**TYPES OF NETWORK**

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**INTRODUCTION**

**Types of computer networks**

A computer network is a cluster of computers over a shared communication path that works for the purpose of sharing resources from one computer to another, provided by or located on the network nodes.

Some of the uses of computer networks are the following:

Communicating using email, video, instant messaging, etc.

Sharing devices such as printers, scanners, etc.

Sharing files

Sharing software and operating programs on remote systems

Allowing network users to easily access and maintain information

**Types of Computer Networks**

1. Personal Area Network (PAN)
2. Local Area Network (LAN)
3. Wide Area Network (WAN)
4. Metropolitan Area Network (MAN)

LAN(Local Area Network)

* Local Area Network is a group of computers connected to each other in a small area such as building, office.
* LAN is used for connecting two or more personal computers through a communication medium such as twisted pair, coaxial cable, etc.
* It is less costly as it is built with inexpensive hardware such as hubs, network adapters, and ethernet cables.
* The data is transferred at an extremely faster rate in Local Area Network.
* Local Area Network provides higher security.

### **Characteristics of LAN**

Here are the important characteristics of a LAN network:

* It is a private network, so an outside regulatory body never controls it.
* LAN operates at a relatively higher speed compared to other WAN systems.
* There are various kinds of media access control methods like token ring and ethernet.

### **Advantages of LAN**

Here are the pros/benefits of LAN:

* Computer resources like hard-disks, DVD-ROM, and printers can share local area networks. This significantly reduces the cost of hardware purchases.
* You can use the same software over the network instead of purchasing the licensed software for each client in the network.
* Data of all network users can be stored on a single hard disk of the server computer.
* You can easily transfer data and messages over networked computers.
* It will be easy to manage data at only one place, which makes data more secure.
* Local Area Network offers the facility to share a single internet connection among all the LAN users.

### **Disadvantages of LAN**

Here are the cons/drawbacks of LAN:

* LAN will indeed save cost because of shared computer resources, but the initial cost of installing Local Area Networks is quite high.
* The LAN admin can check personal data files of every LAN user, so it does not offer good privacy.
* Unauthorized users can access critical data of an organization in case LAN admin is not able to secure centralized data repository.
* Local Area Network requires a constant LAN administration as there are issues related to software setup and hardware failures

PAN(Personal Area Network)

* Personal Area Network is a network arranged within an individual person, typically within a range of 10 meters.
* Personal Area Network is used for connecting the computer devices of personal use is known as Personal Area Network.
* **Thomas Zimmerman** was the first research scientist to bring the idea of the Personal Area Network.
* Personal Area Network covers an area of **30 feet**.
* Personal computer devices that are used to develop the personal area network are the laptop, mobile phones, media player and play stations.

### **Examples Of Personal Area Network:**

* **Body Area Network:** Body Area Network is a network that moves with a person. **For example**, a mobile network moves with a person. Suppose a person establishes a network connection and then creates a connection with another device to share the information.
* **Offline Network:** An offline network can be created inside the home, so it is also known as a **home network**. A home network is designed to integrate the devices such as printers, computer, television but they are not connected to the internet.
* **Small Home Office:** It is used to connect a variety of devices to the internet and to a corporate network using a VPN

**There are two types of Personal Area Network:**



* Wired Personal Area Network
* Wireless Personal Area Network

**Wireless Personal Area Network:** Wireless Personal Area Network is developed by simply using wireless technologies such as WiFi, Bluetooth. It is a low range network.

MAN(Metropolitan Area Network)

* A metropolitan area network is a network that covers a larger geographic area by interconnecting a different LAN to form a larger network.
* Government agencies use MAN to connect to the citizens and private industries.
* In MAN, various LANs are connected to each other through a telephone exchange line.
* The most widely used protocols in MAN are RS-232, Frame Relay, ATM, ISDN, OC-3, ADSL, etc.
* It has a higher range than Local Area Network(LAN).

### **Uses Of Metropolitan Area Network:**

* MAN is used in communication between the banks in a city.
* It can be used in an Airline Reservation.
* It can be used in a college within a city.
* It can also be used for communication in the military.

WAN(Wide Area Network)

* A Wide Area Network is a network that extends over a large geographical area such as states or countries.
* A Wide Area Network is quite bigger network than the LAN.
* A Wide Area Network is not limited to a single location, but it spans over a large geographical area through a telephone line, fibre optic cable or satellite links.
* The internet is one of the biggest WAN in the world.
* A Wide Area Network is widely used in the field of Business, government, and education.

### **Examples Of Wide Area Network:**

* **Mobile Broadband:** A 4G network is widely used across a region or country.
* **Last mile:** A telecom company is used to provide the internet services to the customers in hundreds of cities by connecting their home with fiber.
* **Private network:** A bank provides a private network that connects the 44 offices. This network is made by using the telephone leased line provided by the telecom company.

### **Advantages Of Wide Area Network:**

Following are the advantages of the Wide Area Network:

* **Geographical area:** A Wide Area Network provides a large geographical area. Suppose if the branch of our office is in a different city then we can connect with them through WAN. The internet provides a leased line through which we can connect with another branch.
* **Centralized data:** In case of WAN network, data is centralized. Therefore, we do not need to buy the emails, files or back up servers.
* **Get updated files:** Software companies work on the live server. Therefore, the programmers get the updated files within seconds.
* **Exchange messages:** In a WAN network, messages are transmitted fast. The web application like Facebook, Whatsapp, Skype allows you to communicate with friends.
* **Sharing of software and resources:** In WAN network, we can share the software and other resources like a hard drive, RAM.
* **Global business:** We can do the business over the internet globally.
* **High bandwidth:** If we use the leased lines for our company then this gives the high bandwidth. The high bandwidth increases the data transfer rate which in turn increases the productivity of our company.

### **Disadvantages of Wide Area Network:**

The following are the disadvantages of the Wide Area Network:

* **Security issue:** A WAN network has more security issues as compared to LAN and MAN network as all the technologies are combined together that creates the security problem.
* **Needs Firewall & antivirus software:** The data is transferred on the internet which can be changed or hacked by the hackers, so the firewall needs to be used. Some people can inject the virus in our system so antivirus is needed to protect from such a virus.
* **High Setup cost:** An installation cost of the WAN network is high as it involves the purchasing of routers, switches.

**Conclusion**

* Types of connections in computer networks can be categorized according to their size as well as their purpose
* PAN is a computer network which generally consists of a computer, mobile, or personal digital assistant
* LAN (Local Area Network) is a group of computer and peripheral devices which are connected in a limited area
* WAN (Wide Area Network) is another important computer network that which is spread across a large geographical area
* A metropolitan area network or MAN is consisting of a computer network across an entire city, college campus, or a small region
* WLAN is a wireless local area network that helps you to link single or multiple devices using. It uses wireless communication within a limited area like home, school, or office building.
* SAN is a storage area network is a type of network which allows consolidated, block-level data storage
* System area network offers high-speed connection in server-to-server applications, storage area networks, and processor-to-processor applications
* POLAN is a networking technology which helps you to integrate into structured cabling
* Home network (HAN) is a always built using two or more interconnected computers to form a local area network (LAN) within the home
* Enterprise private network (EPN) networks are build and owned by businesses that want to securely connect various locations
* Campus area network (CAN) is made up of an interconnection of LANs in a specific geographical area
* A VPN is a private network which uses a public network to connect remote sites or users together
* What does LAN stand for? – LAN stands for Local Area Network.
* What is the difference between LAN and WAN? – LAN is a computer network that covers a small geographic area, like a home, office, or group of buildings, while WAN is a computer network that covers a broader area.

**END**

**THANK YOU**