

Aim - Introduction to computer networking theory

Theory - It is a system in which multiple computers are connected to each other to share information & resources.

There are various types of topology.

### ① Mesh Topology

Each device is connected to every other device on the network through a dedicated point to point link.

### ② Star Topology

Each device is connected to central device called hub.

### ③ Bus Topology

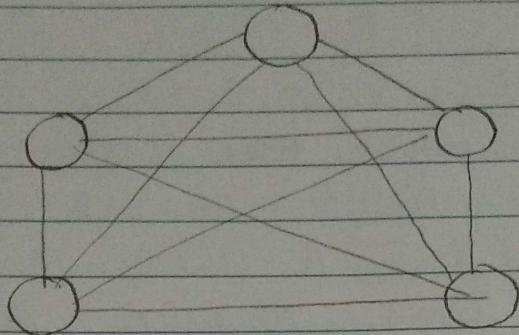
There is a main cable and all devices are connected to this main cable through drop lines.

### ④ Ring Topology

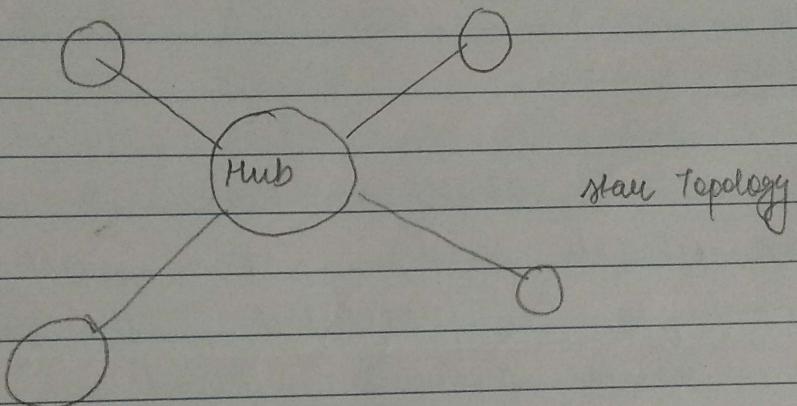
Each device is connected with two device on either side of it.

### ⑤ Hybrid Topology

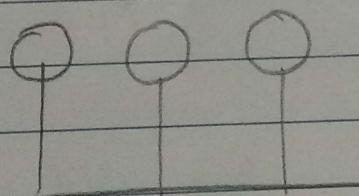
A combination of two or more topology is called hybrid topology.



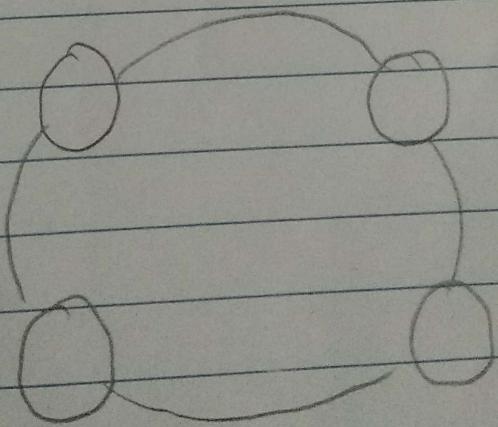
Mesh Topology



Star Topology



Bus Topology



Ring Topology



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## Client & Server

A server is a computer that holds content & services such as website, a media file or a chat application. A client is a computer, that requests to view, download or use the content. The client can connect over a network to exchange information.

## Mac Address

It is a unique identifier that is assigned to NIC (Network Interface Card). It consists of 48 bit or 64 bit address, w/c is associated with network adapter. MAC address can be hexadecimal format.

## IP Address

Address that helps you to identify a network connection known as logical address.



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## switch

A network switch is a computer networking device that connects various devices together on a single computer network. It uses full duplex.

## Bridge

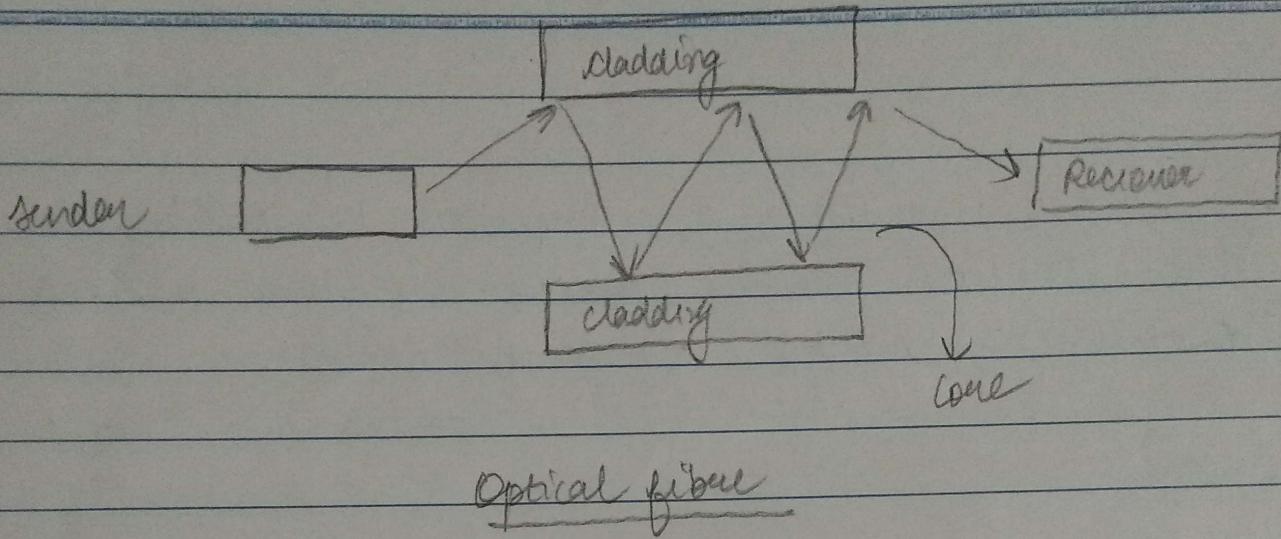
It is a network device that connects multiple LAN together to form a larger LAN. It increases the network capacity of LAN. The working principle of bridge is it blocks or forward the data depending on destination MAC address.

## Twisted Cable Pair

It consists of two conductor each with its own plastic insulation twisted together which helps to reduce crosstalk or串行干扰 between lines. The most common twisted cable pair used in communication is UTP.



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STP (shielded twisted pair) has a metal foil or braided  
braided w/c prevent crosstalk

### Coaxial cable

Cables signals of higher frequency ranges than twisted  
cable, in part because the two media are constructed  
quite differently.

### Gateway

It regulates to affic b/w two dissimilar networks, while  
router manager to affic b/w similar networks

Result - Different component of network were studied.