

## 1. What are the different types of networks?

A computer network is a group of computers linked to each other that enables the computer to communicate with another computer and share their resources, data, and applications.

A computer network can be categorized by their size. A **computer network** is mainly of **four types**:

### LAN(Local Area Network)

- Local Area Network is a group of computers connected to each other in a small area such as building, office.
- LAN is used for connecting two or more personal computers through a communication medium such as twisted pair, coaxial cable, etc.
- It is less costly as it is built with inexpensive hardware such as hubs, network adapters, and ethernet cables.
- The data is transferred at an extremely faster rate in Local Area Network.
- Local Area Network provides higher security.

### PAN(Personal Area Network)

- Personal Area Network is a network arranged within an individual person, typically within a range of 10 meters.
- Personal Area Network is used for connecting the computer devices of personal use is known as Personal Area Network.
- **Thomas Zimmerman** was the first research scientist to bring the idea of the Personal Area Network.
- Personal Area Network covers an area of **30 feet**.
- Personal computer devices that are used to develop the personal area network are the laptop, mobile phones, media player and play stations.

**here are two types of Personal Area Network:**

- Wired Personal Area Network
- Wireless Personal Area Network

**Wireless Personal Area Network:** Wireless Personal Area Network is developed by simply using wireless technologies such as WiFi, Bluetooth. It is a low range network.

## MAN(Metropolitan Area Network)

- A metropolitan area network is a network that covers a larger geographic area by interconnecting a different LAN to form a larger network.
- Government agencies use MAN to connect to the citizens and private industries.
- In MAN, various LANs are connected to each other through a telephone exchange line.
- The most widely used protocols in MAN are RS-232, Frame Relay, ATM, ISDN, OC-3, ADSL, etc.
- It has a higher range than Local Area Network(LAN).

## AN(Wide Area Network)

- A Wide Area Network is a network that extends over a large geographical area such as states or countries.
- A Wide Area Network is quite bigger network than the LAN.
- A Wide Area Network is not limited to a single location, but it spans over a large geographical area through a telephone line, fibre optic cable or satellite links.
- The internet is one of the biggest WAN in the world.
- A Wide Area Network is widely used in the field of Business, government, and education.

2. Explain the Shielded twisted pair (STP) and Unshielded twisted pair(UTP)

## STP and UTP Cables

Shielded twisted pair cable (STP) has the individual pairs of wires wrapped in foil, which are then wrapped again for double protection. Unshielded twisted pair cable (UTP) has each pair of wires twisted together. Those wires are then wrapped in tubing without any other protection. UTP cables are less expensive, and a more popular type of cabling.

### 3. What is difference between baseband and broadband transmission?

Baseband transmission is a data transmission technique in which one signal needs the whole bandwidth of the channel to transfer the data. In contrast, broadband transmission is a transmission technology in which many signals with different frequencies send data across a single channel at the same time.

### 4. What is the difference between a hub, modem, router and a switch?

Modem:	<p>Stands for "modulating-demodulating":</p> <p>modems are hardware devices that allow a computer or another device, such as a router or switch, to connect to the Internet. They convert or "modulate" an analog signal from a telephone or cable wire to digital data (1s and 0s) that a computer can recognize.</p> <p>Simply send traffic from point A to point B without further manipulation.</p>
Routers:	<p>Are responsible for sending data from one network to another.</p> <p>Work at Layer 3 (Network) of the OSI model, which deals with IP addresses.</p> <p>Typically, routers today will perform the functionality of both a router and a switch - that is, the router will have multiple ethernet ports that devices can plug into.</p>
Switches:	<p>They use the MAC address of a device to send data only to the port the destination device is plugged into.</p> <p>Work at Layer 2 (Data Link) of the OSI model, which deals with MAC addresses.</p>
Hubs:	<p>Unlike switches, hubs broadcast data to all ports, which is inefficient, so hubs are basically a multiport repeaters.</p>

### 5. When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well?

When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well? Ans: **Yes, that's because MAC addresses are hard-wired into the NIC circuitry, not the PC.** This also means that a PC can have a different MAC address when the NIC card was replaced by another one

6. When troubleshooting computer network problems, what common hardware-related problems can occur?

Most common hardware related problems are **PaBX, LAN Card, WLAN Card and Wi-Fi AP if it is wireless, Cables, Switches, Routers and Wireless Controllers**. Most problems are hardware related, a faulty power cable or power supply unit.

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