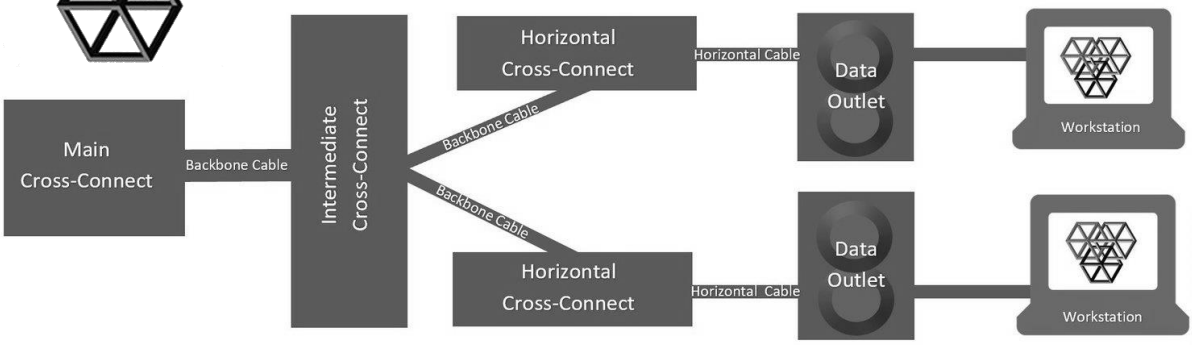
STRUCTURED CABLING | TOPOLOGY



Horizontal Cabling runs both horizontally and vertically, conveying voice and data between a source and the end-user. Cable lengths between cross-connects are determined by the type of cable utilized, physical obstacles, data source and type and Prime Data Communications' commitment to uninterrupted connectivity.

Cross-Connects facilitate connections to other elements in the system (and are also the location of cabling terminations).

- **Main Cross-Connect** | the transition point between entrance and backbone cabling
- **Intermediate Cross-Connect** | the transition point between backbone cabling (cabling that connects the equipment rooms and telecommunications rooms), Main and Horizontal (the cabling that connects telecommunications rooms to individual outlets or work areas)
- **Horizontal Cross-Connect** | the transition point between backbone (connected to equipment) and horizontal (connected to individual outlets and end-user equipment like workstations)
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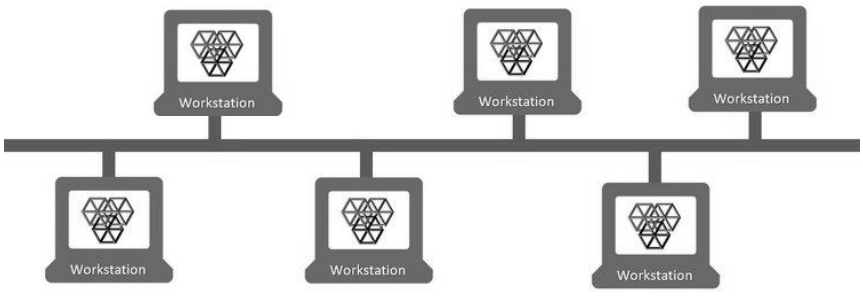
6 BASIC CABLING TOPOLOGIES

Topologies describe the physical and logical path of your network; placement of various devices, cable installation, transmission rates or signal types. Topologies are found in local area networks (LAN), where each point in the LAN has one or more physical links to other devices in the network. Graphical link-maps result in a geometric shape that is used to describe the physical topology of the network: Bus, Star, Ring, and Bus - along with hybrid topologies - Mesh, Clustered Star, Star-wired ring, Hierarchical star, and the Tree.

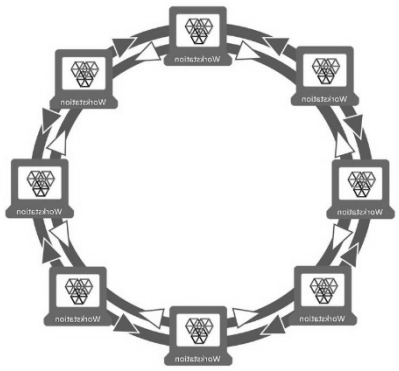
Bus Topology



Bus topology | every device is connected to a single cable which runs from one end of the network to the other (also known as line topology). A bus network is simple and reliable. If one station fails to operate, all the rest can still communicate with each other. For a major disruption to take place, the bus (hub/switch) or a broken cable can result in failure of data-packet transmission to stations. Bus networks are easy to expand and faults are easily detected. That said, a bus

network may not work well if the stations are scattered and not along a common line. This network requires significantly more cabling than other topologies. And, because all data flows through one cable, network times can be slower. Though ideal for small networks, when work stations are scattered or larger networks involved, we recommend another typology.

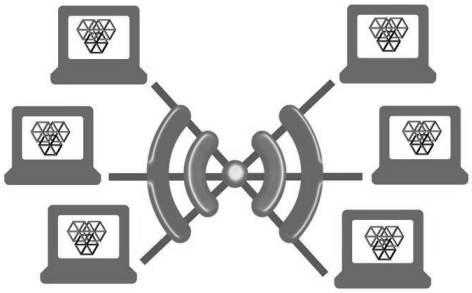
Ring Topology



Ring Topology | computers are basically connected to one another in a circle (with each device having only two neighbors, with data running in one direction or bidirectionally/dual-ring Topology). Ring Topologies can sustain large networks much more effectively than a bus. And, when bidirectional, can provide an extra layer of protection against failure; with dual-rings providing packet-backup if the first ring goes down.

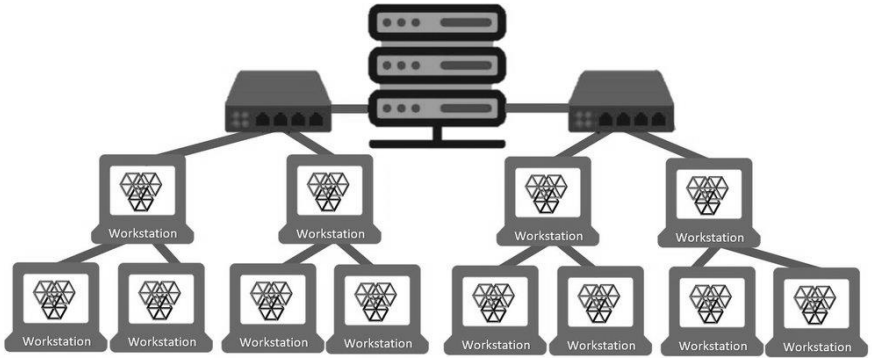
Ring Topologies, while very affordable, include the risk of catastrophic failure; one station can take down the entire network. Scalability is also limited as the entire network must be shut-down for any additions or repairs (downtime), and resources need to be kept within limits so that no station compromises the network as a whole.

Star Topology



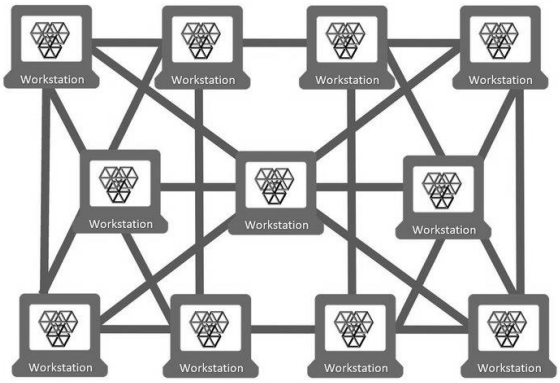
Star Topology | in this network, every device is directly connected to the central point/server (responsible for managing data and transmission) and indirectly connected to every other point in the network. Connections are made using a coaxial cable, twisted pair, or optical fiber cable. The Star Topology is often favored for its conservation of cable, and the fact that workstations can go down or be updated without having to take the whole network offline. While relatively safe from failure, server (central node) health must be managed; a reliability which had a definite bottom line cost. But, when weighing the cost of downtime to system-costs, the benefits of maintaining a Star system often outweigh it's financial burden for enterprise businesses.

Tree Topology



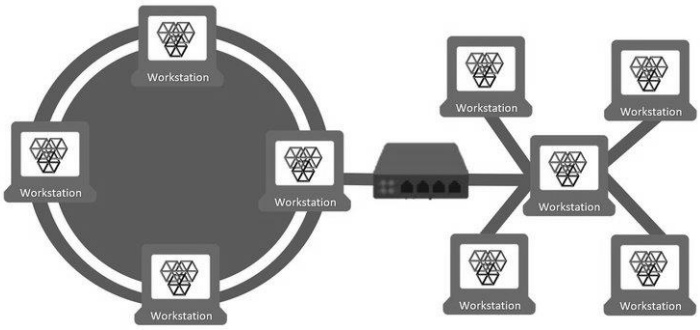
Tree Topology | yes, this is network with roots and branches - the parent-child schema is favored for Wide Area Networks to sustain lots of spread-out devices. Tree topologies can be used to extend both Bus and Star Topologies. The format makes troubleshooting more succinct because performance issues can be spotted by systematically viewing each branch of the tree. Investment in maintaining the central node/stack of servers is essential as the networks high function relies on this grand-parent device. Extensive cabling is required to connect devices throughout the hierarchy.

Mesh Topology



Mesh Topology | There are two forms of mesh topology; partial mesh topology (where most stations are connected, though some are only connected to a few others) and full mesh topology (where every station is connected to everything). The inter-connectivity of the mesh makes this type of network highly reliable and resistant to failure. While requiring an immense amount of configuration and cabling at deployment, this form of typology uses both routing (shortest distant for a data packet to travel) and flooding (all nodes within the network carry data). The Mesh Topology, while highly complex, is the least vulnerable when it comes to either compromise or down-time; as there is no individual node or piece of equipment that can bring the entire system down.

Hybrid Topology



Hybrid Topology | Larger Enterprises often find that a Hybrid Topology best meets their divergent needs. Hybrids, while including the advantages and vulnerabilities of their predecessor systems, there are few constraints on what is possible with a Hybrid. As a result, Hybrids are extremely scalable allowing for strategic and staged integrations and upgrades. Hybrids generally require strong strong and coherent structural cabling as well as a dedicated administrator with the capacity to manage multiple topologies, their challenges, integrations and updates.

WHEN CHOOSING A TOPOLOGY, CONSIDER THE NETWORK YOU WILL NEED

- **Length of cable needed |** physical impediments and type of cable impact the length of run
- **Cable type |** twister pairs, coaxial or optical fiber cables each carry different levels of IT data and telecom signals
- **Cost |** the more complex the typology, the more costly
- **Scalability |** if you think you'll need to upscale your network, you'll want to choose an infrastructure that allows you to add nodes (points of entry) with minimal disruption.