Network Topologies

(WIRED)

https://github.com/DelfinoRT

The configuration, or topology, of a network is key to determining its performance. Network topology is the way a network is arranged, including the physical or logical description of how links and nodes are set up to relate to each other.

There are numerous ways a network can be arranged, all with different pros and cons, and some are more useful in certain circumstances than others. A network structure whose design contains more than one topology is said to be "**hybrid topology**", it is an extended and common practice nowadays.

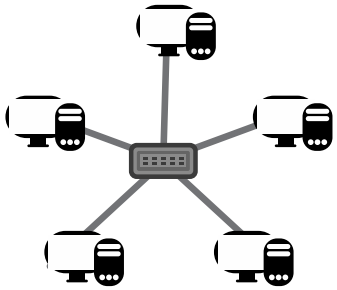
Point to Point

Contains exactly two hosts such as computer, switches or routers, servers connected back to back using a single piece of cable. Often, the receiving end of one host is connected to sending end of the other and vice-versa.

Bus

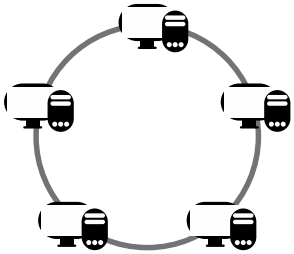
All hosts share single communication line. This topology may have problem while multiple hosts sending data at the same time. Therefore, Bus topology either uses CSMA/CD technology or recognizes one host as Bus Master to solve the issue. A failure of a device does not affect the other devices. But failure of the shared communication line can make all other devices stop functioning.

Star



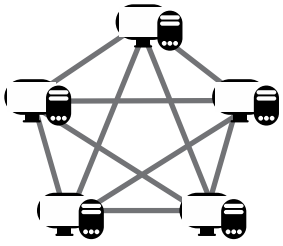
All hosts in Star topology are connected to a central device, known as hub device, using a point-to-point connection. That is, there exists a point to point connection between hosts and hub.The hub device can be any of the following: Hub, Switch or Router.

Ring



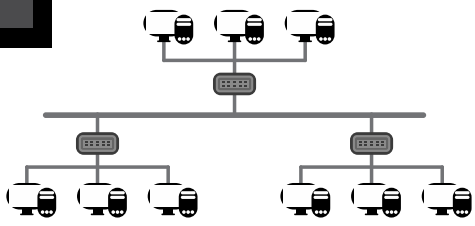
Each host connects to exactly two other hosts, creating a circular network structure. When one host tries to communicate or send message to a host which is not adjacent to it, the data travels through all intermediate hosts.

Mesh



Each host is connected to one or multiple hosts.This topology has hosts in point-to-point connection with every other host (Full Mesh) or may also have hosts which are in point-to-point connection to few hosts only (Partially Mesh). Hosts in Mesh topology also work as relay for other hosts which do not have direct point-to-point links.

Tree



Also known as Hierarchical Topology, this is the most common form of network topology in use presently. Tree topologies have a root node, and all other nodes are connected which form a hierarchy. So it is also known as hierarchical topology. This topology integrates various star topologies together in a single bus, so it is known as a Star Bus topology.