PRACTICAL – 1

AIM: To Study the working principle of different types of networks (Geographical Base and arrangement base)

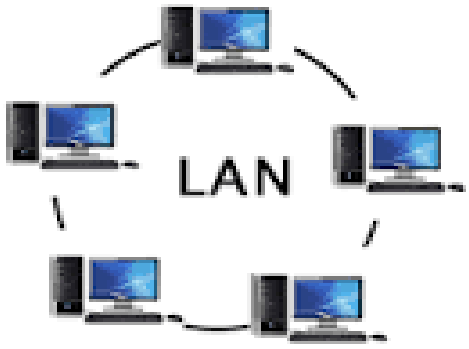
A network is a group of computers and other devices connected so they communicate with each other

Networks refer to three primary categories

1. Local Area Network
2. Metropolitan Area Network
3. Wide Area Network

Local Area Network (LAN)

A local Area Network (LAN) is usually privately owned and links the devices in a single office, building, or campus. Depending upon the needs of an organization and type of technology used, a LAN can be as simple as two PCs and a printer in someone's home office, or it can extend throughout a company and include Voice, Sound and video peripherals. Currently, LAN size is limited to a few kilometers.



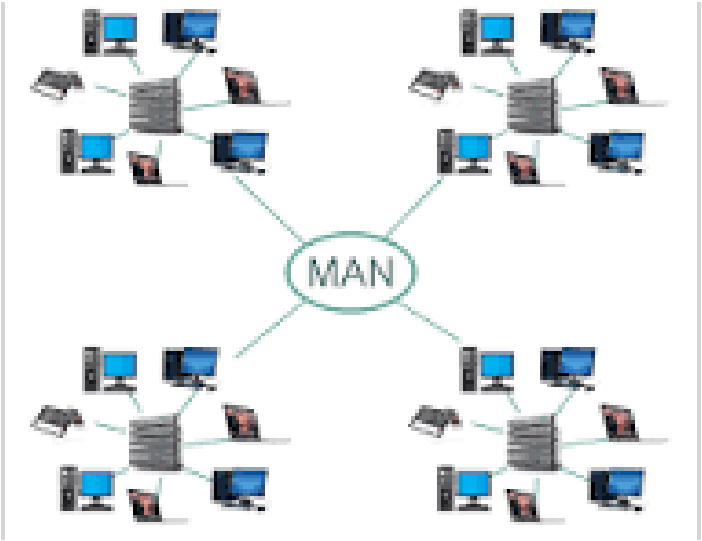
LAN

LANs are designed to allow resources to be shared between personal computers or workstation. The resources to be shared can include hardware (e.g., a printer) software (e.g., an application program), or data

LANs are distinguished from other types of networks by their transmission media and topology. LAN will use only one type of transmission medium. The most common LAN topology are bus, ring, and star.

Metropolitan Area network (MAN)

A Metropolitan area network (MAN) is designed to extend over an entire city. It may be a single network such as a cable television network, or it may be a means of connecting number of LANs into a larger network so that resources may be shares LAN-to-LAN as well as device. For example, a company may use a MAN to connect the LANs in all of its offices throughout a city



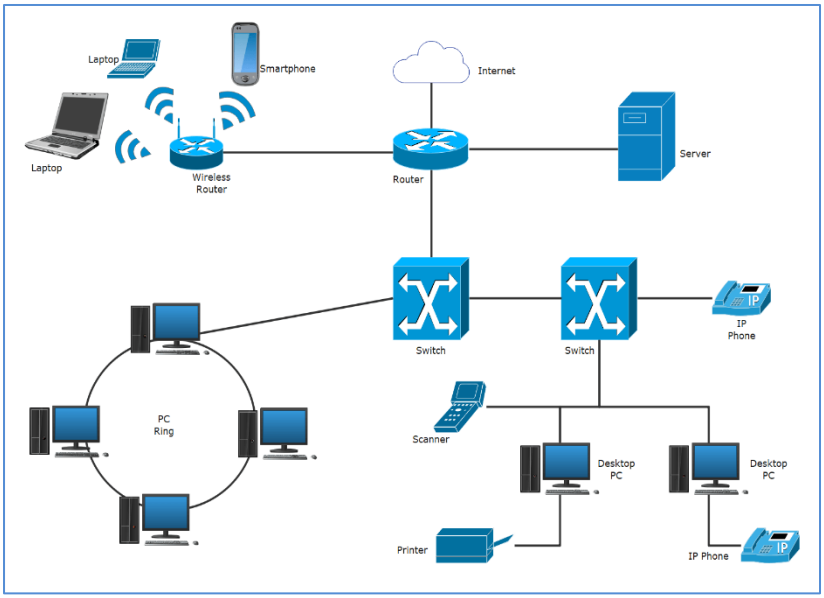
MAN

A MAN may be wholly owned and operated by a private company, or it may be a service provided by a public company, such as a local telephone company.

Wide Area Network (WAN)

A Wide Area Network (WAN) provides long-distance transmission of data, voice, image, and video information over large geographical areas that may comprise a country, continent, or even the whole world

In contrast to LANs WANs may utilize public, Leased, or private communication devices, usually in combinations, and can therefore span an unlimited number of miles.



types of WAN Technologies

There are mainly two technologies that are used in the WAN network design.

- **Circuit switching**: Circuit-switched networks operate on the virtual connection principle, which dictates that all messages will take the same way and that resources along this path are set aside for this connection.
- **Packet Switching:** The size of a packet in a packet-switched network is dictated by the outgoing link, and these packets may follow different routes. These packets are ready to be collected and reassembled at the destination.
- **TCP/IP protocol suite**: TCP/IP is a protocol suite of foundational of internet protocols used to interconnect devices on the Internet and other computer networks or device networks. The full form of TCP/IP is Transmission Control Protocol/Internet Protocol.
- **Router:** A router is a networking device that transfers data packets between device networks and also we can say it is used to interconnect LANs to form a wide area network (WAN).
- **Packet over SONET/SDH (PoS):** Packet over SONET and SDH is a communication protocol used for WAN transport. When using optical fiber and SONET or SDH communication protocol used to define how point-to-point links communicate.
- **Multiprotocol Label Switching (MPLS):** Multi-Protocol is an IP packet routing technique and also a network routing optimization technique that routes IP packets through paths via labels instead of looking at complex routing tables of routers.

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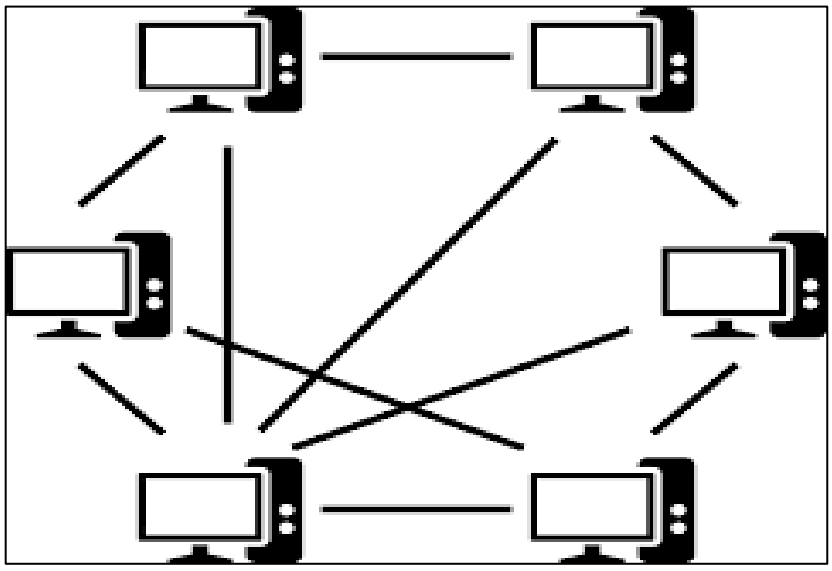
Networks can be defined by its arrangement types also. Generally, we use two types of networks. They are:

- **Peer to peer networks**
- **Client server networks**

Peer to peer network:-

This type of network is used for configuration of small networks. Peer to peer network consist of

around 8 to 10 pc. These types of network are constructed wherever the finance comes in the picture. This network does not contain a dedicated server. This is a completely a non-dedicated network. We can use our server as a node also. Therefore, we can reduce the cost of the network. The controlling of the network can be done from the all terminals. Each user can think him or herself as a network administrator. All the resources connected to a network this network can be controlled by all users. The administrating of these types of networks is very easy. So there is no need of network administrator. All the users can do work independently. As all the users are able to use the network resources easily there arises the problem of security. in the recent times due to advances technology and the less cost of system we can make networks with a dedicated server and good features with less expenses. So peer to peer network are not use much more now days.



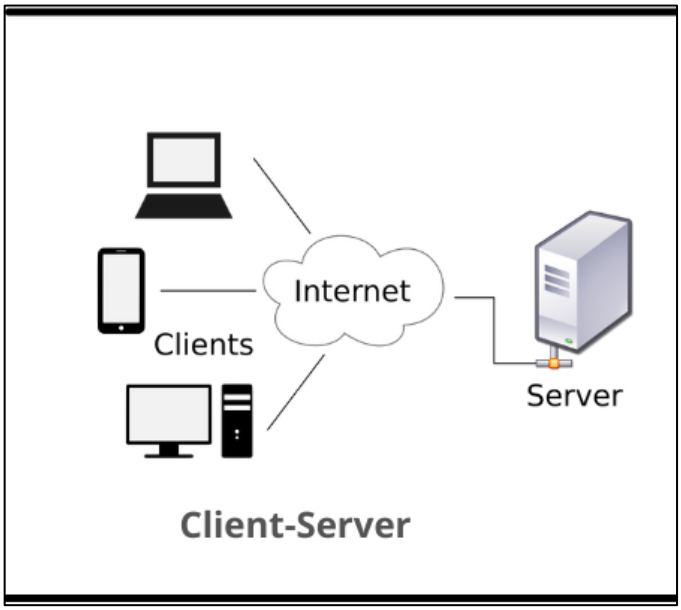
Examples:-

- Novell personal Netware 2.0
- Windows NT Workstation
- Window -95
- Windows for workgroup
- APPLETALK

Client server Networks:-

Client server network works on the principles of one main server and different clients. There may be a chance of more than one server in client server network. This entire additional server is known as helping server. Helping servers like file server. Print server etc takes the burden of file management and print management features of main server. In this way by creating some other servers we can reduce the burden of our main server.

In the client server network, communication generally takes the form of request message from the client to the server asking some work to be done. The server than does work and then sends backs the reply. Usually there are many clients using small numbers of servers.



Examples:

- Novell Netware
- Windows NT server
- Open VMS
- IBM OS/2 LAN server

Questions:-

1. List out advantages and disadvantages of LAN.
2. Compare LAN Vs WAN
3. What are client and server?
4. Write the advantages of client server network over peer to peer network? Types of servers?
5. Explain Dedicated and non dedicated servers.

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