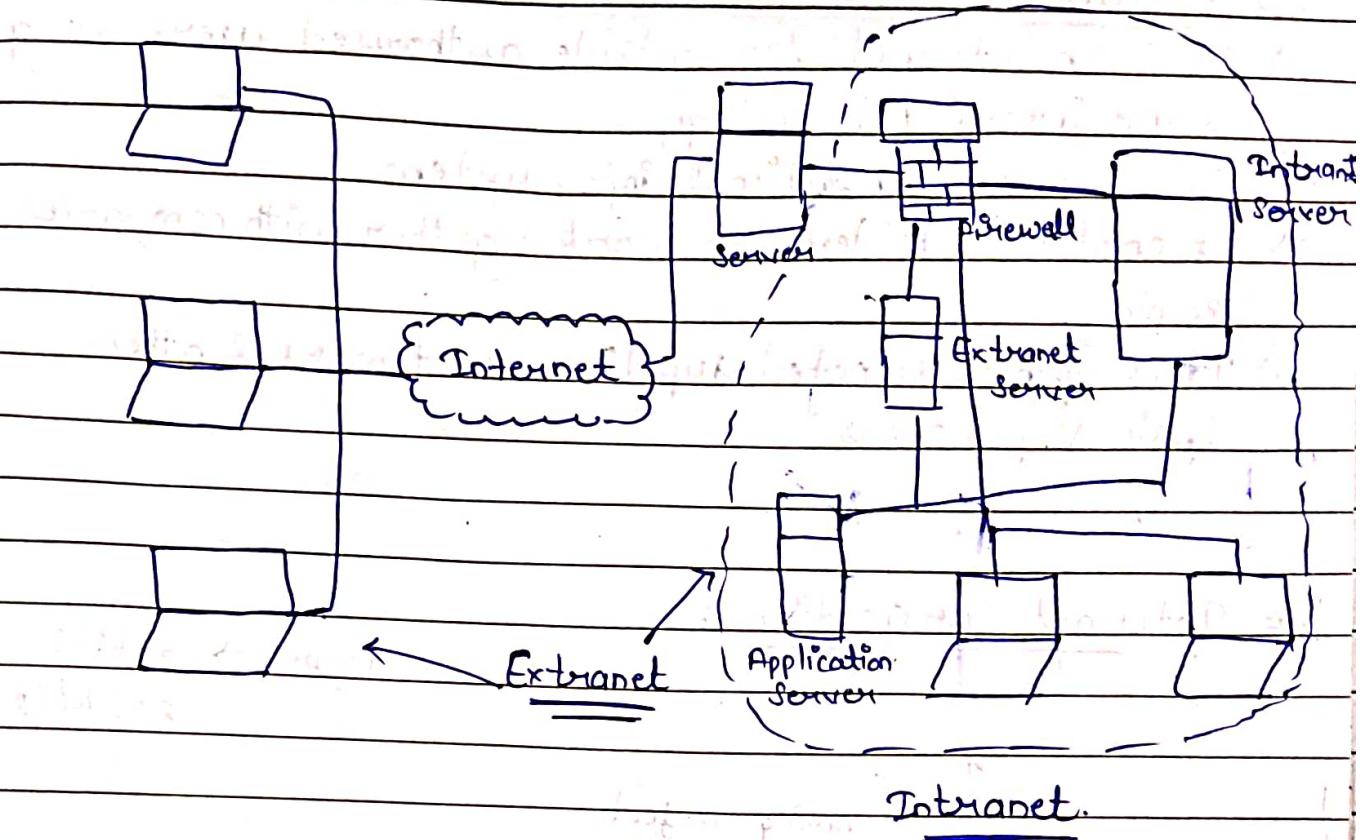


Date.....

TTM



### ① Difference b/w Internet & Intranet :

Internet

Intranet

- 1) Public network.
- 2) Anyone can access the internet.
- 3) Unlimited users.
- 4) Less secured because it is a public network and open to all.
- 5) Huge network consist of LAN, VAN & MAN.
- 6) No owner of Internet.
- 7) It is away to share info around the world.

- 1) Intranet is a private network.
- 2) Only members of university / company can access the data.
- 3) Limited users.
- 4) It is completely secured.
- 5) Is mostly dependent on LAN.
- 6) Has some owner.
- 7) Way to share confidential info within an organization.

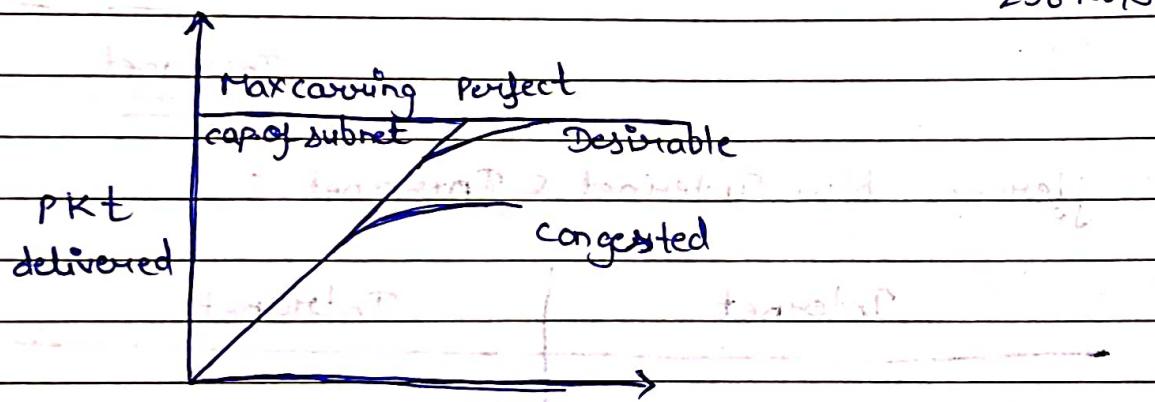
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## ① Extranet :

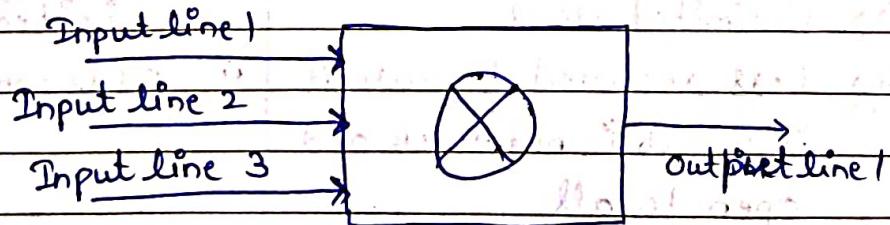
- 1) It is an intranet for outside authorised users using same Internet technology.
- 2) It is inter organisational info. system.
- 3) It enables outsiders to work together with companies' employees.
- 4) It is open to selected suppliers, customers & other business partners.

## # Internet Congestion :

Packets  $\Rightarrow$  33 kb/s  
256 kb/s



### Cause 1. Example



Spiral

Date.....

### ○ Network congestion:

- It is an important issue that can arise in packet switch network.
- It is a situation in computer networks in which the performance of the network is degraded due to presence of too many packet in the subnet.
- Congestion in a network may occur when the load on the network (i.e. no. of packets sent to network is greater than the capacity of the network).

### # Causes of Network Congestion

- 1) If suddenly, a stream of packets start arriving on 3 or 4 input lines and all need the same output line as shown in fig. may cause congestion.
- 2) Slow processing speed of router.
- 3) Congestion is also caused by slow links.

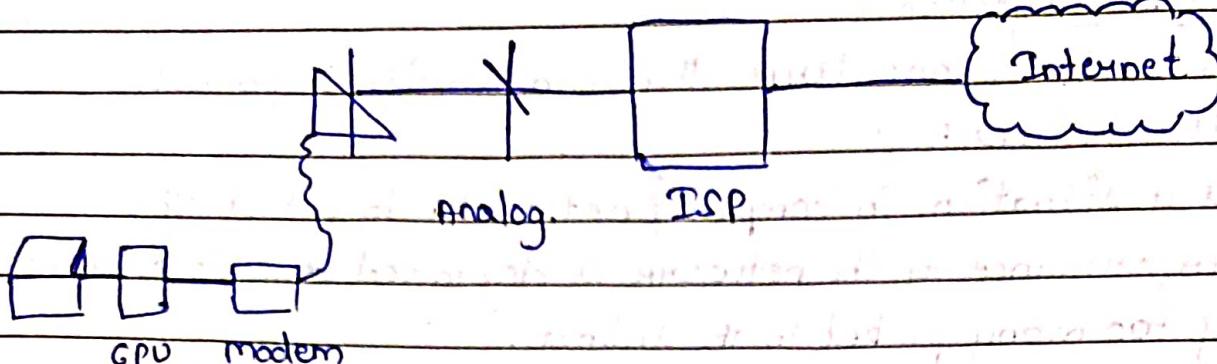
### ○ First Internet:

- ⇒ ARPANET in year 1969 by US defence department (Advanced Research project Affinity Network)

### ○ Dial-up Connection

- ⇒ In this user creates a temporary connection with the ISP uses the internet and then disconnects the connection.
- ⇒ In this type of connection you connect to the internet by Modem and regular telephone line.
- ⇒ Speed 28 to 30 Kb/s.

Date.....



### ① Modes of Internet Connections :

1) Dial-up

2) Broad band.

② Cable connection

③ DSL

④ Broad band : It refers to broad banded width & band width refers to amount of data to (i.e. a medium can carry)

Speed of a broad band connection is varying from 256 kbps to 20 Mb/s

It is as its service is available in three platforms.

1) Cable Modem

It connects the user to the Internet through cable like coaxial.

→ Cable connection use a different medium to connect to the internet and it will not affect the television/ telephone signal.

Date.....

## 2) DSL

Its service is provided by the existing phone lines but it works differently than regular analog network.

→ DSL operates at 512 kb/s to 20 Mb/s.

## 3) Satellite connection:

→ This type of access is used for remote locations where DSL or cable are not available. However, satellite connections are slower than both connections.

→ It can be affected by weather and requires the installation of a satellite dish on your house.

## # Models & Protocols.

OSI Model

⇒

(functionality) Reference model.

Device A

Device B.

↓ Data.

↑ Data.

↑ Data Header  
↓ Data

1) Application layer.

Application layer.

2) Presentation layer. (Present.)

Presentation layer.

3) Session layer. (Time period)

Session layer.

4) Transport layer.

Transport layer.

5) Network layer. → Frame

Network "

6) Data link layer. → PKT

Data link "

7) Physical layer. → O/L

Physical "



Medium

Spiral

Date.....

① A model is the specification set by a standard organisation as a guide line for designing networks and protocol is a set of rules that controls the <sup>interaction</sup> connections of diff. devices in a network or internetwork.

⇒ OSI (Open Source Interconnection)

OSI model is a reference mode that shows how any two diff. system can communicate with each other.

OSI model is a frame work of 7 layers that gives network designers an idea of the functionality of each separate sep.

1) Physical layer

It transmit a bit stream over a physical medium

2) Data link layer

It organise link into logical units called frames.

3) Network layer

It is a source to destination delivery of packet ~~or message~~ message

4) Transport layer

Source to destination delivery of entire message.

5) Session layer

Establish maintain & synchronise the dialogue b/w communication system

6) Presentation layer

deal with the fact that diff. system use diff. coding methods.

7) Application layer.

→ Enables the user to access the network.

Date.....

## TCP / IP Protocol Suite

Application

Physical address : P.L.

48 bit

0.7:01:02:01:2C:4B  
(12 Hexadecimal)

Application layer

SMTP

FTP

Presentation layer

HTTP

Session layer

DNS

TELNET

Logical address - N.L.

132:24:57:9

3

Transport layer

TCP UDP

IPv4 (decimal no.)

2

Network layer

TCMP	IP	RARP
IGMP	ARP	

Port address - T.L.

16 bits.

(753 decimal no.)

Datalink layer

Physical layer

## IP-Addressess

$$2^{32} = 4,294,967,296$$

Range to IP Address  
(Network id) Host add.

0	0 to 127	0-255	0-255	0-255
10	128 to 191			
110	192 to 223			
1110	224 to 239			
1111	240 to 259			

class No. of add. % age

A  $2^{21}$  - 2,147,483,648 50%

B  $2^{30}$  - 1,073,741,824 25%

C  $2^{29}$  - 536,870,912 12.5%

D  $2^{28}$  - 2,68,435,456 6.25%

E  $2^{27}$  - 2,68,435,456 6.25%

Reserved

OR

Not defined.

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Ques: Class A has  $2^3$  addresses how can you prove this by using dotted decimal notation.

$$0 \text{ to } 127^3 \cdot 255^2 \cdot 255^1 \cdot 255^0$$

$$127 \times 256^3 + 255 \times 256^2 + 255 \times 256^1 + 255 \times 256^0 + 1$$

$$\Rightarrow 2.1474836e9$$

Q find the class

a) 0000001 00001011 00001011 1110.1111

(A)

b) 1100001 1.000011 00011011 11111111

(C)

c) 10100111 11011011 10001011 01101111

(B)

d) 227.12.14.87

(D)

e) 193.14.56.22

(C)

d) 14.23.120.8

(A)

Date.....

## Domain Name System (DNS)

Domain Name: A name that identify one or more ip addresses is called domain name

eg: Microsoft.com represents a dozens of ip add.

• Domain names are used in url to find a particular webpage.

For example: In the url `http://Kiet.edu/index.html`.

→ Every domain name has its suffix that indicates which top level domain it belongs to.

eg.: .com, .edu because the internet is based on ip addresses not on domain name.

→ Every web server requires a domain name system server to translate domain names into IP address.

• # Domain name system server stands for 2 things:

1) Domain name Service.

2) Domain name Server

"Service" defines the protocols and the "Server" defines the machines that provides the service.

Difference b/w IP V<sub>4</sub> & V<sub>6</sub>

IP V<sub>4</sub>

IP V<sub>6</sub>

1) Source & destination address are of 32 bits  
2) IP security is optional

1) Source & destination addresses are 128 bits in length  
2) IP security is required and all optional data moved to IP V<sub>6</sub> extension header

Date.....

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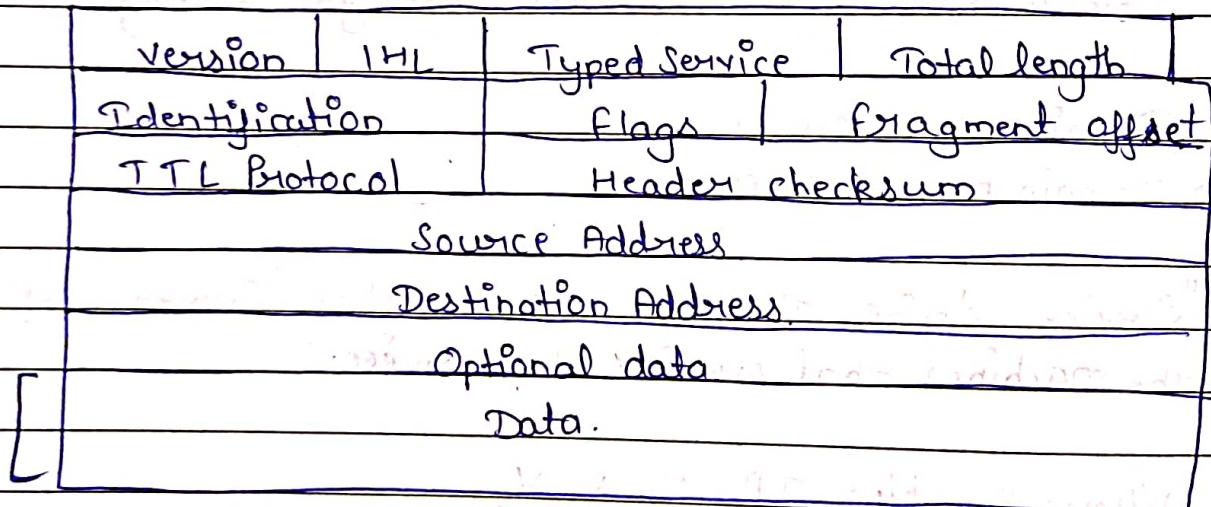
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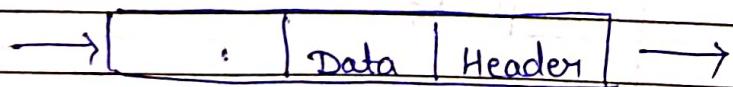
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- |                                                                                            |                                                                                                     |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 3) IP v4 header does not identify packet flow from quality of service handling by routers. | 3) IP v6 header contains flow label field which identify packets flow for (QoS) handling by routers |
| 4) Fragmentation of packet is done by both router and sending host.                        | 4) Packet fragmentation are done by sending host.                                                   |
| 5) Header includes a checksum.                                                             | 5) Header does not include a checksum.                                                              |

### IP v4 Header Datagram Packets



Data pkt



Date.....

## Internet Tools.

Application layer [ FTP, Telnet HTTP ]

FTP : It is the one of the oldest application for the internet file transfer is complicated because it must accommodate <sup>diff.</sup> among the basic ~~host~~. Computer system stores the files.

For eg : ~~rules~~ for valid file name, file extension and file

- ⇒ FTP is used to download the files as FTP is much faster than standard HTTP.
- ⇒ FTP uses the client server Architecture / paradigm / hierarchy the client
- When a user enters a command the client form a request using the FTP protocol and sends it to the server, Similarly the server uses the ftp protocol to send a reply.
- ⇒ FTP creates both a control and a data connection in order to transfer the files.
- ⇒ Control connection is based on Telnet commands.
- ⇒ The FTP server respond on port no. 21 of client, for data transfer parameter.
- ⇒ FTP server opens a server connection for data on port 20 to the original client with the help of TCP connection.

① Telnet : It is the internet protocol for connecting to a remote computer. Majority of computers are accessible by telnet are Unix based system.

⇒ Telnet protocol is applied on a TCP connection to send data in ~~as~~ ASCII format coded over 8 bits using bi-directional system.

⇒ This is a base protocol to which other protocol from TCP/IP like FTP, SMTP, POP are applied.

⇒ It works on port no. 23

② Gopher : It is a protocol system allow server based text files to be hierarchically organised and easily viewed / access by end-user. The servers using gopher application are remote computer.

→ Gopher support only textfile after that Hyper Gopher was invented.

Hyper Gopher support simple graphic format.

### GOPHER Commands :

<Q> quit gopher

<q> quit gopher but ask for confirmation;

<à> select the current items.

<â> move pointer down

<Space> move to the next page.

Date.....

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