Computer Networks

- Network Layer functions

Forwardings

- Forwarding Table

Datagram vs Datatable

- ~~Connection Less~~	- ~~Connection oriented~~
Datagram Net e.g. internet Connection less no call setup no need tos no states connect work on IP Adress Use routing Protocol Packets take may Different Path	Virtual Circuit Net Use vc numbers Connection oriented States 1) Connection setup Senders contact Network layer and develop Path 2) Data Tranfer 3) Termination : Removing entries from Table.

Forwarding Table:

only range is stored against output link interf.

Destination Address Range	Li
192.168.16.0 - 23.255	

CN

Router Structure

- input Ports
- Switching fabric (connect input Port with output Ports)
- output Ports using datagram and forwarding Table
- Routing Process : To ~~Execute~~ routing Protocol

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routing management control plane

forwarding data plane

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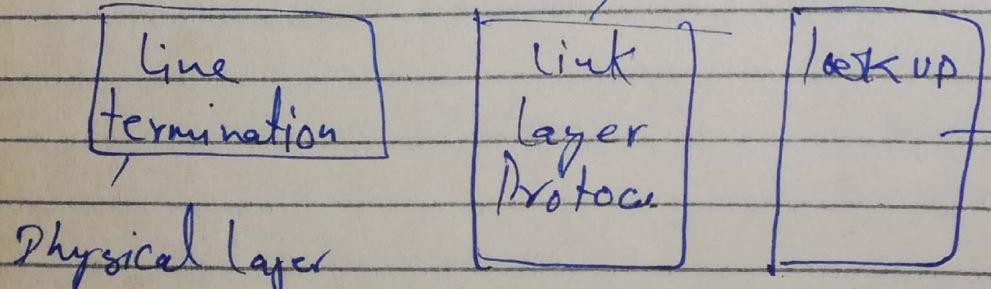
input Port → Bits Converted into frames



types:

- Memory
- Bus

Switching Via Memory

throughput

b Per sec $\frac{b}{2}$ $\frac{50}{2}$ r/w -> 25%

one packet at one time

Switching via bus

No routing process decide locally by labelling of output port by bus

if multiple packets then you can only one packet a time

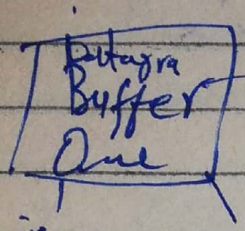
speed depends on bus

Switching via interconnection network

Horizontal Bus ~~not~~ Vertical Bus

One packet can ben sent to one output port at a time

Output Ports



Buffer Size is limit

Buffer overflow Packet drop

for Prioritization

Schul Scduler

RTT.

Transport Layer

↑

Network Layer

↓

Data Link Layer

Physical Layer

Internet Protocals

IP Protocal

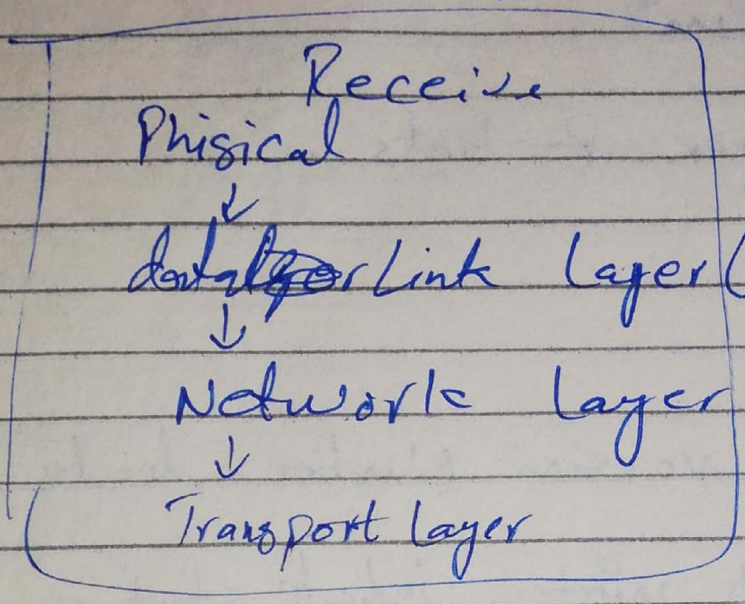
IP datagram Format

- Network layer Packets

IP Protocal version

- IP Protocal version Number : decides IPv4 or IPv6
- header Length ; 20Bytes : indicate start of data
- Priority : type of data e.g video, audio, file transfer
  6 Bit
- Length : Total datagram Size
  20 Bytes — 65535
- 16 Bit identifiers — when each destination
- flags 2Bit DF 1 0 — Don't fragment
  MF 1 1 0 — more fragment
- Fragment of set 6 Bits : iti tells where you place/position of fragment into packet.

- Time to live : Limit datagram lifetime
  - Packet dont get on forever loop

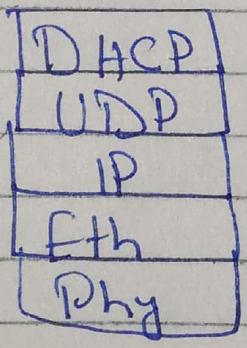


- Upper Layer : Network Layer decide looking this layer.
  - NL decide data is transfer to which Protocal
- Header check : Use to detect Error 16 Bit
- 32 Bit Source IP Adress
- 32 Bit Destination Ip Address

IP fragmentation MTU

if fragment is larger than frame size. MTU

Reassembly : Combining fragments occurs on end System / Destin



IPV4 Adressing

- CIDR : Classless interDomain Routing
  varible mask

DHCP : Dynamic Host Configure Protocol
Distribute IP Adresses

A ICANN.