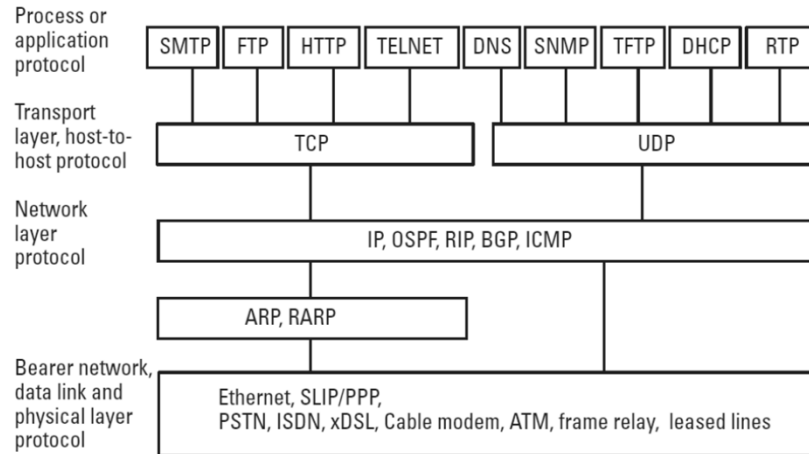


Development of the Internet

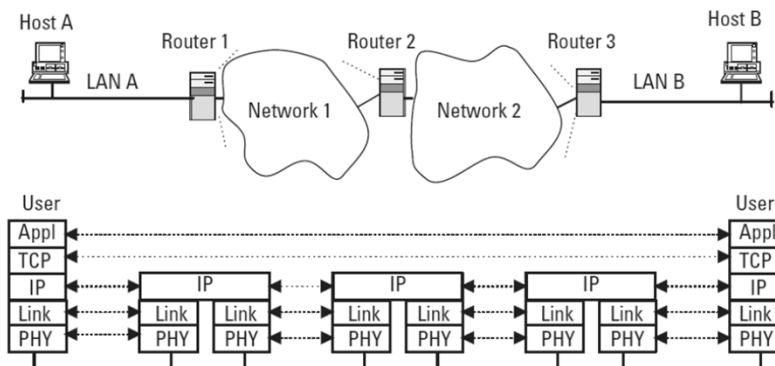
- The worldwide Internet network developed from experimental computer networks in the 1960s to a worldwide university network in the 1970s and 1980s.
- The Internet has been used by academics for more than 20 years. It used to be difficult to use, only some organizations had access to it, and the only users were academic specialists who were familiar with it.
- The graphical user interface is called the World Wide Web (WWW) browser and it has made the Internet easy to use for anyone.
- The Internet has turned into the major information network in the world, but problems that restrict its usage remain with this technology.

Protocols Used in the Internet

- Protocols used in the Internet are usually referred to as the TCP/IP protocol suite



Internet Connection

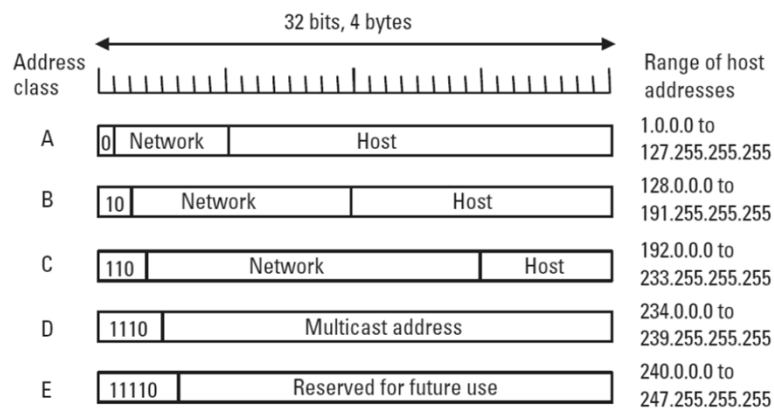


Internet Protocol

- The IP is the core protocol of the Internet. It provides a service for the transfer of data units, datagrams, between the host computer and the router as well as between routers.
- The main task of the IP layer is addressing, which requires global Internet addresses, and routing of the IP packets from the source computer to their destination via a number of interconnected networks.

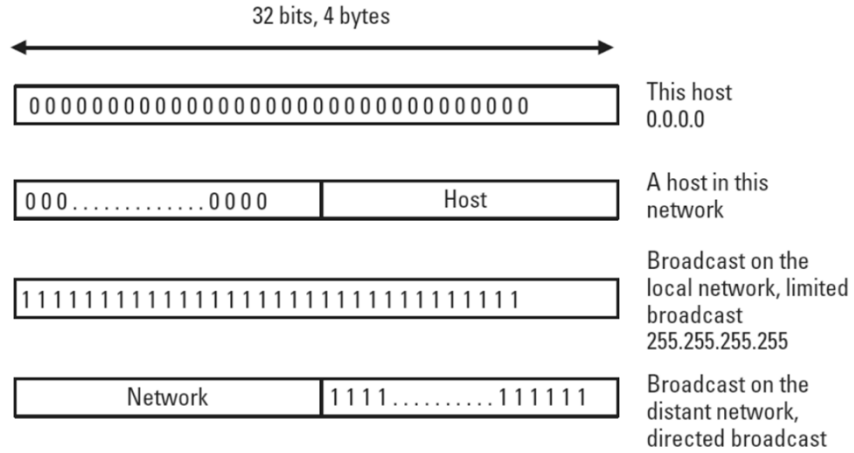
IP Addresses

- IP address format (IPv4)



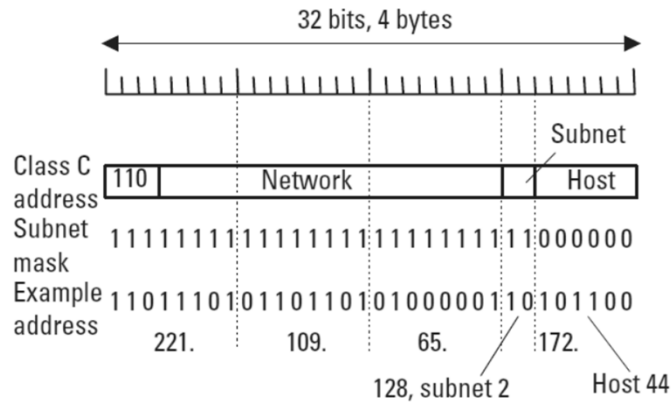
IP Addresses

- Special IP addresses



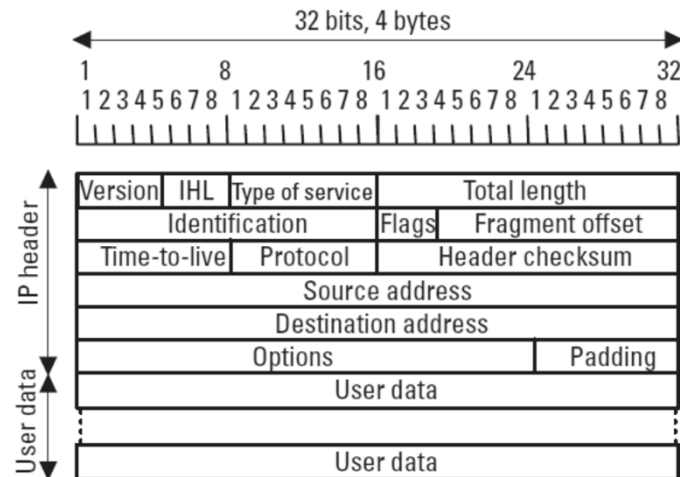
Subnetworks

- For easier management, a network can be divided into subnets so that a company's network still acts like a single network to the outside world.



IP Header

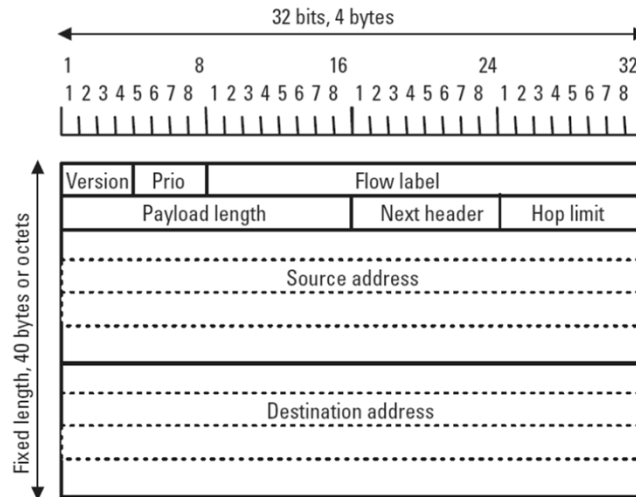
- The Internet header length (IHL) specifies header length as a number of 32-bit words.



IP Version 6

- The new version, IPv6, was specified by IETF and its major goals are listed :
 - Increase address space to support billions of hosts.
 - Reduce the size of routing tables.
 - Simplify the protocol to make the routing process faster.
 - Provide better security.
 - Improve quality of service, particularly for real-time services.
 - Make roaming possible for hosts without changing its address.
 - Permit the old and new protocols to coexist.

IP Version 6



IPv6 Addresses

- The most important problem with IPv4 is the shortage of addresses.
- Addresses need not to be used efficiently and even in the most pessimistic scenario
- A notation that is used to write 16-byte addresses contains eight groups of four hexadecimal digits with colons between groups.

8000:0000:0000:0000:0ABC:DEF1:2345:789A

- Because addresses have a lot of zeros, leading zeros in a group can be omitted and, for example, 0ABC can be written as ABC. If one or more groups are zero, they can be replaced by a pair of colons.

8000::ABC:DEF1:2345:789A

- IPv6 addresses start with a prefix, which defines which kind of address this is.

Mobile IP

- In the MIP model, a mobile terminal has two addresses: the home address (HAddr) and the care-of address (CoA).
- When the mobile terminal is located within its home network, it receives data addressed to the HAddr through the home agent (HA). When the mobile terminal moves to a foreign network, it obtains a CoA broadcast by the foreign agent (FA) in a router advertisement message

