

CN

Lecture Notes

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# Chapter 1

## Intro

### 1.1 Intro

#### 1.1.1 Addresses

- Ip Addresses (32/128 bit)
- MAC Address (48 bit)
- port Address (16 bit)

#### 1.1.2 Ip Address

it is a logical Address used to identify a device over a network  
there are two versions of IP

- IPv4 32 bit
- IPv6 128 bit

there are two types of IP

- public Ip used for communication within a lan network  
these ips are assigned by IANA (internet assigned number authority)  
there are three class of private ip that can be assigned  
class A : 10.0.0.0 to 10.255.255.255  
class B : 172.16.0.0 to 172.31.255.255

class C : 192.168.0.0 to 192.168.255.255

- private ip  
assigned by ISP

### 1.1.3 NAT network address translator

used to convert between public to private ip while packet is coming inside the network and vice versa

### 1.1.4 Representation of ip

- decimal/ dotted decimal  
ip is represented by decimal numbers eg: 11.5.3.7
- binary representation  
ip is represented in the form of zeros and ones  
eg: 00011100.01101101.00011101.01010100

### 1.1.5 ip and ports

the ip is composed of network address/network id and host Address

#### Classes of ip

depending on the range of first octet the ip is divided into following Classes

- class A [0-127] (1 octet nid, 3 octet hid)
- class B [128-191] (2 octet nid, 2 octet hid)
- class C [192-223] (3 octet nid, 1 octet hid)
- class D [224-239] multicasting
- class E [240-255] reserved for future use

in binary representation first few bits will decide class

- 0- class A

- 10 - class B
- 110 - class C

### 1.1.6 default mask

set all the host bit of a class to obtain default mask

- class A : 255.0.0.0
- class B : 255.255.0.0
- class C : 255.255.255.0

### 1.1.7 casting

sending packets over network

**Unicasting** : sending packet from one host to another

**Broadcasting** : sending packets from one host to multiple host