

"Hard Work is the Key to Success."

Unit-1

Introduction to Computer Network

Network:-

A network is a series of points or nodes interconnected by communication path. Network can interconnect with other networks and contain sub-networks.

Computer Network :-

A computer network is defined as interconnected connection of autonomous computers. Computers are said to be interconnected if they are able to exchange information. Connection is physically established through cables, ledgers, microwave, fibre optic and communication satellite.

Objective of Computer Network :-

- Day to Day, the need of computers is growing fastly. A computer has developed in each department. The following are the objectives of the computer network :-

a) Resource sharing is the main objective of the computer network.

The goal is to provide all

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the program and hardware is available to everyone on the network without regarding to the physical location of the resources and the user.

b) It is to provide high reliability. It is achieved by replacing the files two or more machines. So, in case of unavailability, the other copies can be used.

c) Computer networks to help people who live or work apart to report together. When the one user prepared some document, he can make the document online embedding. Thus, computer network is a powerful communication medium.

Application of Computer Network :-

There are following application of computer network :-

i) Marketing Professional use them to collect, exchange and analyse data relating to customers need and product development cycles.

ii) Financial Service include Credit history Search, foreign exchange and investment

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Service and electronic fund transfer, which allow a user to transfer money without going to bank.

iii) Email transfer the message between two or more users in a network. With this application, user can transfer the information in the form of text, picture, video and voice.

iv) Directory Service allow list of file to be stored in central location to speed up the world wide search operation. For example :- Search engine, such as Google, Yahoo, etc.

v) Information Service include bulletin board and data bank. A "WWW" site offering the technical specification for a new product in a information service.

vi) It allows conference to occur without the participant being in the same location. It includes :-

1. Text Conferencing :- Participant communicates through their keyboards & monitors.

2. Voice Conferencing :- Participant at a no. of location communicate simultaneously through phone.

iii) Video Conferencing :- Participant can see as well as talk to another.

vii) Cellular Telephone :- Wireless phone communication even while travelling through long distance.

Categories of Networks

There are three primary categories of network :-

1) LAN (Local Area Network)

It is designed for small physical area such as an office, group of buildings or a factory. LANs are used widely as they are easy to design and to find troubleshoot. Personal computers and workstations are connected to each other through LANs. We can use different types of topologies through LAN, there are Star, Ring, Bus, Tree, etc. It can be a simple network like connecting two computers, share file and network among each other. Local Area Network have data rates are 4 to 16 Mbps. Today, however speeds are increasing and can reach 100 Mbps with Gigabyte system (In Development).

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Advantage of LAN

- i) Local Area Network connects users to a set of common resources.
- ii) Sharing and Accessing of information in this way is easier and economical. LANs can improve productivity in an organisation.
- iii) Cost per unit of storage is significantly reduced.
- iv) Easy to install. Generally Micro-Computers are used.

Disadvantage of LAN:-

- i) In Local Area Network, the distance is limited.
- ii) The distance is limited, the number of computers are limited.

2) MAN (Metropolitan Area Network)

A MAN is designed to extend over an entire city. It may be a single network such as a cable network or it may be a means of connecting a number of local area networks into a large network so that resources may be shared to local area network as well as device

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to device. For example:- A company can use a MAN to connect the LAN in all of its office throughout the city. A MAN may be owned and operated by private company or it may be a service provided by a public company.

Advantage of MAN :-

- i) MAN can cover wider area than LAN.
- ii) MAN networks are usually operated at airports or at a local school.
- iii) Mainframe Computers are used in this network.
- iv) Data Transmission more widely, rapidly and significantly.

Disadvantage of MAN :-

- i) The cost is what inhibits to the geographical reach of MANs.
- ii) Difficult to install.
- iii) This equipment generally has to be installed for the first time.

3) WAN (Wide Area Network) :-

A WAN provides long distance transmission of data, voice, image and video information over large geographical area that may comprise a country, a continent, or even the whole world. A WAN that is own and used by a single company is often referred to as an enterprise network. It actually consists of two or more different networks. Internet is a wide area Network.

Advantage of WAN :-

- i) Message can be sent very quickly to anyone. These message can have pictures, sounds, or data.
- ii) Expensive things can be shared by all the computers on the network without having to buy a different peripherals for each computer.
- iii) Every one on the network can use the same data. This avoids problems where some users may have older information than others.

Disadvantages of WAN :-

- i) Setting up a network can be an expensive and complicated.

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- ii) Security is a real issue. Still, many people are not aware of the importance of security in a network.
- iii) Information may not meet local needs. The information provided by the network may not be suitable for the local needs of the organization.
- iv) Vulnerable to hackers. The network is vulnerable to hackers who can steal data and disrupt the network.
- v) Once setup, requires continuous maintenance. The network requires continuous maintenance to ensure it is secure and running smoothly.