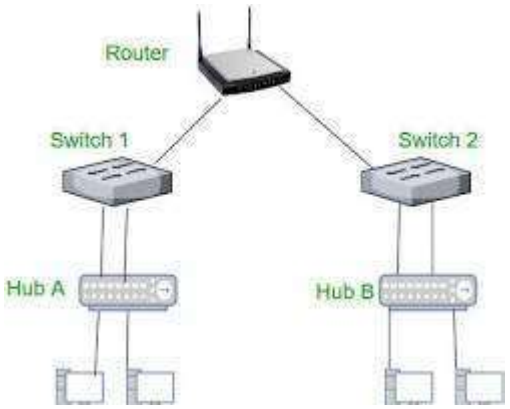
NETWORKING DEVICES

- Hubs: Hubs are simple devices that connect multiple devices together on a single network segment. They act like a central electrical outlet, where any device connected to the hub can send and receive data to any other device on the same hub. However, hubs are not very efficient, as all data sent on the network is seen by all devices, even if it is not addressed to them. This can lead to collisions and slow down the network.



Hub networking device

- Switches: Switches are more intelligent than hubs. They can learn the MAC addresses of the devices that are connected to them and send data only to the specific device that it is addressed to. This makes switches much more efficient than hubs, as it reduces collisions and improves network perform

Switch networking device

- Routers: Routers are used to connect different networks together. They can direct traffic between networks based on the IP address of the destination device.

Routers are essential for connecting to the internet, as they allow your computer to send and receive data to and from other computers on the internet.

Router networking device

- Firewalls: Firewalls are security devices that monitor and control incoming and outgoing traffic on a network. They can be used to block unauthorized access to a network and to protect against malware and other threats.

Firewall networking device

- Modems: Modems are used to convert data from a digital format to an analog format and vice versa. This is necessary because most internet service providers (ISPs) use analog telephone lines to deliver internet service. Modems are also used in cable and DSL internet connections.

Modem networking device

- **Access points**: Access points are used to create wireless networks. They allow devices such as laptops and smartphones to connect to the internet without the need for wires.

Access point networking device

Repeater –:

A repeater operates at the physical layer. Its job is to regenerate the signal over the same network before the signal becomes too weak or corrupted to extend the length to which the signal can be transmitted over the same network.

An important point to be noted about repeaters is that they not only amplify the signal but also regenerate it. When the signal becomes weak, they copy it bit by bit and regenerate it at its star topology connectors connecting following the original strength. It is a 2-port device.

NIC:

NIC or network interface card is a network adapter that is used to connect the computer to the network. It is installed in the computer to establish a LAN. It has a unique id that is written on the chip, and it has a connector to connect the cable to it.

RJ45 and RJ11

A registered jack (RJ) is a standardized network interface for connecting voice and data telecommunications equipment. The Registered Jack connectors – RJ45 and RJ11 are used with the UTP cables. **RJ45** is used for connecting the ethernet cables to different electronic devices. The RJ45 is an 8 pin connector used to attach the ethernet interfaces. It is known as an 8P8C connectors.

RJ11: RJ11 is used to terminate the conventional PSTN telephone networks. RJ11 is a four pins connector which is used for terminating the telephone wires.

RJ-45 are used with ethernet cables.	RJ-11 are used for connecting telephone wires.
The structure of RJ45 is of larger size	The structure of RJ11 is comparatively small
Bandwidth supported by RJ-45 is 10 Gbps over ethernet	Bandwidth supported by RJ-1 is 24 Mbps
The number of wires connected with RJ45 is 8	The number of wires connected with RJ11 is 4

Feature	Gateway	Router	Bridge	Switch
Function	Connects **dissimilar networks** with different protocols	Connects **similar networks** or subnets using IP addresses	Connects **two network segments** within the same network using MAC addresses	Connects **multiple devices** within the same network using MAC addresses
OSI Layer	Layers 2-7	Layers 3-4	Layer 2	Layer 2