Difference Between Star Topology and Bus Topology

Star topology and bus topology is of utmost importance in the study of communication networks. However, there is a considerable difference between star topology and bus topology.

Star Topology vs. Bus Topology

Difference Between Star Topology and Bus Topology	
Star Topology	**Bus Topology**
In the star topology, a central hub connects every device in the network.	The backbone of this network is a single wire that connects every device.
If the network's central hub failed, the entire system would be compromised.	If the network cable fails, the entire network will be destroyed.
Expansion in the star topology is fairly simple. A central hub makes it simple to connect a new node.	It is simpler to expand in a bus topology. Adding new nodes is simple when utilizing a connector.
Data collisions are extremely unlikely in a star topology.	The likelihood of data collisions in a bus topology is relatively high.
It has a non-linear structure.	It has a linear structure.
The speed of data transfer is high with star topology.	The data transport rate is poor in a bus topology.

Star Topology and Bus Topology

In a bus topology, each node is connected to the server by a single wire. In contrast, every node is linked to the server independently in a star topology. Below we have provided the difference between star topology and bus topology, along with a basic introduction to them.

What is Star Topology?

To connect all nodes in a Local Area Network (LAN) to the communication channel, a hub serving as the network's centre is used, which is referred to as a star topology. The connections are made in a way that n-end devices or nodes can be connected using n cables. From the star's centre hub, traffic is produced. All nodes communicate with one another through a central hub; messages sent by one node first travel through the hub before being forwarded to the receiving node.

- The hub oversees and directs all network activities. Data transmission uses it as a repeater as well.

- The star topology lessens the effects of a transmission failure of line by connecting each host to the hub separately. Every host can communicate with the others by sending data to and receiving it from the hub.
- If a transmission line connecting a host to the hub fails, the host will be cut off from the rest of the network but unharmed.

What is Bus Topology?

Bus topology is a sort of network topology in which every device is connected to a single wire, sometimes known as the network's backbone. Each end of the cable has a terminator in its place. The data is withdrawn from the data line by the terminator when it reaches the end of the network cable, which is responsible for facilitating communication between the devices. When devices need to be connected linearly, it is the simplest network structure.

- On a bus network, a host is known as a station. Each station in a bus network receives all network traffic, and each station's traffic is given equal priority for transmission.
- The collision domain and network segment in a bus network are the same. Nodes employ a carrier-sense multiple access (CSMA) mechanism for medium access control or a bus master to share the bus.
- In a bus topology, droplines connect every device to a major wire. The drop lines are connected to the main cable via a tap.

Key Difference Between Star Topology and Bus Topology

The key difference between star topology and bus topology is mentioned below.

- The bus network is less expensive than the star network.
- Bus topology makes troubleshooting challenging because the defect must be found by inspecting every device in the linear network. While defect identification is quite simple in a star topology.
- In a bus topology, a signal is sent from one end to the other in a single direction. Star topology, however, deviates from this.
- Bus topology is preferred when a large network is required. This is because it enables simple network addition of a variety of devices. While addition is constrained in a star topology.
- Due to the fact that different devices are connected by a single straight cable, the bus network has a linear topology. The star network's direction, however, is not linear.