NETWORKING

Network: -" An interconnected collection of autonomous computers"
Interface:- It is client/Server software program that allows multiple users to communicate online with real time audio, video and text chat in dynamic 3D environment.
Server:-A computer that facilitates the sharing of data, software and hardware resources (i.e.) printers, modem etc.,) on the network, is termed as a Server.
Network Interface Unit:- It is an interpreter that helps to establish communication between the server and workstations. Standalone Computer is computer which works independently.
Switching Techniques:-1. Circuit Switching 2 Message Switching 3 Packet Switching
1 **Circuit Switching**:-It seeks physical connection from sender telephone to receiver telephone before the transmission of data.2.**Message Switching**:- The data that is transmitted stored in buffer and after getting free linke it is transmitted to another switching office. This process of "store and forward" will continue till the data reaches the destination.**3. Packet Switching**:- In this technique, all the packet s of fixed data, which is the combination of data and address of the destination will be transmitted to destination . All the packets are stored in the main memory.
CROSS TALK:- The bleeding of signal from cable while transmission is known as cross talk.
Types of cables:-
1.Twisted Pair Cable:-i) Unshielded Pair Cable-> CAT1-no transmission CAT2-upto 4Mbps CAT-3 10Mbps CAT4-16Mbps CAT5-1000Mbps ii) Shielded Pair Cable –segment length-100 metrers – greater protection, protection from interference.
2 Coaxial Cable:- It is better than twisted pair. It contains solid wire core surrounded by one or more foils.
Advantages:-it has bandwidth upto 400MBPS, can be used for broad band connection.Disadvantages:-expensive, not compatible with twisted pair cables
3**.Optic Cables:-**It contains 3 pieces core, cladding and protective coating. It consists of thin strands of glass like material which can carry light from a source to other end of fiber. Bandwidth is of 2Gbps.

Advantages:-Immune to electrical and magnetic interference, suitable for industries, secure and can be used for broad band connection.
Disadvantages:-1.Problem with installation, difficult to solder, expensive.
TRANSMISSION:
1.Microwave Transmission:-
a) It transmits data without the use of cables.
b) It is similar to radio and television signals are used for long distance communication.
c) It consists of transmitter, receiver and the atmosphere
ADVANTAGES:-It is cheaper than digging of cables and maintaining repeaters, freedom from land acquisition, ease of communication, ability to communicate over oceans.
DISADVANTAGES:- It is insecure, susceptible to weather effects like rains, thunder storms, bandwidth is less and cost is high.

2.Radiowave Transmission:-
a) It uses radio frequencies
b) It has 2 parts 1) Transmitter 2) Receiver
c) Both transmitter and receiver uses antennas to radiate and capture the radio signal.
ADVANTAGES:-Offers mobility, cheaper than digging, freedom from land acquisition, offers ease of communication.
DISADVANTAGES:-Insecure, susceptible to weather effects like rains, thunder storms etc.,

3. Satellite Transmission:-

1) In this transmission, the earth station consists of a satellite dish that functions as an antenna and communication equipment to transmit and receive data from satellites
Advantages:-Covers large area, heavy usage of intercontinental traffic makes it attractive.

DISADVANTAGES:-1.Technological limitations preventing the deployment of large, high gain anenas
2. Overcrowding of available bandwidth
3. The high investment cost

Baud:-It is the unit of measurement for the information carrying capacity of a communication channel. It is a synonymous with bits per second.

Bandwidth means difference between the highest and lowest frequencies of a transmission channel.(amount of information travelling through a single channel at any one point of time.

Types of Network:-1) Local Area Network 2)Wide Area Network 3)Metropolitan Area Network

Local Area Network:-Computer networks confined to limited area are known as Local Area Network. Resource is main purpose of LAN. LAN users can share data, printers, hard disks, programs, modem etc.,

Metropolitan Area Network:-This kind of network spread over a city. This purpose is to share both hardware and software resources.

Wide Area Network:-The networks spread across countries are knows as WANs. It facilitates exchange data at cheap rates with high speed. Internet is an example of larges t WAN.

Topology:-The pattern of interconnection of nodes in network is called Topology.

1. The star topology 2. The Bus topology 3 The ring topology 4The mesh topology
5. The tree topology 6. The fully connected topology

1.The Star Topology:-In the topology, the central node is connected to all other nodes by a single path.

Advantages:-1 .Fault detection is easy 2. Use of simple access protocols 3. Easy to recon figurate

Disadvantages:-.1. Use of long cable length. 2. Maintenance cost is high. 3. It is difficult to expand. 4. The failure of central node leads to failure of entire network.

2.The Bus Topology/Linear Topology:- In this topology, Various nodes attached to single length of the transmission medium. Terminators are at both ends, which absorb the signal and removes it from the bus.

Advantages:-1.The maintenance cost is less as cable length is short and wiring is simple.
2. Easy to extend with the help of repeaters.
3. Its architecture is simple

Disadvantages:-1. Fault diagnosis is difficult.
2. Fault isolation is difficult.
3. All nodes must be intelligent.
4. It requires repeater configuration.

3. The Ring Topology/Circular topology:-In this topology, all nodes are connected to two neighbouring nodes . The data travels in one direction from one node to another node.

Advantages:-1.Maintenace cost is less as cable length is short. 2. It is well suited for optic fibers.

Disadvantages:-1. The failure of one node causes the failure of entire network.
2.fault diagnosis is difficult.
3. Network reconfiguarion is difficult.

SOME HARDWARE DEVICES:-

1.MODEM:- Modulator and demodulator

Modem converts digital data to analog data through telephone lines. Similarly, the modem receiving singal changes analog signal to digital signal on the other end.

2.**HUB:**-It is a hardware device used to connect several computers together. There are 2 kinds of hubs

1.Active Hub:-It amplifies signal as it moves from one device to another

2. passive Hub:-It allows signal to pass from one computer to another computer with out any change.

3.**SWITCH:-S**witch is a device that is used to connect networks into different sub networks. It is responsible for filtering of data.

4. Repeater:-It is a network device that amplifies and restores signals for long distance transmission. They are 2 kinds 1. Amplifier :- Amplifies all incoming signals over network.

2. Signal repeater:-It collects the packet and then retransmits the packet.

5.Bridge:-Bridge is smart device and established an intelligent connection between two local networks with the same standard but with different types of cables.

6.Router:- It works like a bridge. It is network device used to connect different segments in a network to improve performance and reliability.

7.**Gateway**:- This network device connects dissimilar networks. It serve as an entrance to another network. It works as a proxy serve which is not actually a server but appears as a server.

80-20 Rule:-80 percent of the traffic on a given network segment is local and not more than 20 percent of the network traffic should need to move across a backbone.

PROTOCOL:- It is a formal description of message formats and the rules that two or more machines must follow to exchange those messages.

HTTP:- It is used for name servers. It is designed for using in web.

FTP :-It is useful to transfer files from one network in an organization to another. It is potent and popular way to share information over the internet. It is a client/server process.

TCP/IP:- TCP is responsible for making sure that commands get through to the other end. It keeps track of what is sent, and retransmits anything that did not get through.

WWW:-World Wide Web is a set of protocols that allows you to access any document on the net through a naming system based on URLs. WWW also specifies a way the hypertext Transfer protocol to request and send a document over the internet. WWW is small part of internet.

URL:-Uniform Resource Locator is determined by the following

The type of server or protocol

The name/address of the server on the internet

The location of the file on the server

The internet address or URL is determined by the following:

1. The type of server or protocol
2. The name/address of the server on the internet.
3. The location of the file on the server

Domain Name System:- The characters based naming system by which servers are identified is also known as Domain Name System.

Uniform Resource Locator:-It is an address of a file on internet. It is determined by the following:

1. The type of server or protocol
2. The name of the server on the internet

3. The location of the file on the server

WebScripting:-The process of creating and embedding scripts in a web page is known as web-scripting
There are two types of scripts:-1.Client side Scripts
2.Serverside Scripts

Client side Scripts:-It is used when client side interaction is used. Eg:-VBScript, Java Script, Hypertext Preprocessor

Server Side Scripts:-It enables the completion or carrying out a task at the server end and then sending the result to the client side. It uses for password protection, browser customization, form processing.

Free Software:- Free Software means the software is freely accessible and can be feely used, changed, improved, copied and distributed by all who wish to do so.

Open Source Software:-It is freely used but it does not have to be free of charge.

Freeware: It is generally used for software, which is available free of cost and which allows copying and further distribution,, but not modification and whose source code is not available.

Shareware:-It is a software, which is made available with the righ to redistribute copies. The modification of the software is not allowed.

Cookies:-These are messages given web server to web browser to keep track of user's activity on a web site.

Hackers:-Hackers are those people who enjoys learning programming languages and are interested in gaining knowledge about computer systems.

Crackers:- These are people who try to break security systems for the purpose of stealing data.

Cyber law:-The law which refers to legal and regulatory aspects of internet and the World Wide Web.

Computer Virus: it is a harmful program that requires a host and makes the system sick.

Trojan Horse: It is hidden code which appears safe to run but has hidden side effects.

Worms: These are replicable programs which travel from computer to computer across network connections.

Spam:-It is a junk mail which can be avoided by creating a filter. If user stop to sign up for various things in internet , spam can be avoided.

1	ABBREVIATION	FULL FORM
2	ARPANET	Advanced Research Projects agency Network
3	TCP	Transmission Control Protocol
4	IP	Internet Protocol
5	NIU	Network Interface Unit
6	VGM	Voice Grade Medium
7	DGM	Data Grade Medium
8	UTP	Unshielded Twisted Pair
9	STP	Shielded Twisted Pair
10	LED	Light emitting Diodes
11	LD	Laser Diodes
12	LAN	Local Area Net Work
13	MAN	Metropolitan Network
14	WAN	Wide Area Network
15	PP	Point to Point Protocal
16	AM	Amplitude Modulation
17	PM	Phase Modulation
18	Modem	Modulator and Demodulator
19	DTR	Data Terminal Ready
20	CTS	Clear to Send

21	DTE	Data Terminal Equipment
22	VFIR	Very fast Infrared
23	HTTP	Hyper Text Transfer Protocal
24	URL	Uniform Resource Locator
25(a)	kBPS	Kilo bits per second
25(b)	KBPS	Kilo Bytes per second (If K is capital)
26(a)	mBPS	Mega bits per second
26(b)	MBPS	Mega Bytes per Second (if M is capital)
27	kHZ	Kilohertz
28	MHz	Megahrtz
29	GHz	Gigahertz
30	THz	Terahertz
31	CTS	Clear to send
32	DTE	Data Terminal equipment
33	DSR	Data Set Ready
34	HTTP	Hyper Text Transfer Protocol
35	URI	Uniform Resource Identifier
36	MIME	Mail and Multipurpose Internet Mail Extension
37	URN	Uniform Resource Name
38	ASCII	American Standard Code for Information Interchange
39	ISCII	Indian Standard Code for Information Interchange
40	FTP	File Transfer Prototcol
41	SLIP	Serial Line Internet Protocol
42	PPP	Point to Point Protocol
43	ISP	Internet Service Provider
44	PDA	Personal Data/Digital Assistant
45	GSM	Global System for mobile
46	SIM	Subscriber Identification Module
47	GSM	Global System for Mobile
48	TDMA	Time Division Multiple Access
49	TDM	Time Division Multiplexing
50	IDEM	Integrated Digital Enhanced Netweork
51	GSM	Global System for Mobile
52	CDMA	Code Division Multiple Access
53	WILL	Wireless in Local Loop
54	UMTS	Universal Mobile Telecommunication System
55	EDGE	Enhanced Data rates for Global Evolution
56	UMTS	Universal Mobile Telephone System
57	SMS	Short Message Service
58	PSTN	Public Switched Telephone Network
59	WCDMA	Wideband Code Division Multiple Access
60	SMSC	Short Message Service Center
61	HTML	Hyper Text Mark up Language
62	XML	Extensible Markup Language
63	DNS	Domain Name System
64	ASP	Active Server Pages
65	JSP	Java Server Pages
66	PHP	Hypertext Preprocessor
67	OSS	Open Source Software
68	FLOSSS	Free Libre and Open Source Software

69	FSF	Free Software Foundation
70	OSI	Open Source Initiative
71	W3C	World Wide Web Consortium
72	IP	Intellectual Property
73	NIC	Network Interface Unit
74	TAP	Terminal Access Point
75	LED	Light Emitting Diode
76	LD	Laser Diode
77	NFS	Network File System