The IP Protocol

At the network layer, the Internet can be viewed as a collection of subnet-works or Autonomous systems that are connected together. The network layer protocol that used for Internet is Internet Protocol (IP). Its job is to provide a best-efforts way to transport datagrams from source to destination, without regard to whether or not these machines are on the same network or not these are other networks in between them.

Internetwork protocol

At the network layer, TCP/IP supports the internetwork protocol .IP, in turn, contains four supporting protocols:ARP ,RARP ,ICMP,and IGMP.

IP is the transmission mechanism used by the TCP/IP protocols. It is an un –reliable and connectionless datagram protocol – a best effort delivery service. This is like a post office service.

IP transports data in packets called Datagrams,each of which is transported separately. Datagrams may travel along different routes and may arrive out of sequence or duplicated. IP does not create virtual circuits for delivery.

Datagram

Packets in IP layer are called Datagrams. A Datagram is a variable length packet(upto 65,536 bytes) consisting of two parts : Header and Data. The header can be from 20 to 60 bytes and contains information essential to routing and delivery.

IP ADDRESSING

In addition to the physical address the internet requires an additional addressing convention : an address that identifies the connection of a host to its network.

Each Internet address consists of 4 bytes defining three fields : class type,netid,and hosted. These parts are varying lengths depending on the class of the address.

CLASSES

There are currently five different classes:

They are Class A, Class B**,** Class C, Class D, Class E

Class A :

This can accommodate more hosts since 3 bytes are reserved for HOSTID. Class A will begin with 0 .

Class B :

This will start with **10** and Host id will have 2 bytes length.

Class C :

This will start with 110 **and** Hostid will have 1 byte length.

Class D:

This will start with **1110 .** This is reserved for **Multicast addresses.**

Class E :

This is reserved for feature use and will start with **1111 .**

Ex. for classes

1. 01111011 10001111 11111100 11001111

   The address is starting with 0 .Hence it is Class A.

2. 10011101 1000111111 11111100 11001111

   The address is starting with 10 .Hence it is Class B.

3. 11011101 10001111 11111100 11001111

The address is starting with 110 .Hence it is Class C

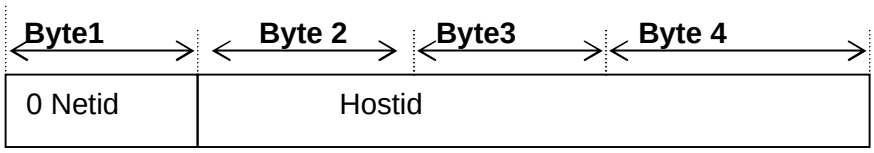
4. 11101011 10001111 11111100 11001111

The address is starting with 1110 .Hence it is Class D.

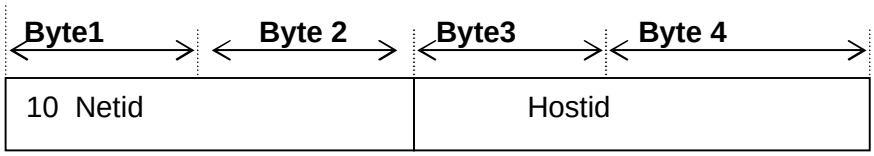
5. 11110101 10001111 11111100 11001111

The address is starting with 1111. Hence it is Class **E.**

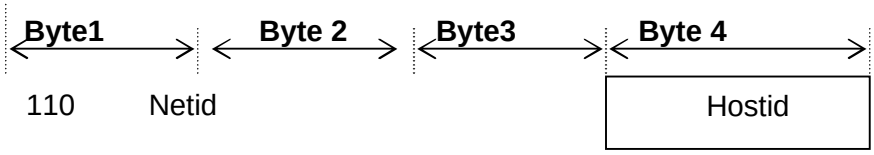
CLASS A :



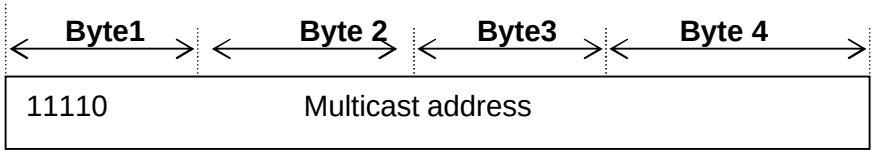
CLASS B:



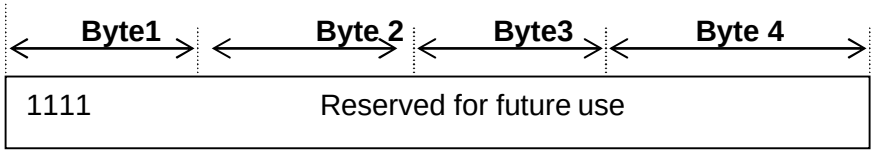
Class C :



Class D :

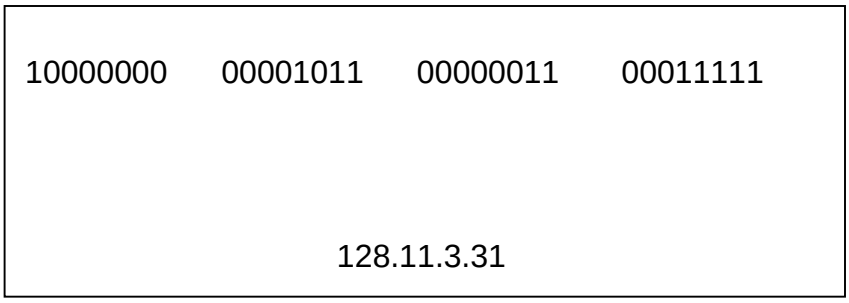


Class E :



Dotted-Decimal Notation:

To make 32 bit form shorter and easier to read, Internet addresses are usually written in decimal form with decimal points separating the bytes – dotted – decimal notation.



IP addresses in decimal notation

Class ranges of Internet address

	From	To	
Class A	0.0.0.0	127.255.255.2555	←
Class B	128.0.0.0	191.255.255.255	←
Class C	192.0.0.0	223.255.255.255	←
Class D	224.0.0.0	239.255.255.255	←
Class E	240.0.0.0	255.255.255.2555	←

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