Network Layer : Internet Protocol; class 4

Role is to get packets from source to destination.

PDU : packet : structure like a frame (which is the PDU of the Data Link Layer).

The PDU of Transport Layer is a Segment which contains the destination App given by the DATA

It is responsible to routing in a connectionless way, creating packets and giving addresses

The router implements the Network Layer. (As the hubs and switches implement the Data Link Layer)

## IPV4 Datagrams Format

See the slides

The protocol :

IP address is an identifier for the host to the router interface

An interface is a connection between a host and a router via a physical link

223.1.3.1

1101 1111 . 0000 0001 . 0000 0011 . 0000 0001

## Classful Network

Class A : 0 -127

* Use for network with many hosts (2^24)

Class B : 128-191

* 2^16 host

Class C : 192-223

* Small network : ~ 256 addresses - special addresses (2)
* 8 bits for network address
* 0 is network address
* 255 is broadcast

Class D :

* Multicasting
* IP TV

CIDR

a.b.c.d /x where x is number of bits in the network part out of the 32 bits of the address, the rest is for the host part

Separate network and host

Subnet

183 13 216 15 / 20

10110111 00001101 11011000 00001111 00010100

\*

11111111 11111111 11110000 00000000 00000000

=

10110111 00001101 11010000 00000000 00000000

183 13 208 0

Divide the host number in a subnet network and host number

Use some bits to create the subetwork

NAT : Network Address Translation

Between rest of internet and local network

Use a signle address when leaving and NAT translate response to net

DHCP

Configure IP addresses of hosts automatically

ARP permits to find MAC addresses of destinations