

Computer Network - Types and Topologies

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A computer network is a group of computers that are connected to each other for the purpose of communication. It is a combination of hardware and software resources which allows computers to communicate with many computers and share information between computing devices.



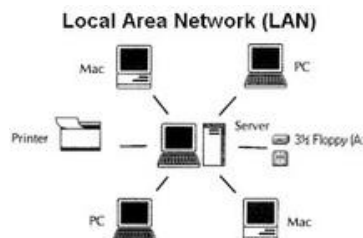
Components of Network

- *Server* - The computers that provide shared resources to network users.
- *Receiver* - The computers that access the shared resources provided by server.
- *Medium* - The wires which makes the physical connections.

TYPES OF COMPUTER NETWORKS

(1) **Local Area Network (LAN)** - It is a computer network that covers a small geographical area like home, office or small group of buildings.

- It is small in size and generally owned by private body.
- It covers maximum ratings of 10 km.
- Data transfer rates are high.
- Two or more computing devices are connected by physical media such as transmission cable
- LAN is based on Ethernet Technique.



(2) **Wide Area Network (WAN)** - It is a computer network that may covers geographical area of a country or continent. It is use to connect LANs and other types of network together so that users of different locations connect with each other,

- Data transfer rate is relatively slower than LAN.
- WANs are often built using switched circuits.

- The device which connects WAN with several LANs is called router.



(3) **Metropolitan Area Network (MAN)** - It is a computer network that usually spans a city or large campus.

- It covers maximum radius of 50 km.
- It usually interconnects a number of LANs into a large network.
- It may be a single network such as Cable TV network, spread over a city.

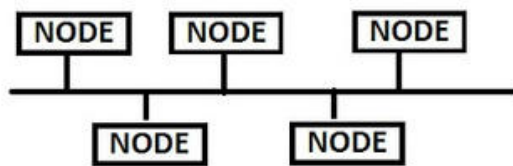


○ NETWORK TOPOLOGIES

Network Topologies describes the physical layout i.e. how cables, nodes and connection devices are linked or organised together.

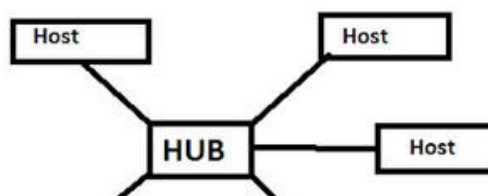
(1) **Bus Network Topology** - It is network topology in which set of nodes are connected by a single communication line, called a bus.

- It is simplest way to connect multiple nodes
- At one time only one node can send data across the network
- The failure of one device does not affect the others.



(2) **Star Network Topology** - In this, all the computers are connected to the central device called Hub. Node send electronics signal to the hub, and then to the remaining computers on the network.

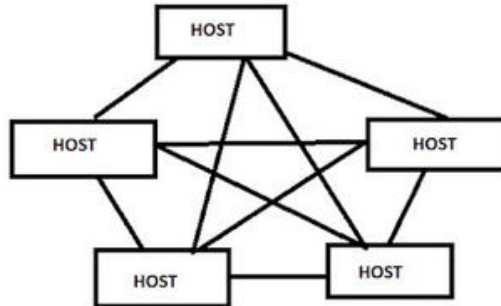
- If Hub will fail then all other computer networks will also fail.
- If only one computer will fail, then it will not affect the other networks.
- It is not so expensive as it requires only one cable to connect more host.





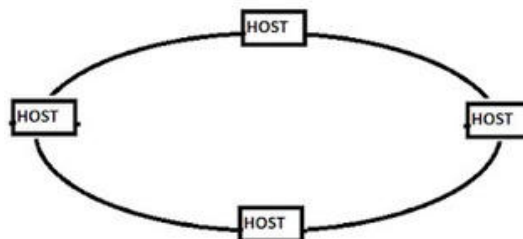
(3) Mesh Network Topology - In this, each node in the network has a connection with other node in the network.

- The cost of this network is high as it requires large amount of cables and each node require hub.
- It is more reliable as there is more than one path between a source and a destination in the network.



(4) Ring Network Topology - It is a network topology each node connects to exactly two other nodes forming a single continuous pathway for signals through each node like a ring.

- The failure of any node may result in failure of the whole ring network.



Some Network Related Terms

- **Protocol** - It is set of rules and standards which is used by computers to exchange data or information with each other across a network.
- **Nodes** - It is a connect point where either data transmission ends or redistribution of data starts.
- **Hosts** - It is computer or other devices connected to a computer network

Must read

- [Computer Network Terms](#)
- [OSI Model layers](#) (Important)