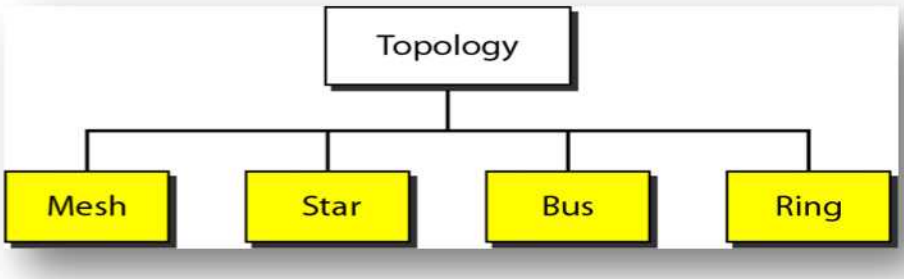
# Internet & WWW

## Network Topology and Protocol

The term network topology simply defines show the devices are arranged physically via network. Thus, the topology of a network is the geometric representation of all the devices that physically connected to each other. There are four basic topologies are: mesh, star, bus, and ring.




Bus Topology

A bus topology forms multipoint connection in which one long cable acts as a backbone (bus) to link all the devices in a network. In other words, Bus topology is a network where every computer and devices are connected to a single cable (bus) by using interface connectors. Every device communicates with the other device through this Bus.

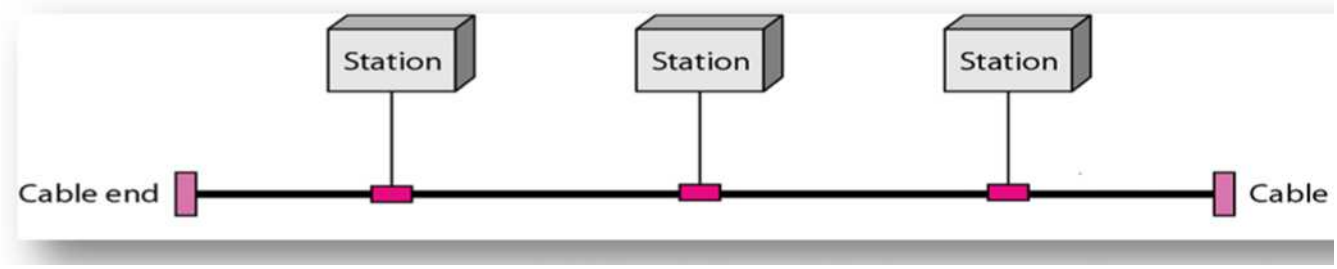



**Fig. Bus Topology**

**Advantages:**

- Ease of installation: Itis easy to set-up and extend bus network by attaching new device to the bus cable by using interface connector. Also it is easy to expand joining two cables together.
- Less cabling required: Since only single cable is used between all devices, therefore, less cabling is required than mesh and star topologies, hence it has very simple structure.
- Less cost: Due to less cabling required, it is very cost effective.

**Disadvantages:**

- Difficult fault detection and isolation: Since a single cable is shared between all devices, therefore, it is difficult to detect and troubleshoot fault at individual station or device.
- Failure of bus cable stops all transmission: Since communication between all devices is done by using bus cable, therefore, fault or break in the bus cable stops all transmission.

- Less privacy or security: Security is very low because all the computers or devices receive the sent signal from the source.

**Use:** It is used in small LANs but mostly with other topology.

**Ring Topology**

In a ring topology, each device is connected to two other devices on either side (forward and backward) and it communicates with these two adjacent neighbours (exactly two neighbours for each device). All devices connected to each other make a closed loop (ring). A signal is passed along the ring in one direction, from device to device, until it reaches its destination.

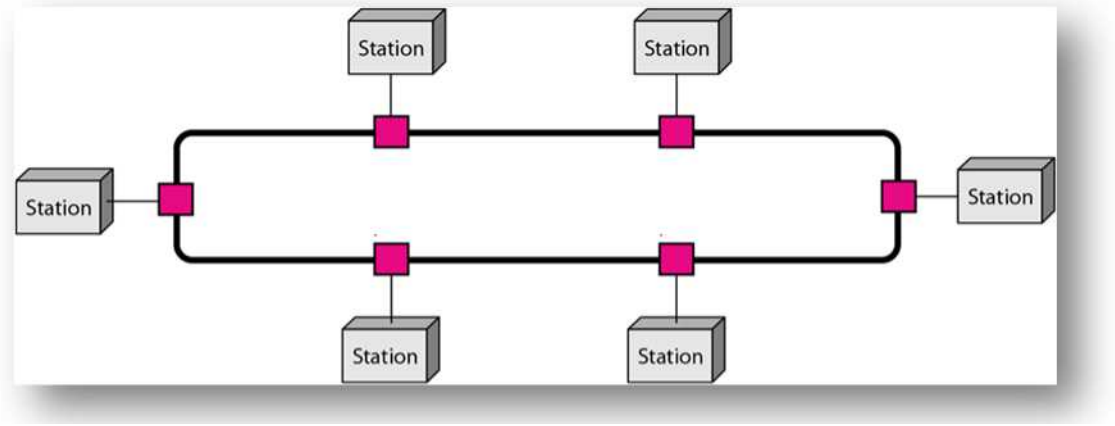



Fig. Ring Topology

**Advantage:**

- Easy to install, reconfigure and expand: It is easy to set-up and extend ring network by attaching new device to the ring cable.
- Reduces Traffic: Since in ring topology all the traffic flows in only one direction therefore, it helps to reduces and controls the traffic in the network (as compared to bus topology).
- Less cabling required: Since only single ring is used between all devices, therefore, less cabling is required and it is cheap to configure.

**Disadvantage:**

- Failure of ring or device stops all communication: Since the communication depends upon the ring and also one device is connected with its two adjacent devices, therefore, a break in the ring or failure of any device or port may disable the entire communication. Also Adding or deleting the computers disturbs the network activity.
- Communication delay: Each packet of data must pass through all the computers between source and destination, it makes it slower especially if the number of nodes will increase.
- Difficult fault detection and isolation: Since a single cable is shared between all devices, therefore, it is difficult to detect and troubleshoot fault at individual device or port.