

UNIT - 5

Infrastructure for EC

Content - A network of network, internet protocol, web based client / server, internet security, multimedia delivery.

A network of network - A term internet is known as network of network. Now the question is raise from here. What is network? The answer is a computer network is a system in which multiple computers are connected to each other to share information and resources. Internet enables its users to share and access enormous amount of information worldwide. It uses WWW, FTP, email services, audio and video streaming etc. At huge level, internet works on client-server model.

* Characteristics of a Computer Network :-

- 1- Share resources from one computer to another.
- 2- Create files and store them in one computer, access those files from the other computer connected over the network.
- 3- Connect a printer, scanner, or a fax machine to one computer within the network use the machines available over the network.

Following is the list of hardware's required to set up a computer network.

- Network Cables

- Distributors
- Routers
- Internal Network Cards
- External Network Cards

* Applications of Communication & Computer Network :-

Computer systems and peripherals are connected to form a network. They provide numerous advantages:

1. Resource sharing such as printers and storage devices.
2. Exchange of information by means e-mails and FTP.
3. Information sharing by using Web or Internet.
4. Interaction with other users using dynamic web pages.
5. IP phones
6. Video conferences
7. Parallel computing
8. Instant messaging

• Types of computer

Local area network

Metropolitan area network

Wide area network

* Internet :- Internet is defined as an information super highway, to access information over the web. However, it can be defined in many ways as follows:

- 1- Internet is a world-wide global system of interconnected computer networks.
- 2- Internet uses the standard internet protocol (TCP/IP).
- 3- Every computer in internet is defined by a unique IP address.
- 4- IP address is a unique set of numbers (such as 110.22 33.114) which identifies a computer location.
- 5- A special computer DNS (Domain Name Server) is used to give name to the IP address so that user can locate a computer by a name.
- 6- Internet is accessible to every user all over the world.

Evolution

The concept of internet was originated in 1969 and has undergone several technological and infrastructural changes as discussed below -

- The origin of Internet derived from the concept of Advanced Research Project Agency Network (ARPANET)
- ARPANET was developed by United States Department of Defence.
- Basic purpose of ARPANET was to provide communication among the various bodies of government.
- By the time, with invention of new technologies such as TCP/IP protocols, DNS, WWW, browsers, scripting languages etc. Internet provided a medium to publish and access information over the web.

Advantages -

1. Internet allows us to communicate with the people sitting at remote locations.
2. One can surf for any kind of information over the internet. Information regarding various topics such as Technology, Health & Science, Social studies, Information Technology, Products etc can be surfed with help of a search engine.
3. Apart from communication and source of information, internet also serves a medium for entertainment.
4. Internet allows us to use many services like -
 - (a) Internet Banking
 - (b) Online Shopping
 - (c) Online Ticket Booking
 - (d) Online Bill Payment
 - (e) Data Sharing
 - (f) E-mail
5. Internet provides concept of electronic commerce, that allows the business deals to be conducted on electronic systems.

Disadvantages -

1. There are always chances to lose personal information such as name, address, credit card number.
2. Another disadvantage is the Spaming. Spaming corresponds to the unwanted e-mail in bulk.
3. These e-mails serve no purpose and lead to obstruction of entire system.
3. Virus can easily be spread to the computers connected to internet. Such virus attack may cause your system to crash or your important data

may get deleted.

4. Also a biggest threat on internet is pornography.
5. There are various websites that do not provide the authenticated information. This leads to misconception among many people.

* Transmission Control Protocol (TCP) :-

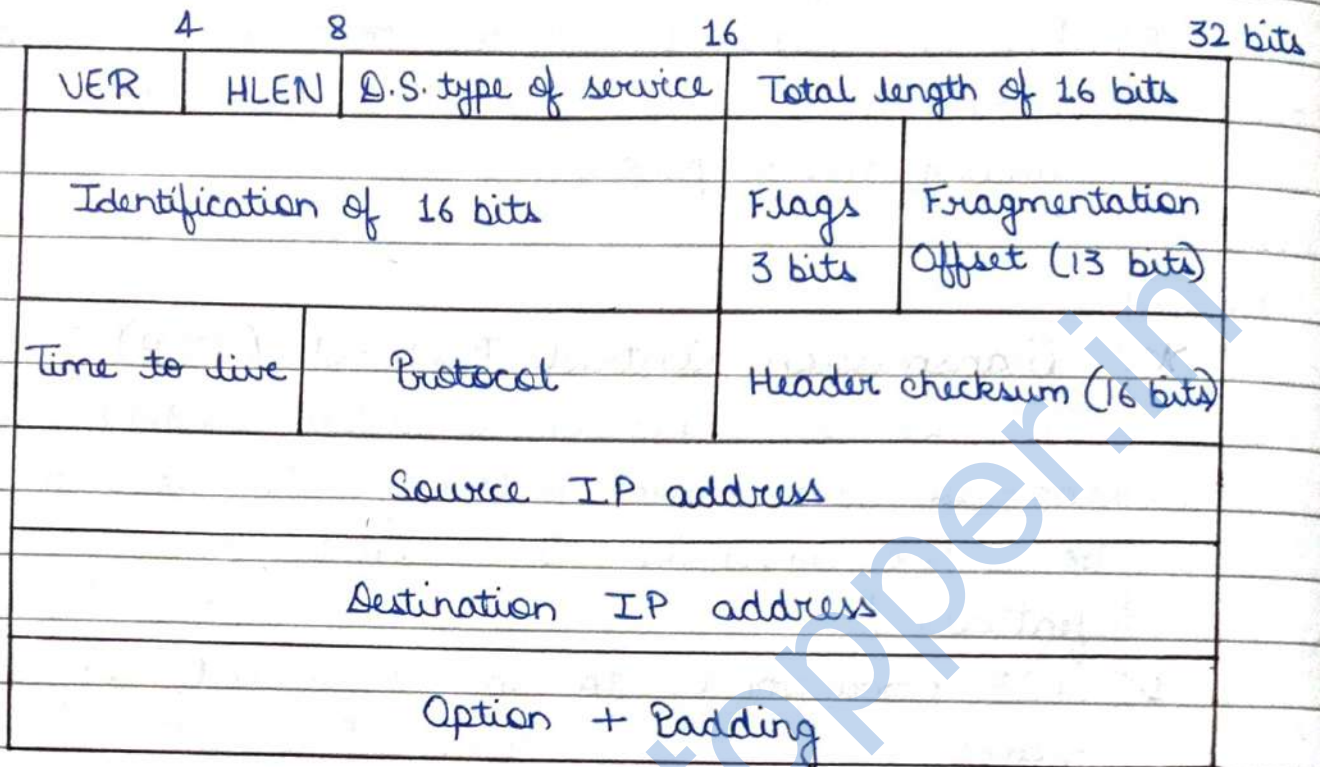
TCP is a connection oriented protocol and offers end-to-end packet delivery. It acts as a backbone for connection. It exhibits the following key features :

- 1- TCP corresponds to the transport layer of OSI model.
- 2- TCP is a reliable and connection oriented protocol.
- 3- TCP offers connection oriented end-to-end packet delivery.
- 4- TCP ensures reliability by sequencing bytes with a forwarding acknowledgement number that indicates to the destination, the next byte, the source expect to receive.
- 5- It retransmits the bytes not acknowledged with in specified time period.

* Internet Protocol (IP) :-

Internet Protocol is connectionless and unreliable protocol. It ensures no guarantee of successfully transmission of data. In order to make it reliable it must be paired with reliable protocol such as TCP at the transport layer. Internet protocol transmits the data in form of a datagram as

shown in the following diagram -

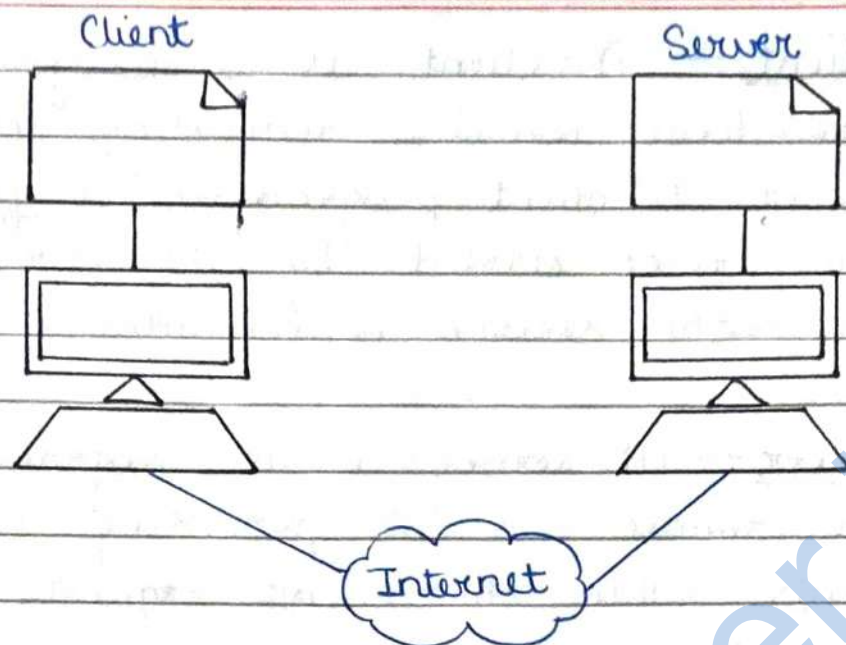


Points to remember :

- (a) The length of datagram is variable.
- (b) The datagram is divided into two parts - header and data.
- (c) The length of header is 20 to 60 bytes.
The header contains information for routing and delivery of the packet.

* Client and Server model :-

- A client and server networking model is a model in which computers such as servers provide the network services to the other computers such as clients to perform a user based tasks. This model is known as client-server networking model.
- The application programs using the client-server model should follow the given below strategies -



- An application program is known as a client program, running on the local machine that requests a service from an application program known as a server program, running on the remote machine.
- A client program runs only when it requests for a service from the server while the server program runs all time as it does not know when its service is required.
- A server provides a service for many clients not just for a single client. Therefore, we can say that client-server follows the many-to-one relationship. Many clients can use the service of one server.
- Services are required frequently, and many users have a specific client-server application program. For example, the client-server application programs allow the user to access the files, send e-mail, and so on. If the services are more customized, then we should have one generic application program that allows the user to access the services available on the remote computer.

- Client - A client is a program that runs on the local machine requesting service from the server. A client program is a finite program means the service started by the user and terminates when the service is completed.
- Server - A server is a program that runs on the remote machine providing services to the clients. When the client requests for a service, then the server opens the door for the incoming requests, but it never initiates the service.
A server program is an infinite program means that when it starts, it runs infinitely unless the problem arises. The server waits for the incoming requests from the clients. When the request arrives at the server, then it responds to the request.
- Advantages of Client - server networks -
 1. Centralized - Centralized back-up is possible in client-server networks, i.e., all the data is stored in a server.
 2. Security - These networks are more secure as all the shared resources are centrally administered.
 3. Performance - The use of the dedicated server increases the speed of sharing resources. This increases the performance of the overall system.
 4. Scalability - We can increase the number of clients

and servers separately, i.e., the new element can be added, or we can add a new node in a network at any time.

• Disadvantages of Client-Server network -

1. Traffic Congestion is a big problem in client/server networks. When a large number of clients send requests to the same server may cause the problem of traffic congestion.
2. It does not have a robustness of a network i.e., when the server is down, then the client request cannot be met.
3. A client/server network is very decisive. Sometimes, regular computer hardware does not serve a certain number of clients. In such situations, specific hardware is required at the server side to complete the work.
4. Sometimes the resources exists in the server but may not exist in the client.

* Multimedia Technologies :-

Importance of Multimedia in E-commerce - Text is the most commonly used media for communication. It is widely used for communication of education, information, entertainment and many more through books, newspaper and magazines. Use of photography and pictures improves the presentation of a text. This improvement is brought through multimedia which is a combination of different

media such as text, sound, video, graphics, animation and many more.

Since the multimedia is a tool to enhance the level of communication, it is now being used as an effective tool in sales promotion for attracting customers. There are some important functions of multimedia in e-commerce are discussed below —

Nowadays, online shopping are very popular by using mobile devices. Smart phones have cameras which provide both the requirements and demands of multimedia technologies.

★ Delivery Methods —

Multimedia content can be delivered via the internet, or by more traditional methods such as CDs and DVDs.

Traditional Delivery Methods — DVD video offers high quality full motion video in a standard format which can be viewed with a standard player and television. Multimedia CD/DVD can be played on most personal computers and may be used for video as well as any type of multimedia content which can be delivered online.

- **Internet Multimedia —** More and more frequently multimedia content is being delivered via the internet in an ever-increasing list of ways, including public web-sites, dealer portals, blogs, social media sites, and chat rooms.

Online content can be accessed by a

desktop PC for on demand viewing or downloaded locally for later viewing. Access is available anywhere at any time subject to the constraints of the viewer's Internet Service Provider (ISP) and/or Local Area Network (LAN) and the owner of the content.