

## What is Network?



A **network** is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected to one another to allow the sharing of data. An excellent example of a network is the Internet, which connects millions of people all over the world. To the right is an example image of a home network with multiple computers and other **network devices** all connected.

## Types of Network:

There are 11 Types of Networks in Use Today.

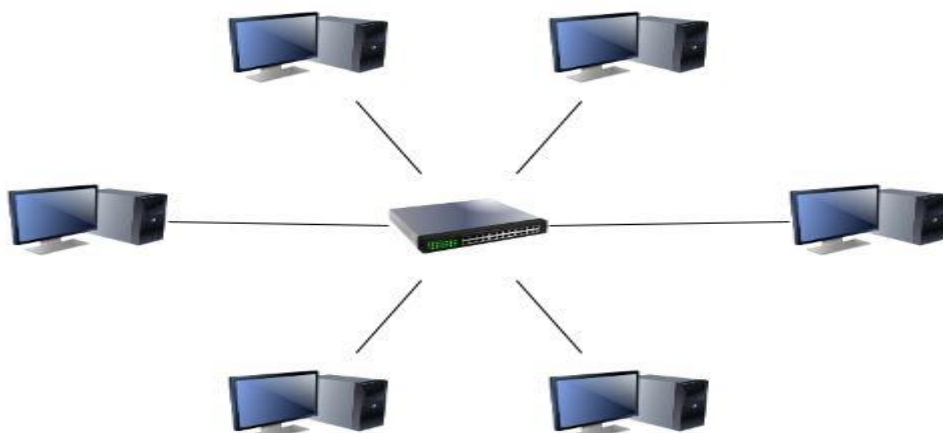
1.

### PERSONAL AREA NETWORK(PAN)



The smallest and most basic type of network, a PAN is made up of a wireless modem, a computer or two, phones, printers, tablets, etc., and revolves around one person in one building. These types of networks are typically found in small offices or residences, and are managed by one person or organization from a single device.

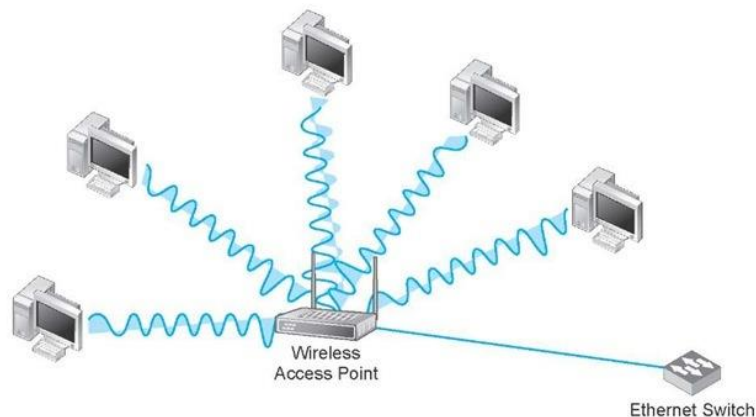
### 2. Local Area Network (LAN)



LANs are the most frequently discussed networks, one of the most common, one of the most original and one of the simplest types of networks. LANs connect groups of computers and low-voltage devices together across short distances (within a building or between a group of two or three buildings in close proximity to each other) to share information and resources. Enterprises typically manage and maintain LANs.

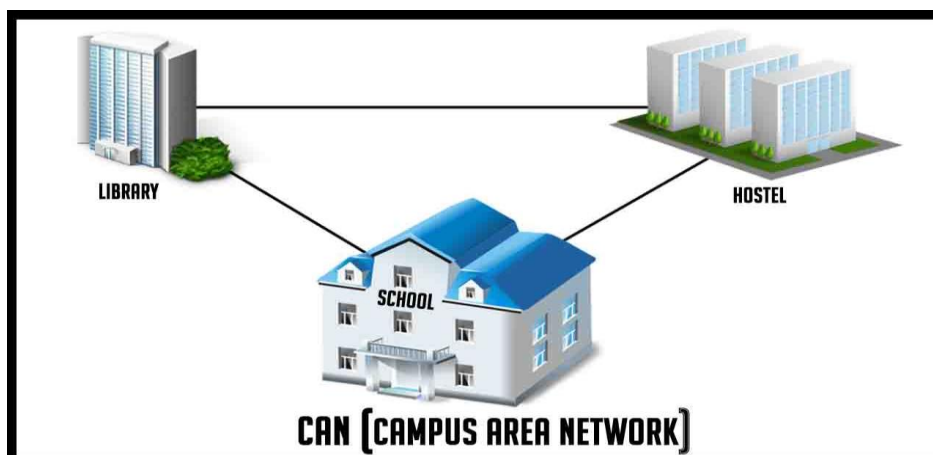
Using routers, LANs can connect to wide area networks (WANs, explained below) to rapidly and safely transfer data.

### 3. Wireless Local Area Network (WLAN)



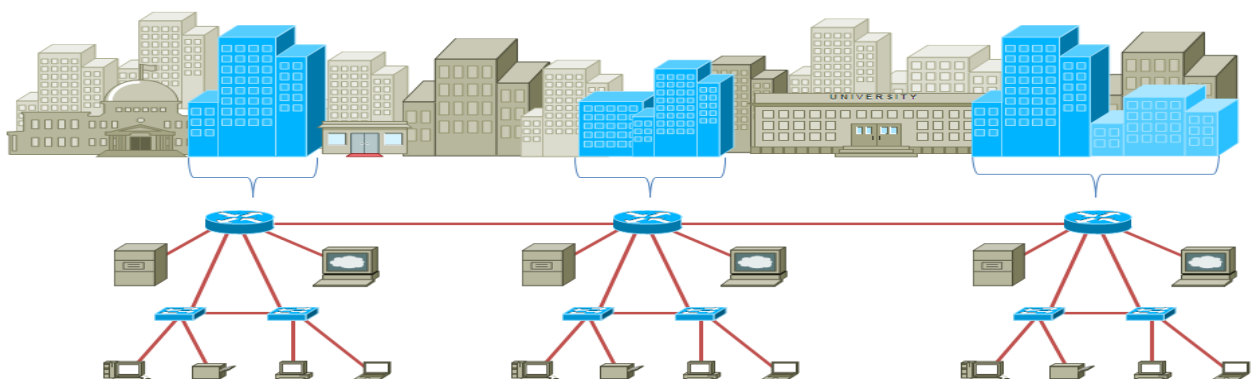
Functioning like a LAN, WLANs make use of wireless network technology, such as WiFi. Typically seen in the same types of applications as LANs, these types of networks don't require that devices rely on physical cables to connect to the network.

### 4. Campus Area Network (CAN)



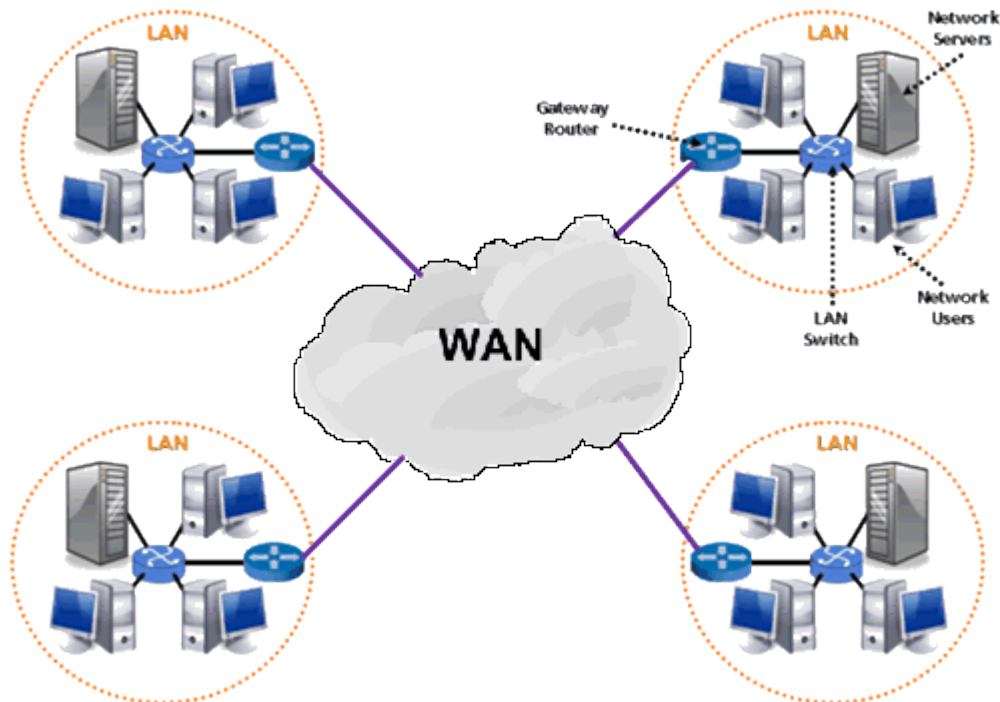
Larger than LANs, but smaller than metropolitan area networks (MANs, explained below), these types of networks are typically seen in universities, large K-12 school districts or small businesses. They can be spread across several buildings that are fairly close to each other so users can share resources.

### 5. Metropolitan Area Network (MAN)



These types of networks are larger than LANs but smaller than WANs – and incorporate elements from both types of networks. MANs span an entire geographic area (typically a town or city, but sometimes a campus). Ownership and maintenance is handled by either a single person or company (a local council, a large company, etc.).

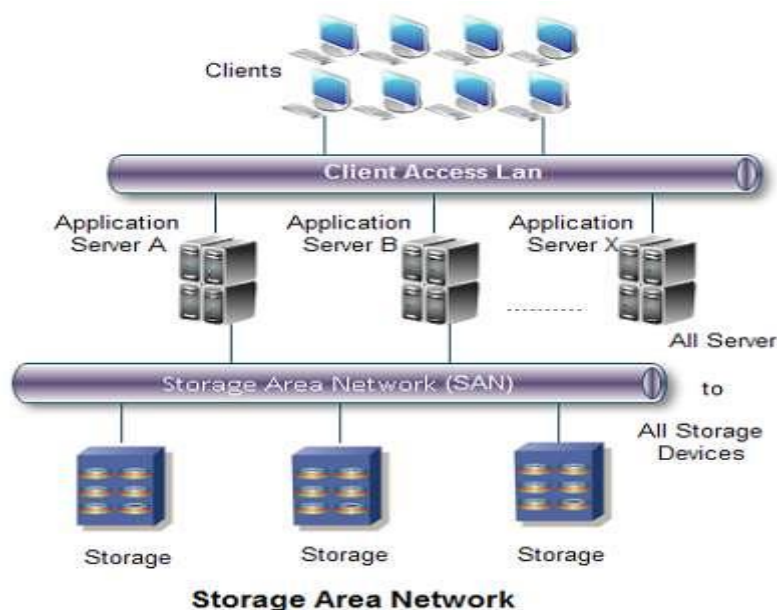
## 6. Wide Area Network (WAN)



Slightly more complex than a LAN, a WAN connects computers together across longer physical distances. This allows computers and low-voltage devices to be remotely connected to each other over one large network to communicate even when they're miles apart.

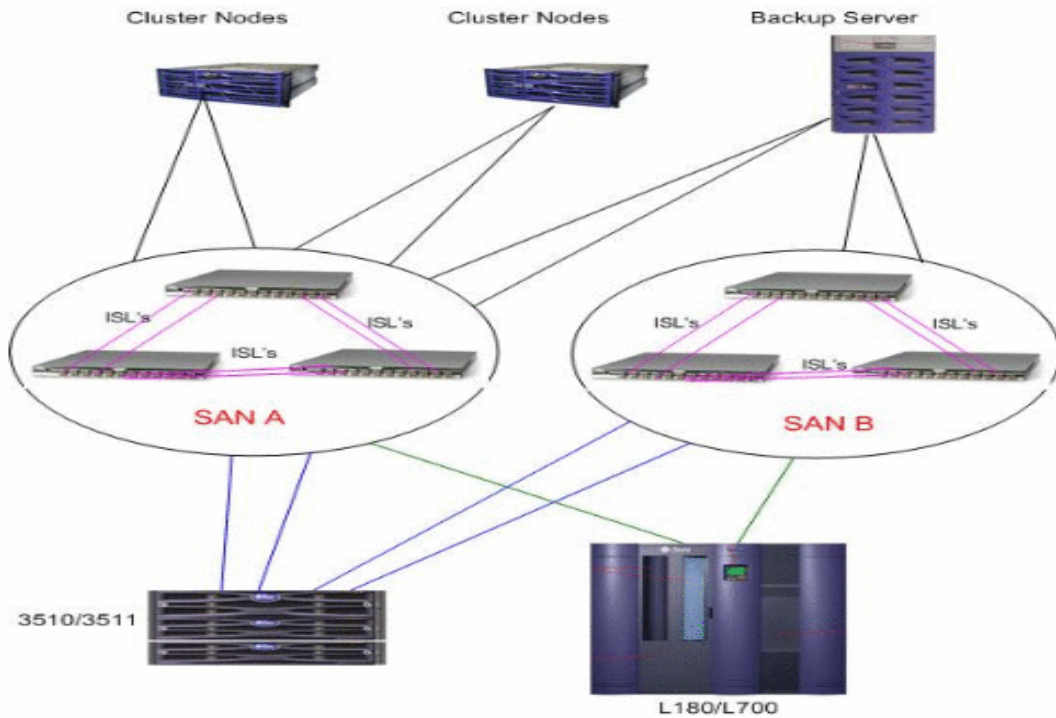
The Internet is the most basic example of a WAN, connecting all computers together around the world. Because of a WAN's vast reach, it is typically owned and maintained by multiple administrators or the public.

## 7. Storage-Area Network (SAN)



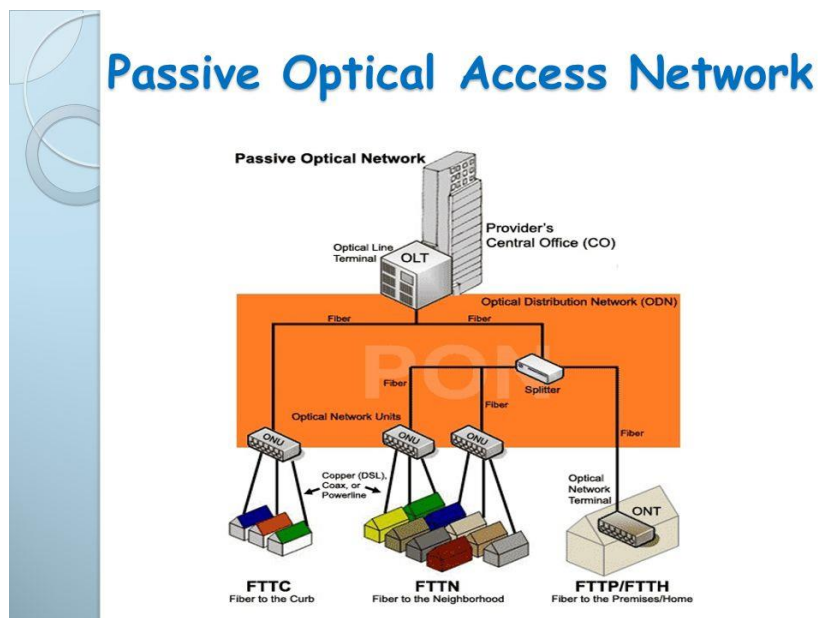
As a dedicated high-speed network that connects shared pools of storage devices to several servers, these types of networks don't rely on a LAN or WAN. Instead, they move storage resources away from the network and place them into their own high-performance network. SANs can be accessed in the same fashion as a drive attached to a server. Types of storage-area networks include converged, virtual and unified SANs.

## 8. System-Area Network (also known as SAN)



This term is fairly new within the past two decades. It is used to explain a relatively local network that is designed to provide high-speed connection in server-to-server applications (cluster environments), storage area networks (called “SANs” as well) and processor-to-processor applications. The computers connected on a SAN operate as a single system at very high speeds.

## 9. Passive Optical Local Area Network (POLAN)



As an alternative to traditional switch-based Ethernet LANs, POLAN technology can be integrated into structured cabling to overcome concerns about supporting traditional Ethernet protocols and network applications such as PoE (Power over Ethernet). A point-to-multipoint LAN architecture, POLAN uses optical splitters to split an optical signal from one strand of single mode optical fiber into multiple signals to serve users and devices.



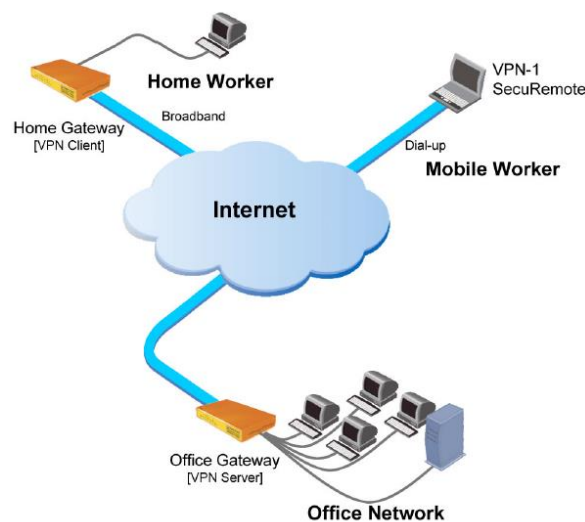
## 10. Enterprise Private Network (EPN)



These types of networks are built and owned by businesses that want to securely connect its various locations to share computer resources.

## 11. Virtual Private Network (VPN)

By extending a private network across the Internet, a VPN lets its users send and receive data as if their devices were connected to the private network – even if they're not. Through a virtual point-to-point connection, users can access a private network remotely.



### Device Type:

We can divide network Devices in Two (02) type:

- 1). End Device
- 2). Intermediary Device

### 1). End Device :

The network devices that people are most familiar with are called end devices. End devices are either the source or destination of data transmitted over the network. All computers connected to a network that participate directly in network communication are classified as hosts.

Some examples of end devices are:

- Computers (workstations, laptops, file servers, and web servers)
- Network printers
- VoIP phones
- TelePresence endpoints
- Security cameras
- Mobile handheld devices (smartphones, tablets, PDAs, and wireless debit/credit card readers and barcode scanners) sensors such as thermometers, weight scales, and other devices that will be connected to the IoT.

## 2). Intermediary Device:

Intermediary devices interconnect end devices. These devices provide connectivity and work behind the scenes to ensure that data flows across the network. Intermediary devices connect the individual hosts to the network and can connect multiple individual networks to form an internetwork.

Examples of intermediary network devices are:

- switches and wireless access points (network access)
- routers (internetworking)
- firewalls (security).

## Different Names for PC:

Work Station, Host, Node, End Device, End Point, Client PC, Server PC, Desktop, etc.

## Different Names for LAN CARD:

1. Network Interface Card (NIC)
2. Communication Card
3. Ethernet Card

## Network Media:



Communication across a network is carried over a medium, such as through a cable or through the air. The medium facilitates communication from source to destination. Modern networks primarily use three types of media to interconnect devices and to provide the pathway over which data can be transmitted.

As shown in the figure, these media are:

- metallic wires within cables
- glass or plastic fibres (fibre optic cable)
- wireless transmission.

The signal encoding that must occur for the message to be transmitted is different for each media type. On metallic wires, the data is encoded into electrical impulses that match specific patterns. Fiber optic transmissions rely on pulses of light, within either infrared or visible light ranges. In wireless transmission, patterns of electromagnetic waves depict the various bit values.

Different types of network media have different features and benefits. Not all network media have the same characteristics, nor are they appropriate for the same purposes.

The criteria for choosing network media are:

- the distance the media can successfully carry a signal
- the environment in which the media is to be installed
- the amount of data and the speed at which it must be transmitted
- the cost of the media and installation.

### Common Network Devices Symbols:



Desktop  
Computer



Laptop



Server



LAN Switch



Router



Multilayer Switch



IP Phone



Firewall



Hub



Wireless  
Router



Wireless  
Access Point



LAN  
Media



WAN  
Media



Wireless  
Media