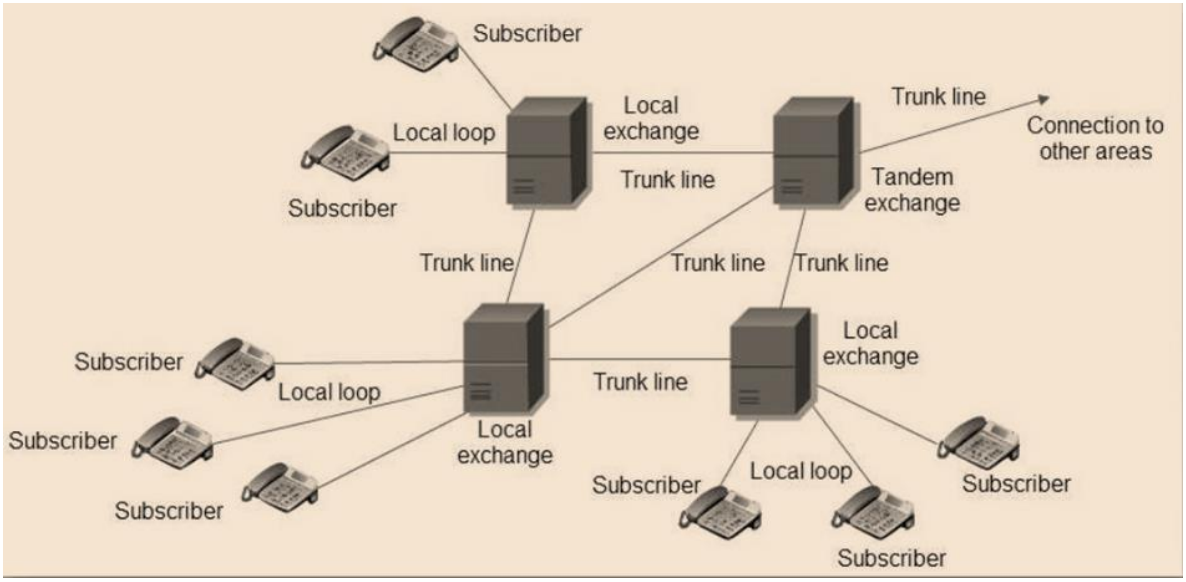
PSTN Network

PSTN also referred to as the landlines/Plain Old Telephone Service (POTS). It's the **aggregation of circuit-switching telephone networks** that has evolved from the days of Alexander Graham Bell.

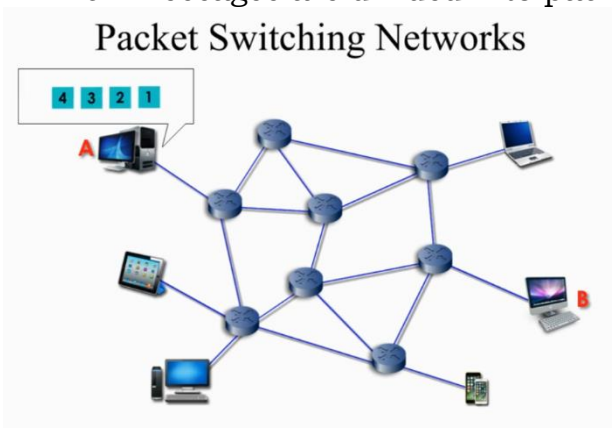


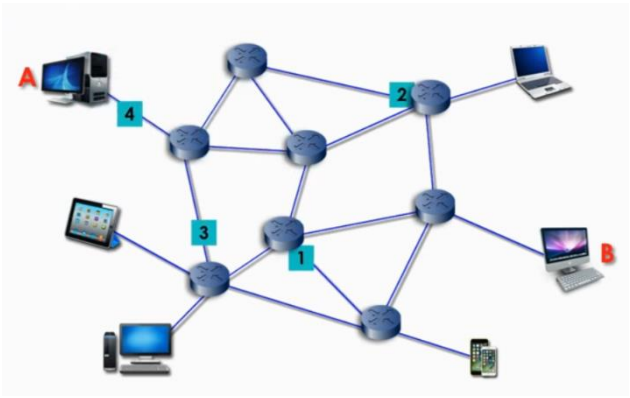
The PSTN is a circuit-switched network.

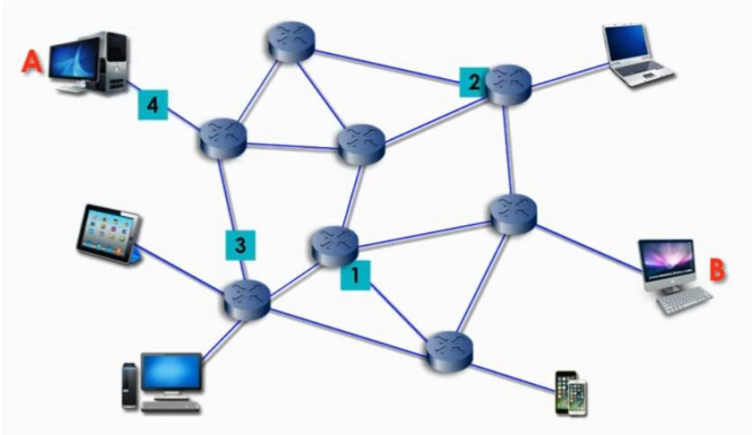
In the sense a dedicated circuit is established for the duration of a telephone call.



But **this contrasts with packet switching networks**, such as the internet, in which messages are divided into packets and each packet is sent individually.







Originally, PSTN was only an analog system, but it is now almost entirely digital. Only the vey oldest and most backward parts still use analog.

In terms of physical media, PSTN is a mix of copper wires, fiber optics and wireless.

PSTN forms a basic foundation and a very important part in the infrastructure of WAN technologies.

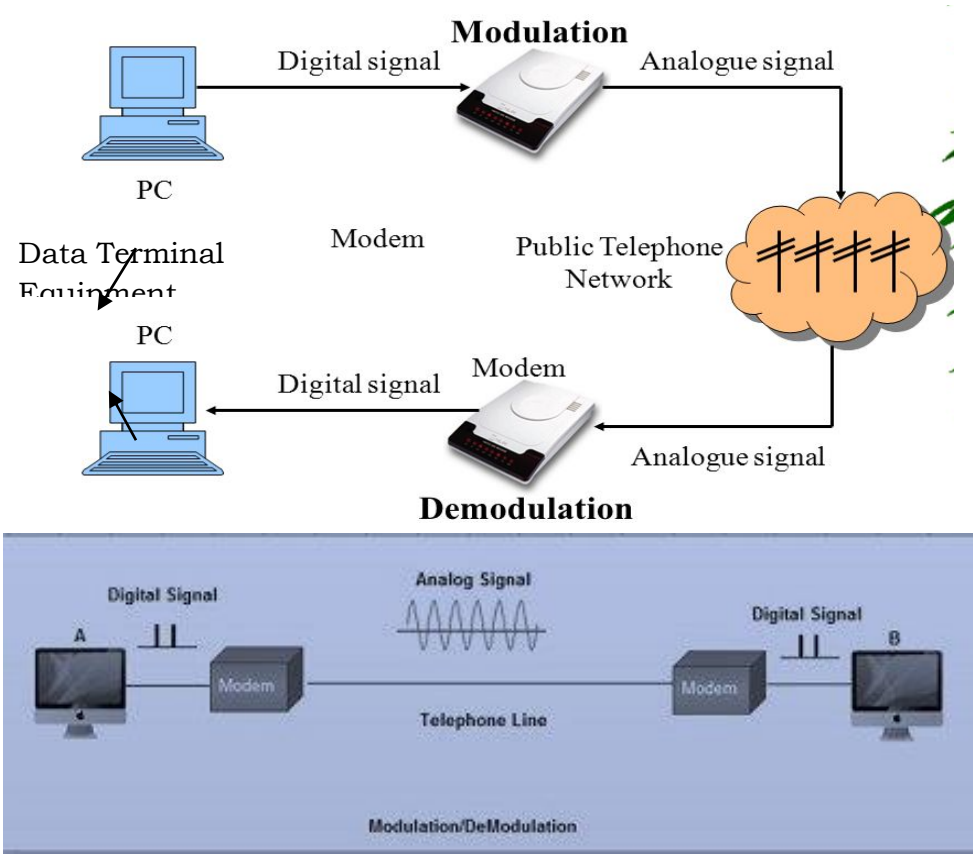
PSTN – Dial Up Connections: Requires a modem and a phone line to dial into a service provider's node, in order to get the connection

Modulation, Demodulation and Modem

Modem is abbreviation for Modulator – Demodulator. Modems are used for data transfer from one computer network to another computer network through telephone lines. The computer network works in digital mode, while analog technology is used for carrying massages across phone lines.

Modulator converts information from **digital mode to analog mode** at the transmitting end and demodulator converts the same from **analog to digital at receiving end**. The process of converting analog signals of one computer network into digital signals of another computer network so they can be processed by a receiving computer is **referred to as digitizing.**

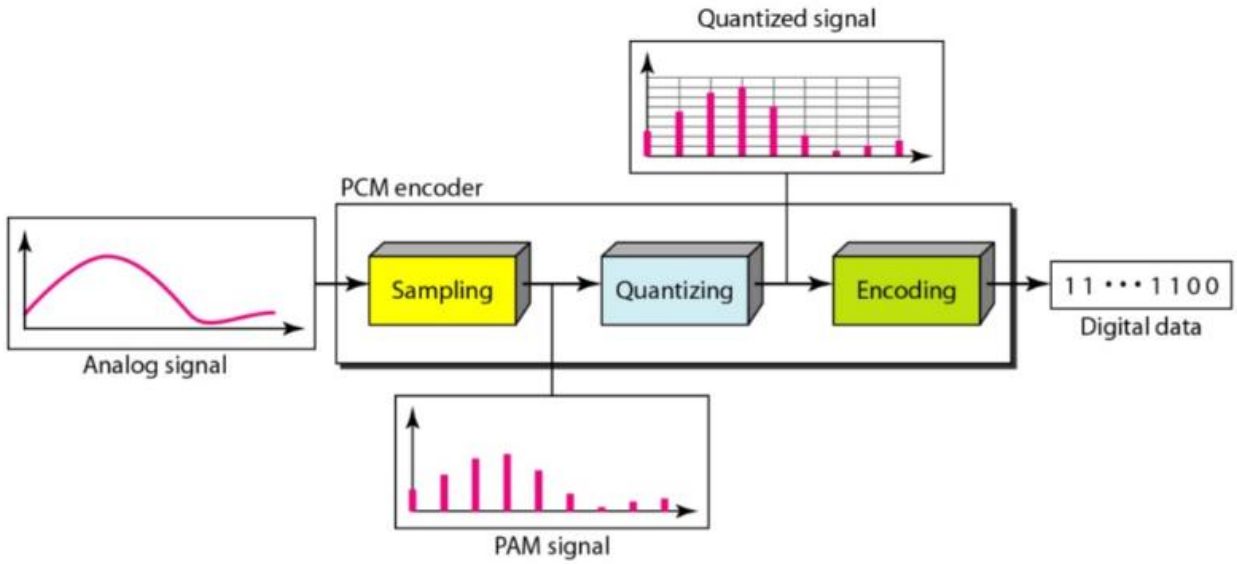
When an analog facility is used for data communication between two digital devices called Data Terminal Equipment (DTE), modems are used at each end. DTE can be a terminal or a computer.



Different modulation schemes

Different modulation schemes are used to modulate data. Pulse Code Modulation (PCM) is one method in which the **samples of an analog signal** are taken (called a pulse amplitude modulated signal – PAM signal) and then are shown that the original signal can be constructed at the receive end using these samples.

Analog voice data must be translated into a series of binary digits before they can be transmitted. With PCM, the amplitude of the sound wave is sampled at regular intervals and translated into a binary number. The difference between the original analog signal and translated digital signal is called quantizing error.



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