

## What is computer network with example?

A network is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected to allow data sharing. An example of a network is **the Internet**, which connects millions of people all over the world.<sup>07</sup>

## How many types of Computer Network ?

### 11 Types of Computer Networks

Choosing the right computer network for your Raleigh business or organization is necessary in order to install proper **cabling** and security measures and be able to scale your business for growth. For example, choosing a network that can only support one building won't work if your organization expands into a campus-style setting. To help you better understand which option is best for you, our **structured cabling company** is breaking down the 11 types of computer networks.

## Three Common Networks for Smaller Organizations

The three most common computer networks are also generally smaller. They tend to support fewer devices across smaller areas and are easier to maintain.

## 1. Personal Area Network

A Personal Area Network (PAN) is the most basic type, usually used for homes or home offices. A PAN allows all the devices to be supported from a single terminal, generally a wireless modem.

## 2. Local Area Network

For larger buildings that utilize multiple connected devices in a fairly concentrated area, a Local Area Network (LAN) is created. The range is fairly short, only supporting one building, but it allows information and resources to be shared easily within the structure. An example of an LAN would be a retail store with all the point-of-sale systems, inventory computers, and office computers and devices all connected to one network, but don't rely on portable devices because it's not a wireless network.

## 3. Wireless Local Area Network

Wireless LAN uses a wireless signal, rather than cables, to support devices. While there are fewer cables ran and the ability to support connection to smartphones and tablets, a wireless LAN is often slower than a traditional LAN.

## Scalable Computer Networks for Larger Organizations

These networks listed below tend to be significantly larger, spanning multiple buildings or even several miles. These networks require additional hardware support and maintenance due to the sheer volume of data and information. At their core, they are built using the same kind of infrastructure as either a LAN or WLAN, only much more complex.

### 4. Campus Area Network

A Campus Area Network (CAN) is created to allow users to share resources over a close area of multiple buildings, such as a hospital or medical center or a college campus. Some businesses will also use a CAN, especially if they plan on scaling up in the future.

### 5. Metropolitan Area Network

Designed to span over an area of multiple square miles, such as a city, large college campus, or a company headquarters, a Metropolitan Area Network (MAN) connects multiple LANs in different locations through fiber optic lines, telephone lines, or wireless communication. The Metropolitan Area Network supports connectivity to local or large internet service providers.

## 6. Wide Area Network

The Wide Area Network (WAN) is the largest type of computer network and has no limits based on geographic location. The internet itself is an example of a global WAN. A WAN is set up by connecting LANs and MANs via satellite or microwave, making it both very powerful and very expensive.

## Specialized Networks

For more specialized networks with specific purposes or unique security needs, the following specialized networks are designed and implemented:

### 7. Storage Area Network

Built specifically to link storage devices to servers, a Storage Area Network (SAN) moves data away from one network and house it separately, through a drive connected to a server.

### 8. System Area Network

A System Area Network (also called a SAN) is a local network uniquely designed for high-speed interconnection in a cluster environment. These networks include server-to-server, processor-to-processor, and Storage Area Networks all operating as one entity.

## 9. Passive Optical Local Area Network

As technology moves away from switch-based ethernet LANs, Passive Optical Local Area Networks (POLAN), is installed into **structured cabling** design. It is built on a point-to-multipoint LAN architecture, using optical splitters to send a signal from one fiber into multiple signals across devices.

## 10. Enterprise Private Network

An Enterprise Private Network (EPN) is owned by large businesses or organizations that want to keep all of their locations on one secure network to easily share resources.

## 11. Virtual Private Network

A Virtual Private Network (VPN) connects your device to a server on the internet, allowing you to use the internet from that server's connection. If the server is in a different country, it will look like your device is also coming from that country.

A VPN allows users to hide their location, avoid using public wi-fi hotspots, and can't be logged if torrenting information.

## What is a Computer Network Topology?

A Network Topology is **the arrangement with which computer systems or network devices are connected to each other**. Topologies may define both physical and logical aspect of the network. Both logical and physical topologies could be same or different in a same network.

## How many types of computer network topology?

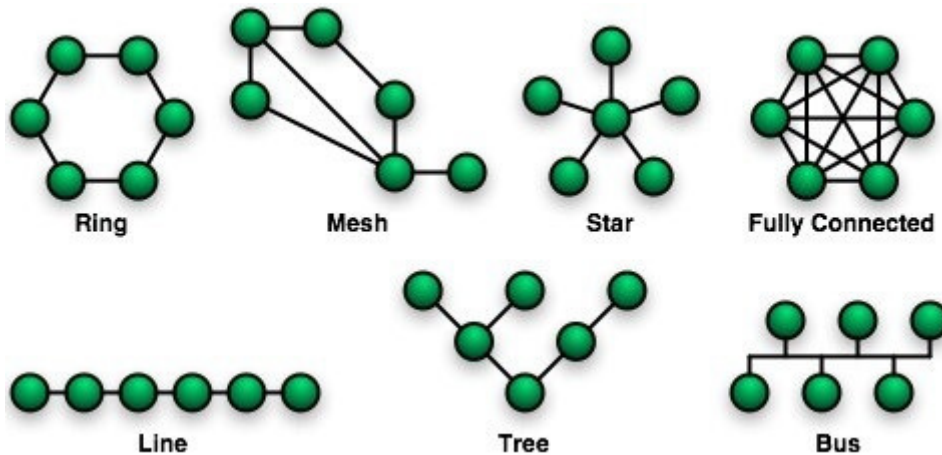
**In a computer network, there are mainly six types of physical topology, they are:**

- Bus Topology.
- Ring Topology.
- Star Topology.
- Mesh Topology.
- Tree Topology.
- Hybrid Topology.

## Advantages and Disadvantages of Network Topologies

Network nodes has its own advantages and disadvantages. Here we tell you about the same.

## Network Topologies



**Network topologies** describe the ways in which the elements of a network are connected. They describe the physical and logical arrangement of network nodes.

Let us look at the advantages different network topologies offer, and their shortfalls.

### Bus Topology

#### Advantages of Bus Topology

1. It is easy to set up, handle, and implement.
2. It is best-suited for small networks.
3. It costs very less.

#### Disadvantages of Bus Topology

1. The cable length is limited. This limits the number of network nodes that can be connected.
2. This network topology can perform well only for a limited number of nodes. When the number of devices

connected to the bus increases, the efficiency decreases.

3. It is suitable for networks with low traffic. High traffic increases load on the bus, and the network efficiency drops.
4. It is heavily dependent on the central bus. A fault in the bus leads to network failure.
5. It is not easy to isolate faults in the network nodes.
6. Each device on the network “sees” all the data being transmitted, thus posing a security risk.

## Ring Topology

### Advantages of Ring Topology

1. The data being transmitted between two nodes passes through all the intermediate nodes. A central server is not required for the management of this topology.
2. The traffic is unidirectional and the data transmission is high-speed.
3. In comparison to a bus, a ring is better at handling load.
4. The adding or removing of network nodes is easy, as the process requires changing only two connections.
5. The configuration makes it easy to identify faults in network nodes.
6. In this topology, each node has the opportunity to transmit data. Thus, it is a very organized network topology.
7. It is less costly than a star topology.



## Disadvantages of Ring Topology

1. The failure of a single node in the network can cause the entire network to fail.
2. The movement or changes made to network nodes affect the entire network's performance.
3. Data sent from one node to another has to pass through all the intermediate nodes. This makes the transmission slower in comparison to that in a star topology. The transmission speed drops with an increase in the number of nodes.
4. There is heavy dependency on the wire connecting the network nodes in the ring.

## Mesh Topology

### Advantages of Mesh Topology

1. The arrangement of the network nodes is such that it is possible to transmit data from one node to many other nodes at the same time.
2. The failure of a single node does not cause the entire network to fail as there are alternate paths for data transmission.
3. It can handle heavy traffic, as there are dedicated paths between any two network nodes.
4. Point-to-point contact between every pair of nodes, makes it easy to identify faults.

### Disadvantages of Mesh Topology

1. The arrangement wherein every network node is connected to every other node of the network, many

connections serve no major purpose. This leads to redundancy of many network connections.

2. A lot of cabling is required. Thus, the costs incurred in setup and maintenance are high.
3. Owing to its complexity, the administration of a mesh network is difficult.

## **Star Topology**

### **Advantages of Star Topology**

1. Due to its centralized nature, the topology offers simplicity of operation.
2. It also achieves isolation of each device in the network.
3. Adding or removing network nodes is easy, and can be done without affecting the entire network.
4. Due to the centralized nature, it is easy to detect faults in the network devices.
5. As the analysis of traffic is easy, the topology poses lesser security risk.
6. Data packets do not have to pass through many nodes, like in the case of a ring network. Thus, with the use of a high-capacity central hub, traffic load can be handled at fairly decent speeds.

### **Disadvantages of Star Topology**

1. Network operation depends on the functioning of the central hub. Hence, central hub failure leads to failure of the entire network.
2. Also, the number of nodes that can be added, depends on the capacity of the central hub.
3. The setup cost is quite high.

## Tree Topology

Imagine a hierarchy of network nodes, with the root node serving client nodes, that in turn serve other lower-level nodes.

The top-level node is mostly a mainframe computer while other nodes in the hierarchy are mini or microcomputers.

In this arrangement, the node at each level could be forming a star network with the nodes it serves. In this case, the structure combines star and bus topologies and inherits their advantages and disadvantages.

### Advantages of Tree Topology

1. The tree topology is useful in cases where a star or bus cannot be implemented individually. It is most-suited in networking multiple departments of a university or corporation, where each unit (star segment) functions separately, and is also connected with the main node (root node).
2. The advantages of centralization that are achieved in a star topology are inherited by the individual star segments in a tree network.
3. Each star segment gets a dedicated link from the central bus. Thus, failing of one segment does not affect the rest of the network.
4. Fault identification is easy.
5. The network can be expanded by the addition of secondary nodes. Thus, scalability is achieved.

## **Disadvantages of Tree Topology**

1. As multiple segments are connected to a central bus, the network depends heavily on the bus. Its failure affects the entire network.
2. Owing to its size and complexity, maintenance is not easy and costs are high. Also, configuration is difficult in comparison to that in other topologies.
3. Though it is scalable, the number of nodes that can be added depends on the capacity of the central bus and on the cable type.

## **Hybrid Topology**

A hybrid topology combines two or more topologies and is meant to reap their advantages.

Obviously, the advantages and disadvantages of a hybrid topology are a combination of the merits and demerits of the topologies used to structure it.