

COMPUTER NETWORK

Sonia Rana

Student of ECS department

Dronacharya College of Engineering

Abstract- A network consists of 2 or more computers connected together, and they can communicate and share resources (e.g. information) A computer network or data network is a telecommunications network which allows computers to exchange data. In computer networks, networked computing devices pass data to each other along network links (data connections). Data is transferred in the form of packets. The connections between nodes are established using either cable media or wireless media. The best-known computer network is the Internet. Network computer devices that originate, route and terminate the data are called network nodes. Nodes can include hosts such as personal computers, phones, servers as well as networking hardware. Two such devices are said to be networked together when one device is able to exchange information with the other device, whether or not they have a direct connection to each other.

Index Terms- network, telecommunication network, route, terminate, hosts, network links, nodes

I. INTRODUCTION

Computer networks differ in the transmission media used to carry their signals, the communications protocols to organize network traffic, the network's size, topology and organizational intent. In most cases, communications protocols are layered on (i.e. work using) other more specific or more general communications protocols, except for the *physical*

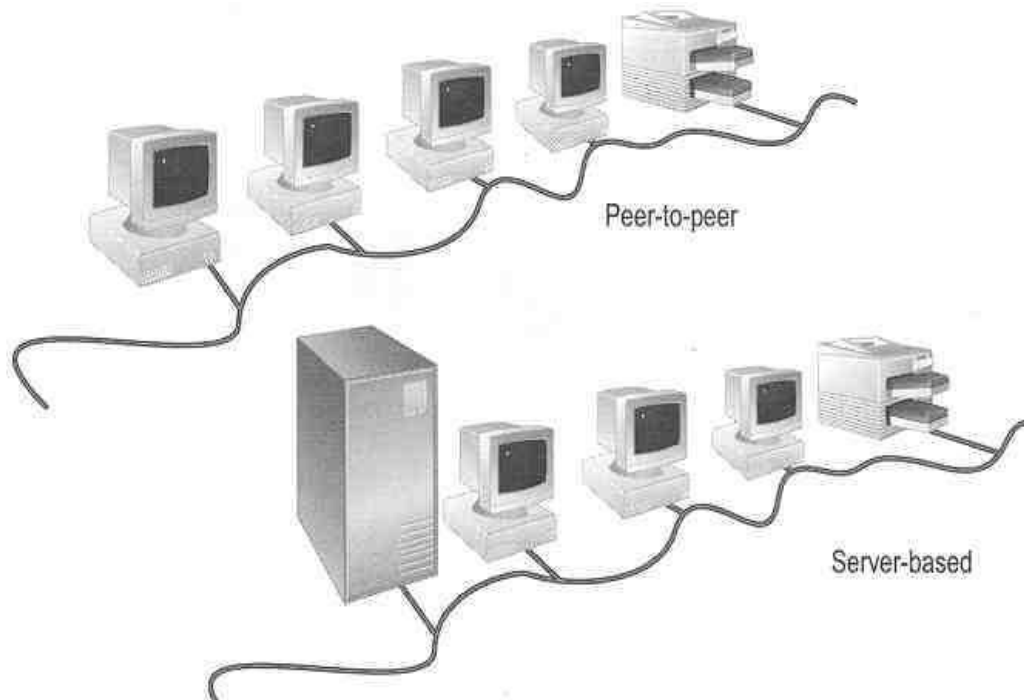
layer that directly deals with the transmission media.

Computer networks support applications such as access to the World Wide Web, shared use of application and storage servers, printers, and fax machines, and use of email and instant messaging applications.

II. NETWORK

A network is a group of two or more computer systems linked together. There are many types of computer networks, including the following:

- **local-area networks (LANs):** The computers are geographically close together (that is, in the same building).
- **wide-area networks (WANs):** The computers are farther apart and are connected by telephone lines or radio waves.
- **campus-area networks (CANs):** The computers are within a limited geographic area, such as a campus or military base.
- **metropolitan-area networks (MANs):** A data network designed for a town or city.
- **home-area networks (HANs):** A network contained within a user's home that connects a person's digital devices.



III. NETWORK TOPOLOGY

Network topology is the arrangement of the various elements (links, nodes, etc.) of a computer network. Essentially, it is the topological structure of a network and may be depicted physically or logically.

Physical topology is the placement of the various components of a network, including device location and cable installation.

Logical topology illustrates how data flows within a network, regardless of its physical design.

IV. LAN

A **local area network (LAN)** is a computer network that connects computers and devices in a limited geographical area such as home, school, computer laboratory or office building. The defining characteristics of LANs, in contrast to wide area networks (WANs), include their usually higher data-transfer rates, smaller geographic area, and lack of a need for leased telecommunication lines.

Types of LAN:

Wired Local Area Networks

In a wired LAN, coaxial cable or special grades of twisted pair wires and network adapters connect the devices. Back in the dawn of computing, two computers were directly wired to each other using a crossover cable. In order to accommodate the

demands of a network and connect more computers, central devices like hubs, switches, or routers have evolved.

Wireless Local Area Networks

WLANs send and receive data through the air and use radio and infrared waves to transmit information without a physical connection. The access point receives, buffers and transmits data between the WLAN and the wired network infrastructure. A single access point can support a small group of users and can function within a range of less than one hundred to several hundred feet.

V. PROTOCOLS

The **Internet Protocol (IP)** is the principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries. Its routing function enables internetworking, and essentially establishes the Internet.

IP is the primary protocol in the Internet Layer of the Internet Protocol Suite and has the task of delivering datagrams from the source host to the destination host solely based on their addresses. For this purpose, IP defines addressing methods and structures for datagram encapsulation.

1. FTP

The **File Transfer Protocol (FTP)** is a standard network protocol used to transfer computer files from one host to another host over a TCP-based network,

such as the Internet. FTP is built on a client-server architecture and uses separate control and data connections between the client and the server.

2. HTTP

The **Hypertext Transfer Protocol (HTTP)** is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web. The standards development of HTTP was coordinated by the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C).

3. IPv4

Internet Protocol version 4 (IPv4) is the fourth version in the development of the Internet Protocol (IP). It is one of the core protocols of standards-based internetworking methods in the Internet, and was the first version deployed for production in the ARPANET in 1983. IPv4 is a connectionless protocol for use on packet-switched networks. It operates on a best effort delivery model, in that it does not guarantee delivery, nor does it assure proper sequencing or avoidance of duplicate delivery.

4. IPv6

Internet Protocol version 6 (IPv6) is the most recent version of the Internet Protocol (IP), the communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet. IPv6 was developed by the Internet Engineering Task Force (IETF) to deal with the long-anticipated problem of IPv4 address exhaustion. IPv6 is intended to replace IPv4.

VI. NETWORK DEVICES

Computer networking devices are units that mediate data in a computer network and are also called network equipment. Units which are the last receiver or generate data are called hosts or data terminal equipment.

1. HUB

Networks using a Star topology require a central point for the devices to connect. Originally this device was called a concentrator since it consolidated the cable runs from all network devices. The basic form of concentrator is the hub. Hubs pose a security risk since all packets are flooded to all ports all the time.



2. SWITCHES

Switches are a special type of hub that offers an additional layer of intelligence to basic, physical-layer repeater hubs. A switch must be able to read the MAC address of each frame it receives. This information allows switches to repeat incoming data frames only to the computer or computers to which a frame is addressed. This speeds up the network and reduces congestion.



3. MODEMS

A modem is a device that makes it possible for computers to communicate over telephone lines. The word modem comes from Modulate and Demodulate. A **modem (modulator-demodulator)** is a device that modulates signals to encode digital information and demodulates signals to decode the transmitted information.

VII. CONCLUSION

Computer Communication will become a much more useful networking tool when large number of people with similar interest acquire access to the technology.

REFERENCES

[1] www.webopedia.com/TERM/N/network.html
 [2] www.networklobby.org/