

Hello everyone! In this video, you will understand various types of network topologies, their advantages and disadvantages.

A network topology refers to the arrangements of computers and other nodes in a network. It describes the design of a computer network and also defines the transmission technology that is the unidirectional or Omni directional flow of data inside a network.

There are various types of network topologies such as Mesh, Star, Bus and Ring etc. Various networks may have different topologies as per the scale of the network and standard followed by them such as IEEE802.11, IEEE 802.3 etc.

Mesh Topology requires all the machines in the network, to have direct communication links with other machines. Therefore, a network with n nodes will have n into $(n-1)$ divided by 2, cables and, each system will require $n-1$ LAN ports.

Mesh topology has many advantages such as:

There is no traffic problem in the network, as all the nodes are connected to each other directly. Nodes are provided with better privacy and security fault identification and isolation is also easier in mesh topology. It has some Disadvantages also. such as networks with mesh topology have Bulky cabling nodes require more I/O ports, which

makes Installation and reconfiguration of network difficult and hardware to connect each link expensive.

A Star topology is an arrangement of nodes, in the network, in such a way that each node is connected to a central hub, switch or a central computer. In this topology, the devices connect to each other through hub only. They are not allowed to directly communicate with each other.

Advantages of star topology include: -

Less cost, Easy to install and reconfigurable,
Less cabling than Mesh topology and easy fault identification and isolation

Similarly, disadvantages are: -

Hub failure can make whole system down, as no two machines in network can talk to each other directly.

It requires more cabling than other topologies such as tree, bus etc.

Bus topology is a network topology where each node in the network, is connected to a single backbone cable using drop lines. All the computers connected to the backbone cable receive all the network traffic, transmitted by other nodes. It is mostly used in small networks.

Similar to other topologies, Bus topology also has some advantages and disadvantages.

Advantages include

Easy installation and Less cabling

Whereas, **Disadvantages include**

Difficult reconfiguration and Difficult Fault isolation.

Apart from this, signal reflection at taps, in case of fault, may cause degradation in signal quality and A fault or break in the bus cable can stop all transmission.

In Ring topology, a ring of devices is formed, with each cable segment connecting exactly two devices, Repeaters are used for Ring topology with a large number of nodes, because if someone wants to send data to the last node in the network of 100 nodes, the data will have to pass through 99 nodes to reach the 100th node., a long path during which the signal may get deteriorate.

Ring topology has many advantages like, it is Easy to install and reconfigurable along with simple fault isolation. The defected cable or system, can easily be identified and isolated from the network.

Like other topologies, this topology is also not free from disadvantages. The disadvantages include unidirectional traffic flow which results in complete system failure in case of a break in a ring.

Thank You.