

- Shubham Agrawal



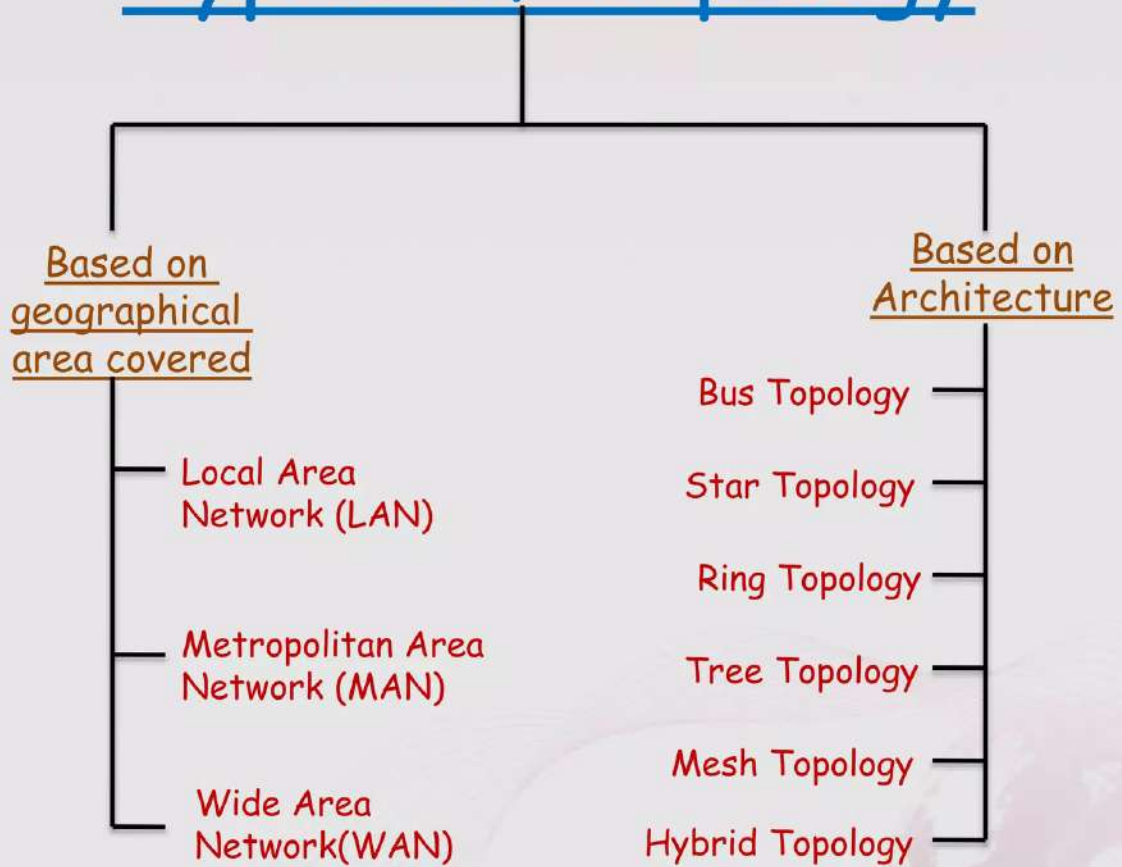
Network Topology

What is Network Topology?

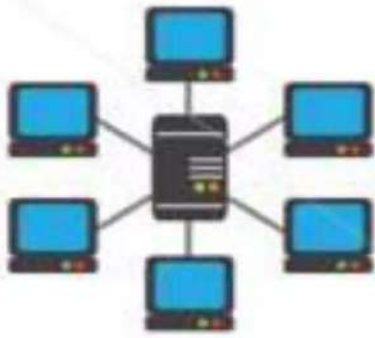
A computer network is a collection of two or more computers which are connected together to share information and resources.



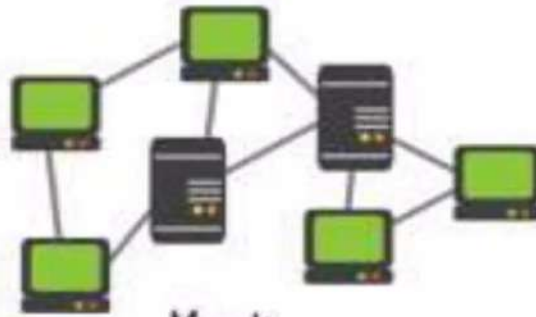
Types Of Topology



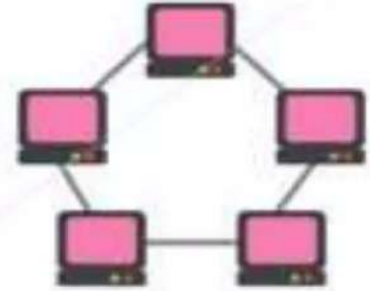
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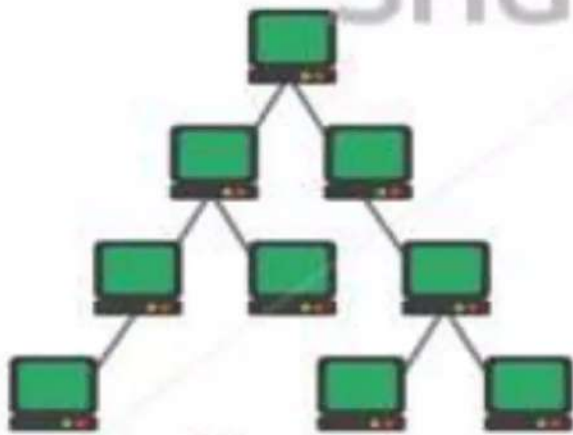
Star



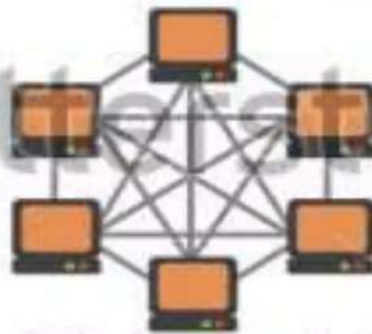
Mesh



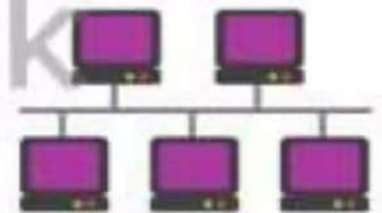
Ring



Tree



Fully Connected



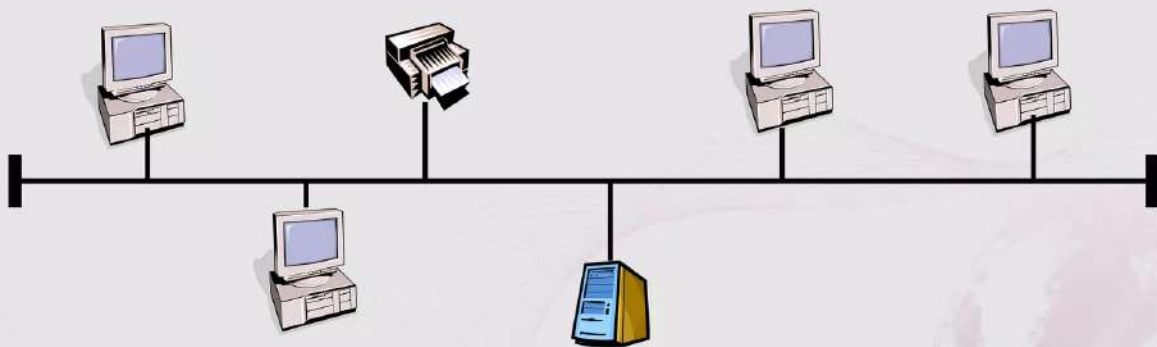
Bus



Line

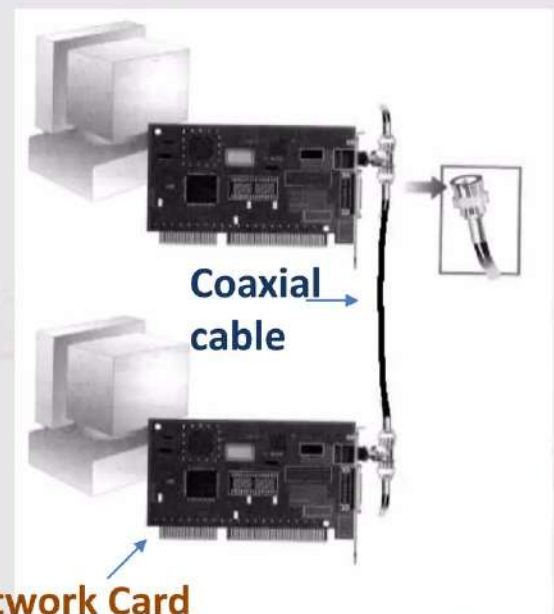
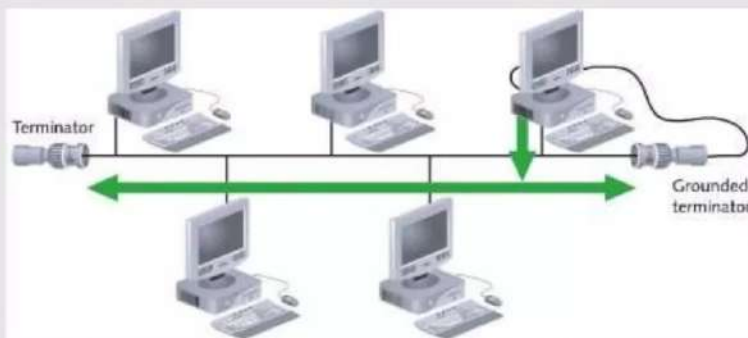
Bus Topology

A **Bus topology** consists of a single cable—called a **bus**— connecting all nodes on a network without intervening connectivity devices



Advantages of Bus Topology

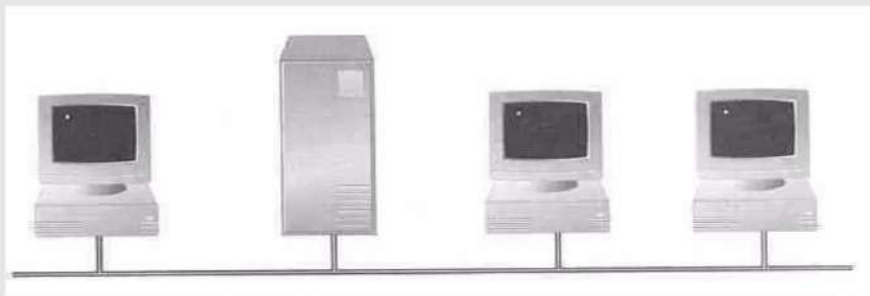
- Works well for small networks.
- Relatively inexpensive to implement.
- Easy to expand joining two cables together.
- Used in small network.



Network Card

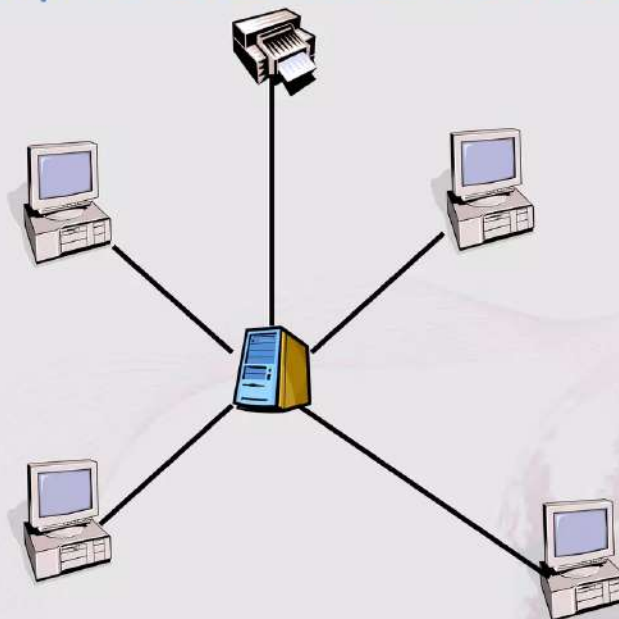
Disadvantages of Bus Topology

- Management costs can be high
- Cables fails then whole network fails.
- Cables has a limited length.



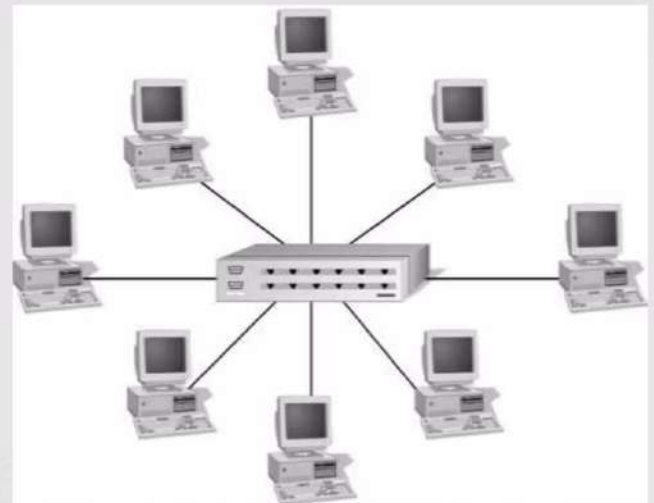
Star Topology

A star network is designed with each node (file server, workstation, peripheral) connected directly to a central network hub or server.



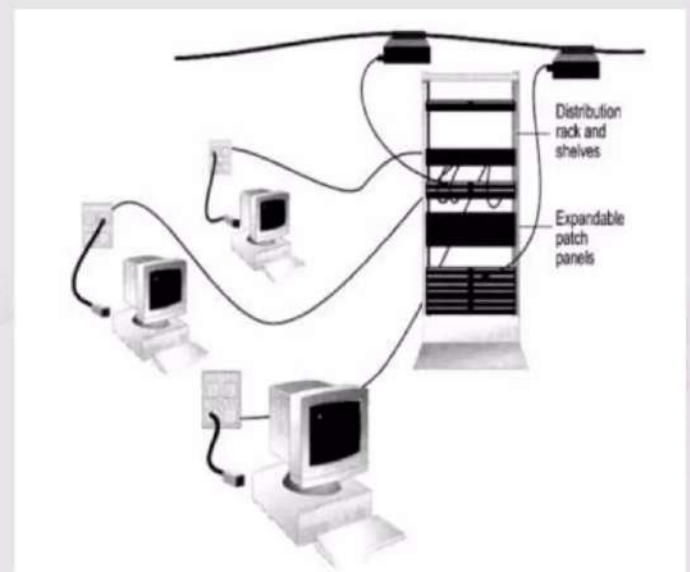
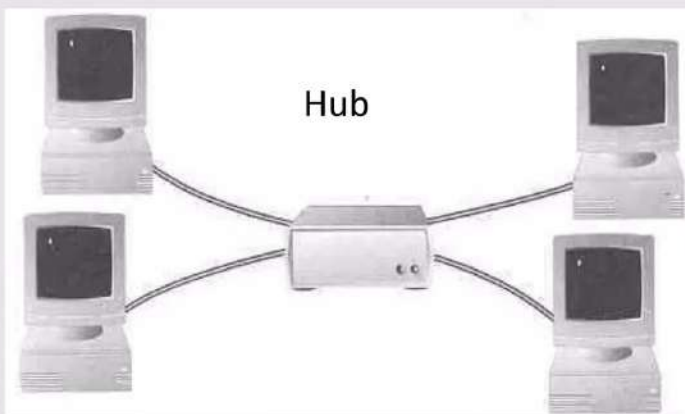
Advantages of Star Topology

- Good option for modern networks
- Low startup costs
- Easy to manage
- Offers opportunities for expansion
- Most popular topology in use wide variety of equipment available



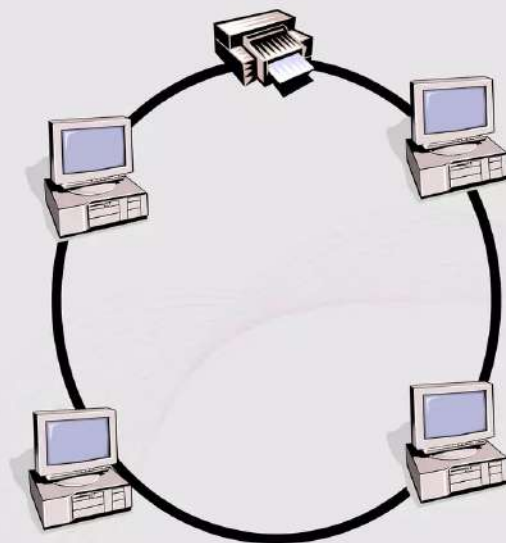
Disadvantages of Star Topology

- Hub is a single point of failure
- Requires more cable than the bus
- Cost of installation is high.



Ring topology

A ring network is one where all workstations and other devices are connected in a continuous loop. There is no central server.



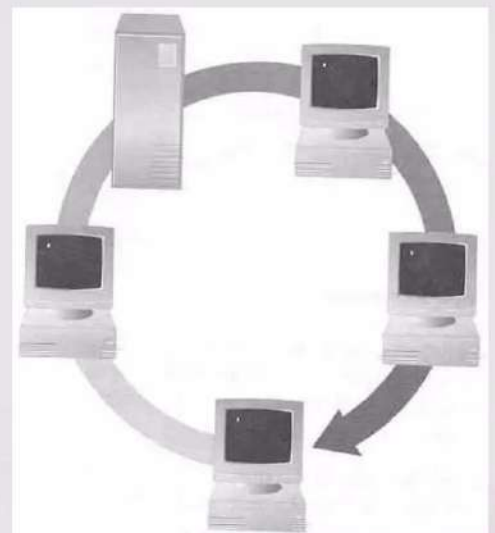
Advantages of Ring Topology

- Easier to manage; easier to locate a defective node or cable problem
- Well-suited for transmitting signals over long distances on a LAN
- Handles high-volume network traffic



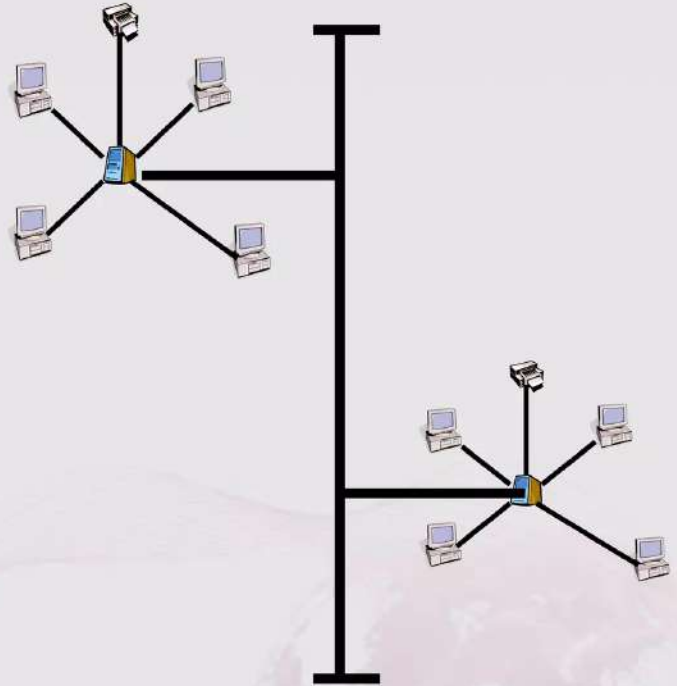
Disadvantages of Ring Topology

- Expensive
- Requires more cable and network equipment at the start
- Not used as widely as bus topology
 - Fewer equipment options
 - Fewer options for expansion to high-speed communication



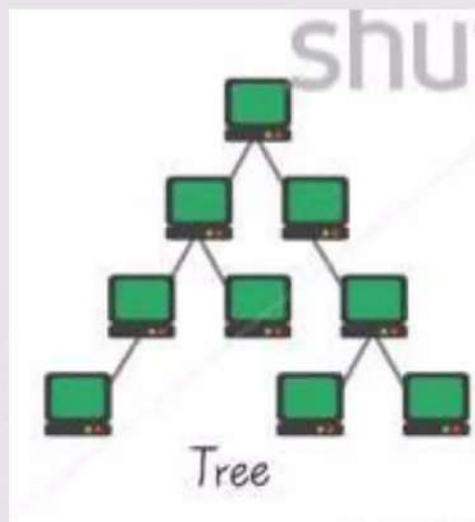
Tree topology

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



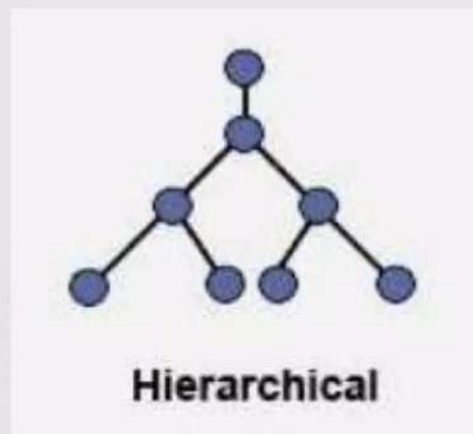
Advantages Of Tree Topology

- Extension of Bus and Star Topology.
- Expansion of nodes is possible and easy.
- Easily managed and maintained.



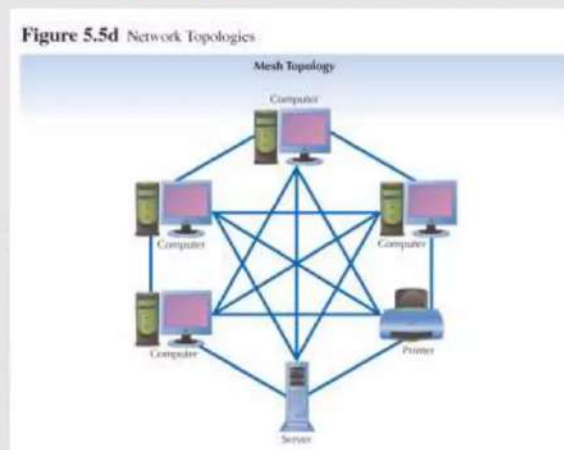
Disadvantages Of Tree Topology

- Heavily cabled.
- Costly.
- If more nodes are added maintenance is difficult.
- Central hub fails, network fails.



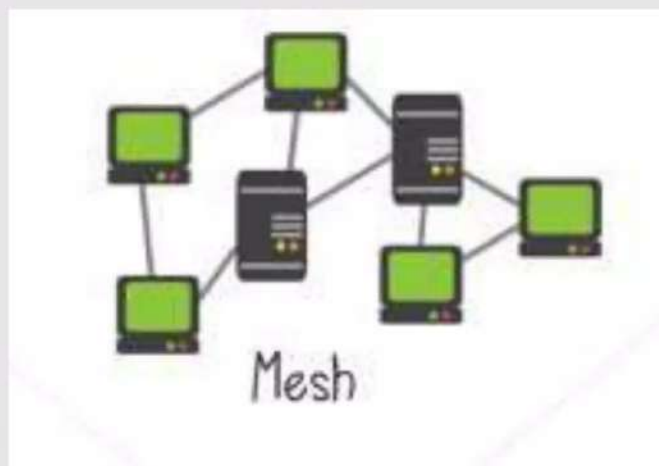
Mesh Topology

It is a point-to-point connection to other nodes or devices. Traffic is carried only between two devices or nodes to which it is connected. Mesh has $\frac{n(n-1)}{2}$ physical channels to link n devices.



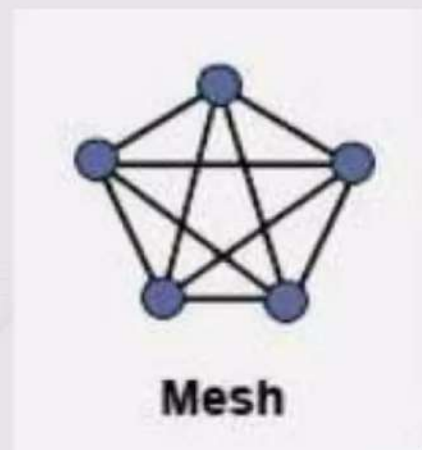
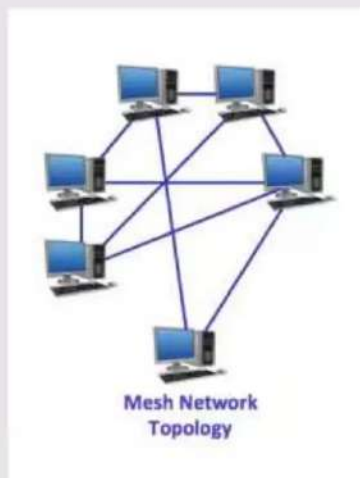
Advantages Of Mesh Topology

- Each connection can carry its own data load.
- Fault is diagnosed easily.
- Provide security and privacy.



Disadvantage of mesh topology

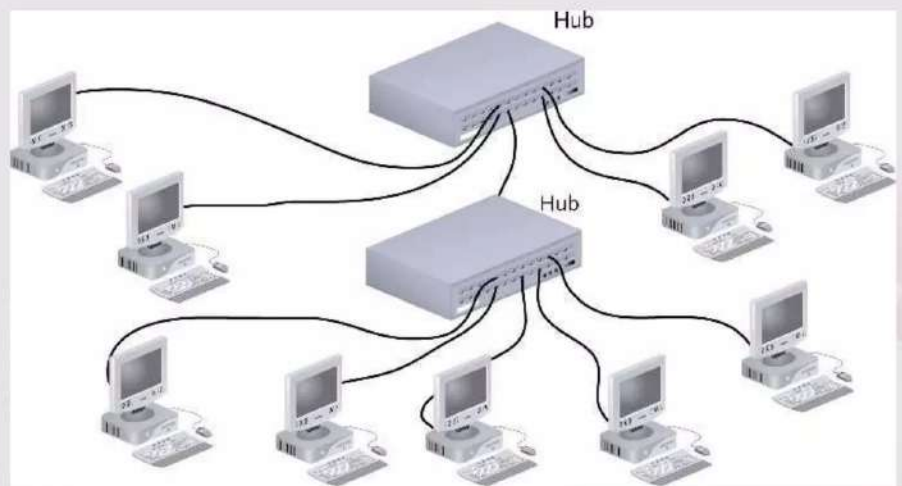
- Installation and configuration is difficult.
- Cabling cost is more.
- Bulk wiring is required.



Hybrid Topology

It is the mixture of two or more topologies. Therefore it is called Hybrid topology. A hybrid topology combines characteristics of linear bus and star and/or ring topologies.

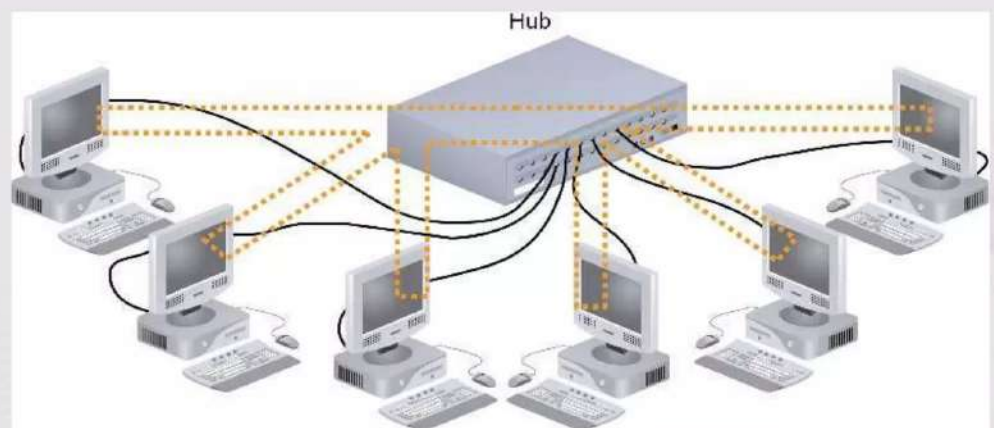
Star-Wired Bus



Advantages of hybrid topology

- Reliable as error detecting and trouble shooting is easy.
- Effective.
- Scalable as size can be increased easily.
- Flexible.

Star-Wired Ring



Disadvantages Of Hybrid Topology

- Complex in design.
- Costly.

