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| --- | --- | --- |
| **Topology** | **Pros** | **Cons** |
| **Bus** | InexpensiveSimple to expand        Easy to implement | Prone to faults  Limited scalabilityDifficult to isolate faults |
| **Ring** | Equal access Deterministic    Avoid collision | Fault in any link affects whole network  Difficult to add or remove nodes |
| **Mesh** | Redundant     Fault-tolerant   Highly scalable | Very expensive  Difficult to setup and configure the number of links grows exponentially with nodes |
| **Star** | Easy to setup      Easy to expand        Fault isolation | Hub is a single point of failure  Limited bandwidth |
| **Tree** | Expansion of star Some fault tolerance Low-cost | Bus cable is a single point of failure  Difficult to configure |
| **Hybrid** | Flexibility Fault tolerance High performance | Complex Costly to implement  Difficult to troubleshoot |

Switches: Connect multiple devices within a local area network (LAN) and facilitate the exchange of data packets between them.

Routers: Connect multiple networks together, such as LANs or wide area networks (WANs), and facilitate communication between devices across different networks.

**Interdomain Routing**

Interdomain Routing is the protocol in which the routing algorithm works both within and between domains. Domains must be connected in some way, for hosts inside one domain to exchange data with hosts in other domains. This connection within domains is governed by the interdomain routing protocols. This is often done using the Border Gateway Protocol (BGP). It is used in Path Vector Routing using which interdomain routing is performed. In path vector routing, the routing depends on the analysis of the path from the nodes in the current domain to the node in the other domain, and not on the distance between nodes.

**Intradomain Routing**

Intradomain Routing is the routing protocol that operates only within a domain. In other words, intradomain routing protocols are used to route packets within a specific domain, such as within an institutional network for e-mail or web browsing. Unlike interdomain routing protocols, it doesn't communicate with other domains. There are two types of protocols used for intradomain routing:

1. **Distance Vector Routing (uses Routing Information Protocol or RIP)** In distance vector routing, each node in a domain stores information about its neighboring nodes. The information is stored in a table known as a routing table, which is maintained by each node in the domain. RIP is one of the earliest distance-vector routing protocols, and it uses hop count as a routing statistic. By placing a cap on the maximum number of hops that may be taken between a source and a destination, RIP avoids routing loops.
2. **Link State Routing (uses Open Shortest Path First or OSPF)** In link state routing, each node in a domain stores information about all the other nodes in the domain, in other words, the routing table of each node stores information about the entire topology of the domain. Since each node has all the information about the domain at its disposal, Dijkstra's algorithm is used to calculate the best routing path. This is possible due to OSPF, and this is also its advantage.