Topology - is the arrangement of the various elements (links, nodes, etc.) of a computer network.

BUS Topology

Bus topology is a network type in which every computer and network device is connected to single cable. When it has exactly two endpoints, then it is called Linear Bus topology. It transmits data only in one direction. Every device is connected to a single cable

Advantages-

1) short cable length 2) easy to extend

Disadvantages-

1) fault diagnosis is difficult 2) nodes must be intelligent to select the data sent.

RING Topology

It is called ring topology because it forms a ring as each computer is connected to another computer, with the last one connected to the first. Exactly two neighbours for each device.

Advantages-

1) each node gets to send the data when it receives an empty token. This helps to reduce chances of collision. Also in ring topology all the traffic flows in only one direction at very high speed.

2) there is no need for network server to control the connectivity between workstations

Disadvantages –

1) node failure causes network failure. If one workstation or port goes down,the entire network gets affected

2) network is highly dependent on the wire which connects different components.

STAR Topology

In this type of topology all the computers are connected to a **single hub through a cable**. This **hub is the central node** and all others nodes are connected to the central node. It is used in most existing information networks involving data processing or voice communications

Advantages- 1) one device per connection 2) easy to extend

Disadvantages – 1) long cable length 2) central node dependency

TREE Topology

It has a root node and all other nodes are connected to it forming a hierarchy. It is also called

hierarchical topology. It should at least have three levels to the hierarchy.

Advantages- 1) Easy to extend 2) fault isolation is easy

Disadvantages – 1) dependent on the root computer 2) complex access protocols

Q Write two advantage and disadvantage of networks.

Ans **Advantage**:

⬜ We can share resources such as printers and scanners.

⬜ Can share data and access file from any computer.

Disadvantage:

⬜ Server faults stop applications from being available.

⬜ Network faults can cause loss of data.

Q What are the factors that must be considered before making a choice for the topology?

Ans There are number of factors to consider in before making a choice for the topology, the most

important of which are as following :

(a) **Cost.**

(b) **Flexibility**

(c) **Reliability**

Q What are the similarities and differences between bus and tree topologies?

Ans . **Similarities**:

⬜ In both Bus and Tree topologies transmission can be done in both the directions, and can be

received by all other stations.

⬜ In both cases, there is no need to remove packets from the medium.

Difference:

⬜ Bus topology is slower as compared to tree topology of network.

⬜ Tree topology is expensive as compared to Bus Topology

Q What are the limitations of star topology?

Ans

⬜ Requires more cable length than a linear topology.

⬜ If the hub, switch, or concentrator fails, nodes attached are disabled.

⬜ More expensive than linear bus topologies because of the cost of the hubs, etc.

Q When do you think, ring topology becomes the best choice for a network?

Ans Ring topology becomes the best choice for a network when,

⬜ Short amount of cable is required.

⬜ No wiring closet space requires

Q .Write the two advantages and two disadvantages of Bus Topology in network.

Ans **Advantage**:

⬜ Easy to connect a computer or peripheral to a linear bus.

⬜ Requires less cable length than a star topology.

Disadvantage :

⬜ Slower as compared to tree and star topologies of network

⬜ Breakage of wire at any point disturbs the entire network

Q Briefly mention two advantages and two disadvantages of Star Topology in network.

Ans **Advantage**:

⬜ Easy to install and wire.

⬜ No disruptions to the network when connecting or removing devices.

Disadvantage :

⬜ Requires more cable length than a linear topology.

⬜ If the hub, switch, or concentrator fails, nodes attached are disabled.