NIELIT GORAKHPUR

Course Name: O Level (2nd Sem)   **Subject:** Introduction to ICT Resources
Topic: Computer Network - Types (Part 1)   **Date:** 26-05-2020

Computer Network

Types of Computer Network
There are many types of network that are described as follows:

- According to coverage area –
  - LAN (Local Area Network)
  - MAN (Metropolitan Area Network)
  - WAN (Wide Area Network)
- According to topology –
  - Bus
  - Ring
  - Star
  - Tree
  - Mesh
  - Cellular
- According to Transmission media –
  - Guided Network –Wired Network
  - Un-Guided Network – Wireless Network
- According to Services –
  - Public Network- Internet
  - Private Network - Entranet
  - Private over Public – Extranet
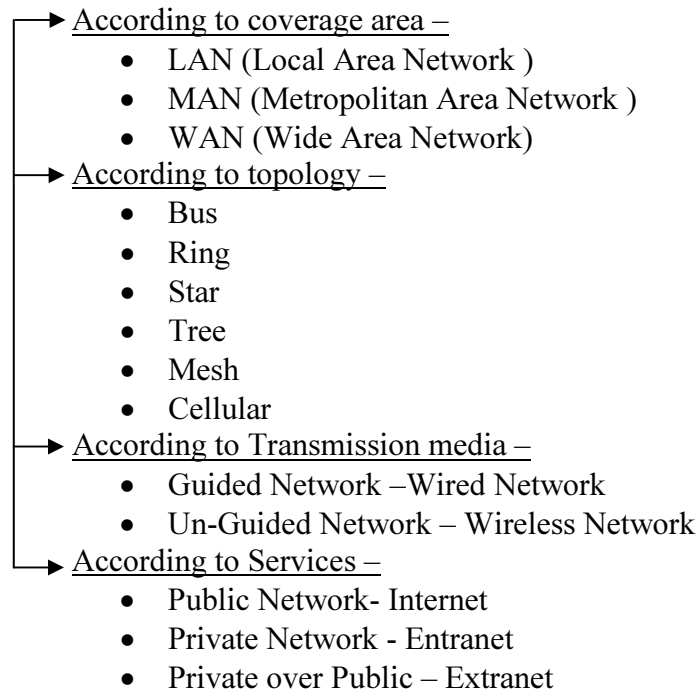
LAN (Local Area Network)

A local area network (LAN) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building. LAN is a group of computers located in the same room, on the same floor, or in the same building that are connected to form a single computer network. LANs allow users to share storage devices, printers, applications, data and other network resources. They are limited to a specific geographical area, usually less than one kilometer in diameter.

A system of networked computers and other hardware, like printers, that are in relatively close proximity to one another. LAN is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines or wireless circuits. A LAN is capable of transmitting data at very fast rates, much faster than data that can be transmitted over a telephone line. But the distances are limited. There is also a limit to the number of computers that can be attached to a single LAN. There are several different protocols (Ethernet, Token Ring, etc.), each with its own advantages and disadvantages. The owners usually' provide and maintain the transmission media for a LAN maximum data transfer rate of 100 Mbits/sec or more.

The line printer and magnetic tape storage are "shared" resources, since any user attached to the network can access these devices through PCs acting as the resource manager, or server, as it is commonly called in LAN terminology. In some networks, users can directly exchange data or files from the mainframe or mini computers.

Advantages of LANs

a) LANs allow sharing of expensive resources such as coloured laser printers and high capacity, high-speed mass storage devices among a number of users.
b) They allow for high-speed exchange of essential information between key people in an organization. If properly managed, this sharing will promote greater efficiency and productivity and will lead to more sophisticated applications such as electronic mail and company's web site.
c) LANs provides a catalyst to increase the range of potential applications for the IBM PCs where an application package can be used by users.
d) LANs contribute to increased productivity and profitability in the case of a business.

Disadvantages of LANs

a) The financial cost of LAN is still high. If one plans to use a network to share a laser printer, the user might find it cheaper to purchase another laser printer than to purchase networking hardware and software.
b) LAN software requires memory space in each of the computers used on the network. For an IBM PC computer, with 256 megabyte of main memory, in an IBM Token-Ring Network that has a printer or a disk space shared with other users, almost 10 per cent of the computer's memory is required to manage the network interface. This reduces the memory space available for the user's programs.
c) LAN adds another level of complexity to the computer operation. The installation and management of a LAN requires far more technical and administrative skills than installing and managing several computers that are not networked.
d) Some control on the part of the user is lost. You may have to share a printer with other users. You may face a situation like, for example, the entire network suddenly locking up because one user has made a mistake.
e) Some type of security system must be implemented if it is important to protect confidential data.
f) Memory-intensive programs, such as RDBMS and expert systems, are particularly vulnerable to networking because of memory requirement.

Exercise:

1: What is Local Area Network?
2: What are the advantages and disadvantages of LAN?