Network Topology refers to the logical arrangements of computers / nodes are connected and communicate with each other.

In a computer network, there are 6 different types of network topology.

Bus topology

Ring topology

Star topology

Mesh topology

Tree topology

Hybrid topology.

Bus topology is a network, all the computer nodes and network system are connected to a single transmission channel.

**Features**

It transfers the data in a single direction.

There is a single connection between the node/system and the channel.

**Advantages**

It is easy to connect a device and handle

Take less time to set up

It is best-suited for small networks.

Easy to expand.

**Disadvantages**

If the backbone cable fails, then the whole network will be down.

No bi-directional communication.

Not suitable for heavy traffic data transmission as it increases the chance of collision.

In a Ring topology, the device forms the ring shape, each device is connected exactly to its neighbour on both sides and the first and last nodes are connected to each other.

**Features**

To prevent the loss of the transmission data from the first node to the last node, number of repeaters are deployed in the network.

Dual Ring Topology: Bidirectional connections between each network node.

Data is transmitted in a sequential manner it can’t skip device in between.

**Advantages**

Chance of collision is less.

Cheap to set up and expand.

**Disadvantages**

Difficult to troubleshoot.

Failure in a single computer can lead to disturbing the whole network.

Adding or removing a computer will disturb the transmission of the data in the network.

In star topology, all the computers are connected to a single central node called a hub through a cable. All the transmission of data is through the hub.

**Features**

Every computer is connected to the hub through a dedicated connection/cable.

Hub also acts as a repeater.

**Advantages**

Failure of one computer will not affect other computers in a network.

Easy to add or remove the computer in a network.

Hub can be easily replaced.

**Disadvantages**

Performance of transmission depends on the hub.

Installation cost is high.

Failure of the hub will stop the transmission.

In a mesh topology, every computer is connected to each other computer via dedicated channels.

**Advantages**

It is robust

A fault is diagnosed easily.

Provides privacy and security.

**Disadvantages**

The cost of implementation and maintenance is higher.

Configuration and installation are difficult.

Suitable for less number of devices, as cable cost is high.

Tree topology has a root node and other two nodes are connected to the root node. There is only one connection between any two connected nodes. It has a parent-child hierarchy.

**Features**

Usually implemented in WAN

**Advantages**

Adding a computer to a node is easy.

Easier fault finding and maintenance.

Features of star and bus topology.

**Disadvantages**

Require huge cable.

Costly to implement.

If the root node fails then the whole network will fail and will stop its processing.

A hybrid topology is a combination of two or more types of network topology.

This types of network topology are usually implemented by the organisation

**Features**

Collection of two or more topology.

**Advantages**

Scalable: easy to increase the size of the network by adding new components

Effective: design in such a way that the strength of constituent topologies is maximized.

Flexible: It can be designed according to the requirement of the organisation.

Reliable: fault detection and troubleshooting is easy.

**Disadvantages**

Costly to implement: Cost of Infrastructure, hub and expertise increases.

Difficult to manage as it is complex in design.