

## ***CHAPTER 4***

# ***COMPUTER NETWORK***

### **4.1 Introduction**

Computer networking is the process of inter connecting two or more computers so that the users can communicate with each other, share resources and overcome other limitations of stand-alone systems. The network can be established with a variety of combinations of computers such as a network of only microcomputers, microcomputers and one or more minicomputers, and a set of microcomputers connected to a mainframe computer.



Figure: Computer network

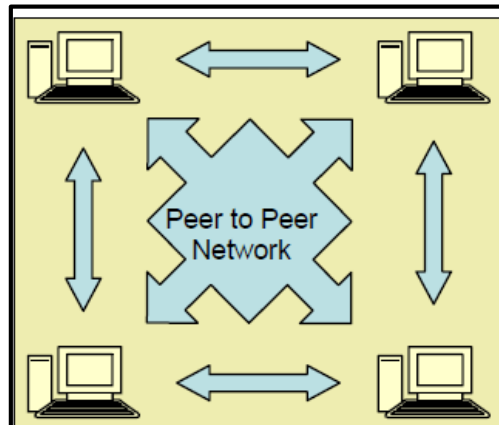
## 4.2 Advantages of Networking

1. **Resource sharing:** Network enables sharing of expensive resources such as processor, storage space and peripherals like modem, fax, and laser printer.
2. **Sharing of Data files:** The network permits concurrent access to the same data file by many users in the network. Thus corporate databases are shared by users in many areas like sales department, production center, inventory department etc.
3. **Sharing of Software:** Any user in a network can load and use the software installed on any of the computer or fileserver in the network.
4. **Communication:** The Network enables people in an organization to communicate among them. It is also possible to communicate with trading partners and customers outside the organization with a connectivity to the Internet. E-mail, voice mail, instant messaging, video conferencing etc are some of the communication facilities that can be used for communication among users on a network.

## 4.3 Types of Networks

### 1. Peer to peer networks

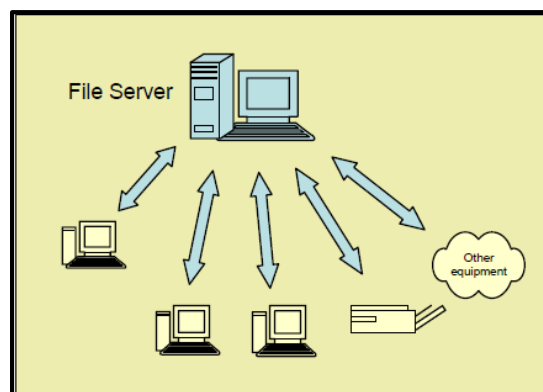
**Peer-to-peer networks** are more commonly implemented where less than ten computers are involved and where strict security is not necessary. All computers have the same status, hence the term 'peer', and they communicate with each other on an equal footing. Files, such as word processing or spreadsheet documents, can be shared across the network and all the computers on the network can share devices, such as printers or scanners, which are connected to any one computer.



**Figure: Peer to Peer Networking**

## 2. Client/server networks

Client/server networks are more suitable for larger networks. A central computer, or 'server', acts as the storage location for files and applications shared on the network. Usually the server is a higher than average performance computer. The server also controls the network access of the other computers which are referred to as the 'client' computers. Typically, teachers and students in a school will use the client computers for their work and only the network administrator (usually a designated staff member) will have access rights to the server.



**Figure: Client - Server Networking**

Peer-to-Peer Networks	Client/Server Networks
Easy to set up <input type="checkbox"/> <input type="checkbox"/>	More difficult to set up
Less expensive to install <input type="checkbox"/>	More expensive to install <input type="checkbox"/>
More time consuming to maintain the software	Less time consuming to maintain the software
Ideal for networks with less than 10 computers <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	No limit to the number of computers that can be supported by the network <input type="checkbox"/>
<input type="checkbox"/> Does not require a server <input type="checkbox"/> <input type="checkbox"/>	Requires a server running a server operating system

**3. Local area networks (LANs)** are used to connect networking devices that are in a very close geographic area, such as a floor of a building, a building itself, or a campus environment.

In other words, LAN is an interconnection of computers that need to communicate with each other in a limited geographical area. The network may have other shared devices attached such as fax, laser printers and copiers. The network includes a central facility with huge storage capacity. The processing may be centralized or decentralized depending upon the requirements of the organization. It also has a network operating system for managing the network.

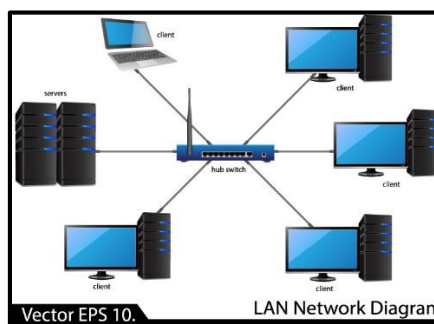


Figure: Local Area Network

**4. Wide area networks (WANs)** are used to connect LANs together. Typically, WANs are used when the LANs that must be connected are separated by a large distance.