MRA DAV Public School, Solan

Class XII (Informatics Practices)
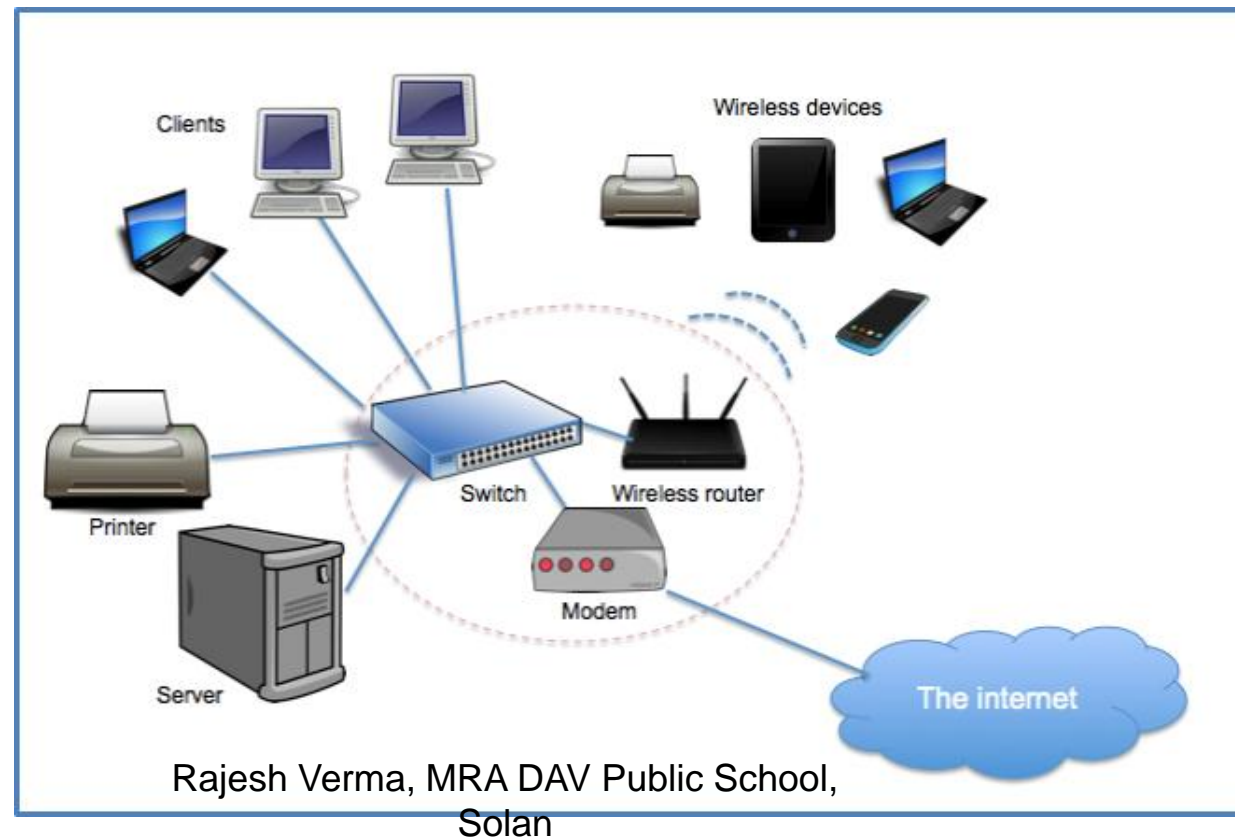
Topic: Introduction to Networks

- What is a network?
- Advantages of a network
- Classification of networks based on area covered.

A computer network is a collection of interconnected computers and other devices to share data and other resources (hardware and software resources).

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Advantages

Networks have several advantages which are described below:

1. Information sharing: Sharing of Information In a network, the users can share information, data and text easily to other users. Different users can share the same database, having different levels of access control.

2. Resource Sharing: Sharing of Peripherals The computers, in a network, can share common peripherals, e.g. one highly speed common printer can be used for all computers in a network.

3. Improved Communication: Communication In a network environment, communication between different users or computers is possible. By which we can send messages, documents (text), data files, graphics, videos, images or an e-mail to different users over the network.

4. Remote Access: Accessing Remote Database We can access the remote database and retrieve information according to our requirement in a network. We can booked tickets for airlines and trains or even we can book a room in a hotel at any destination by a network.

5. Central Storage of Data: Files can be stored on a central server that can be shared and made available to each and every user in an organization. With centralized processing, data is stored and retrieved from a single central location. Thus, there is no duplication of data and almost no data redundancy.

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It is the smallest and basic network type that is often used at home. It is a connection between the computer and another device such as phone, printer, modem tablets, etc

The PAN refers to a computer network, which is used for communication among computer devices spread over a few meters. PAN may be wired (i.e. with the use of computer buses such as USB) or wireless using wireless network technologies such as bluetooth etc.

Bluetooth personal area network(PAN) is also called a piconet. It can be composed of upto eight devices in a master slave relationship. The first bluetooth device is master and other devices are acting as slaves. Normally, its range is upto 10 m.

Inkjet Printer

PDA

Desktop PC

Laptop Computer

Mobile Phone

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LAN is used in small offices and Internet cafes to connect a small group of computers to each other. Usually, they are used to transfer a file or for playing the game in a network.

A local area network is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building.
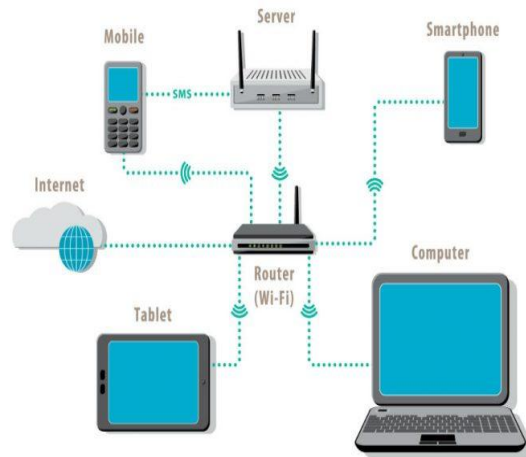
Fig: Wireless

Fig: Wired

A metropolitan area network (MAN) is a computer network that interconnects users with computer resources in a geographic region of the size of a metropolitan area.

The area covered by MAN is a small town, city, etc. A huge server is used to cover such a large span of area for connection.

All types of communication media (guided and unguided) are used to setup a MAN. A MAN is typically owned and operated by a single entity such as a government body or a large corporation.

Examples of a MAN are the part of the telephone company network that can provide a high-speed DSL line to the customer or the cable TV network in a city.
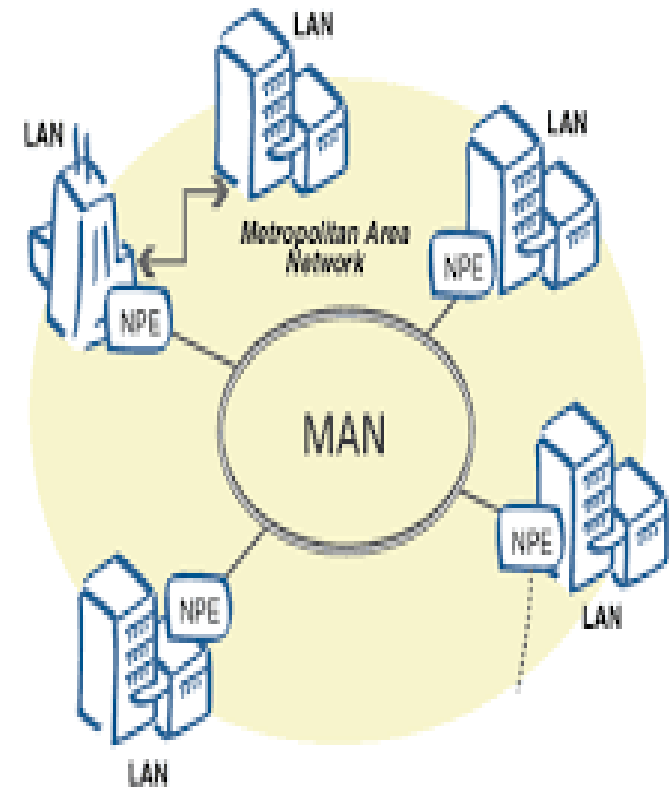
It is more complex than LAN and covers a large span of the area typically a large physical distance. The Internet is the largest WAN which is spread across the world. WAN is not owned by any single organization but it has distributed ownership.

WAN's data rate is slow about a 10th LAN's speed, since it involves increased distance and increased number of servers and terminals etc. Speeds of WAN ranges from few kilobits per second (Kbps) to megabits per second (Mbps).

Propagation delay is one of the biggest problems faced here. Devices used for transmission of data through WAN are: Optic wires, Microwaves and Satellites.
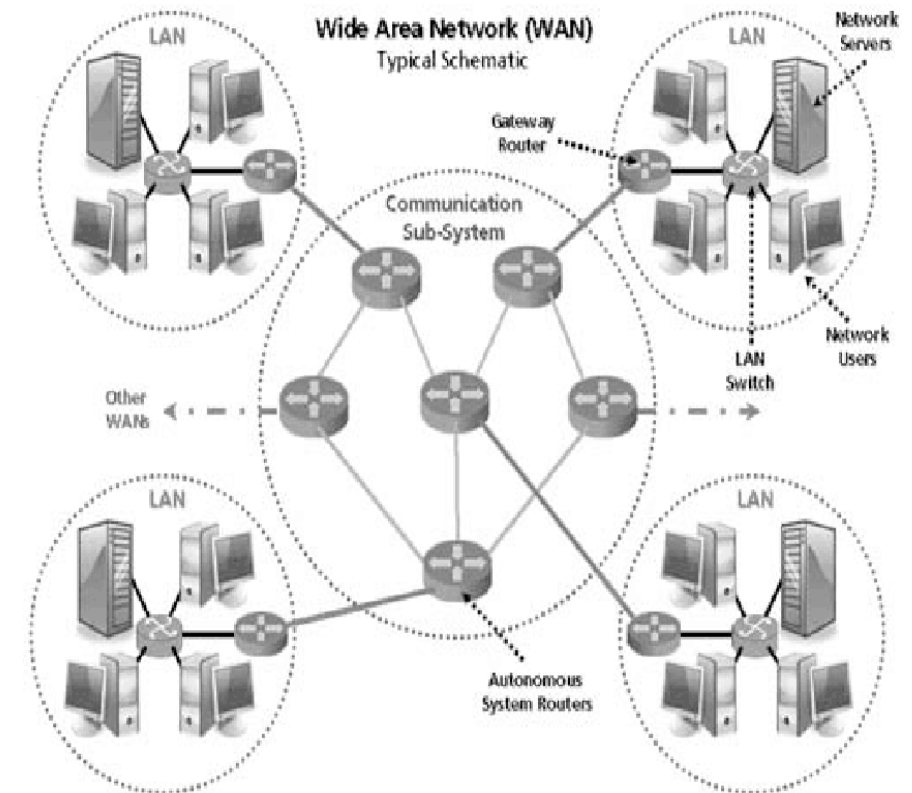
Parameter	PAN	LAN	MAN	WAN
Area covered	Small area (up to 10 m radius)	A building or campus (up to 10 km)	A city (up to 100 km radius)	Entire country, continent or globe
Networking cost	Negligible	Inexpensive	Expensive	Very expensive
Transmission speed	High speed	High speed	Moderate speed	Low speed
Error rate	Lowest	Lowest	Moderate	Highest
Network devices used	WLAN, USB Dongle	LAN/WLAN, Hub/Switch, Repeater, Modem	Router, Gateway	Router, Gateway
Technology/media used	Infrared, Bluetooth	Ethernet, Wi-Fi	Optical fibre, Radio wave, Microwave	Microwave Satellite