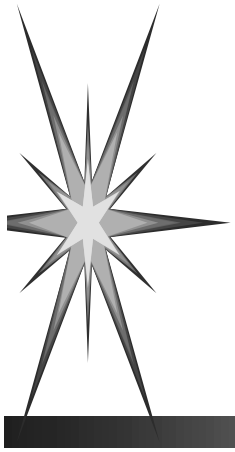
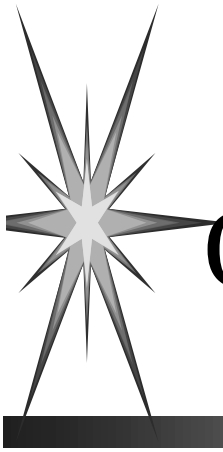


TCP/IP

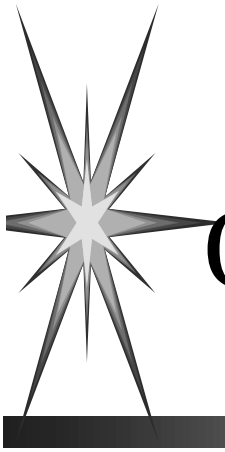
An overview of TCP/IP and related protocols

Reuven Aviv



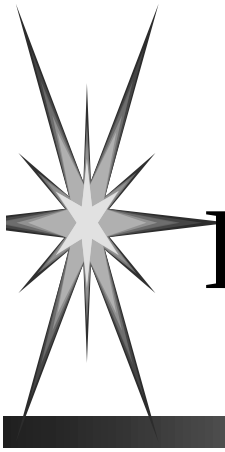
Overview

- Brief history
- Ethernet
- Internet Addressing
- Mapping from IP address to Physical addresses
- The Internet Protocol
- IP Routing
- ICMP



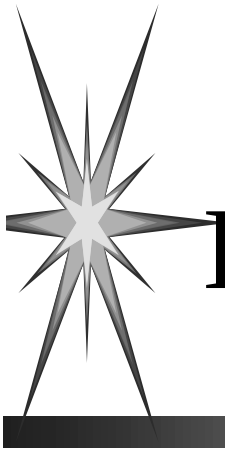
Overview Continued...

- Layering Communication Software
- UDP
- TCP



Brief History

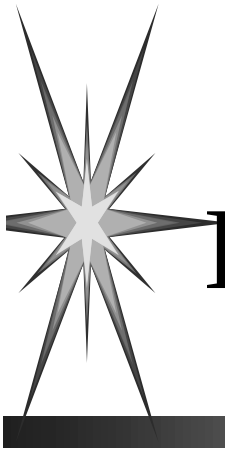
- APRANET
- UNIX
- Internet Activities Board (IAB)
- Network Information Centre (NIC)
- Documentation
  - Request for comments (RFC)
  - Internet Engineering Notes (IEN)



Ethernet

- Carrier Sense Multiple Access Protocol
- Send and forget
- Error checking: Drop frames with errors

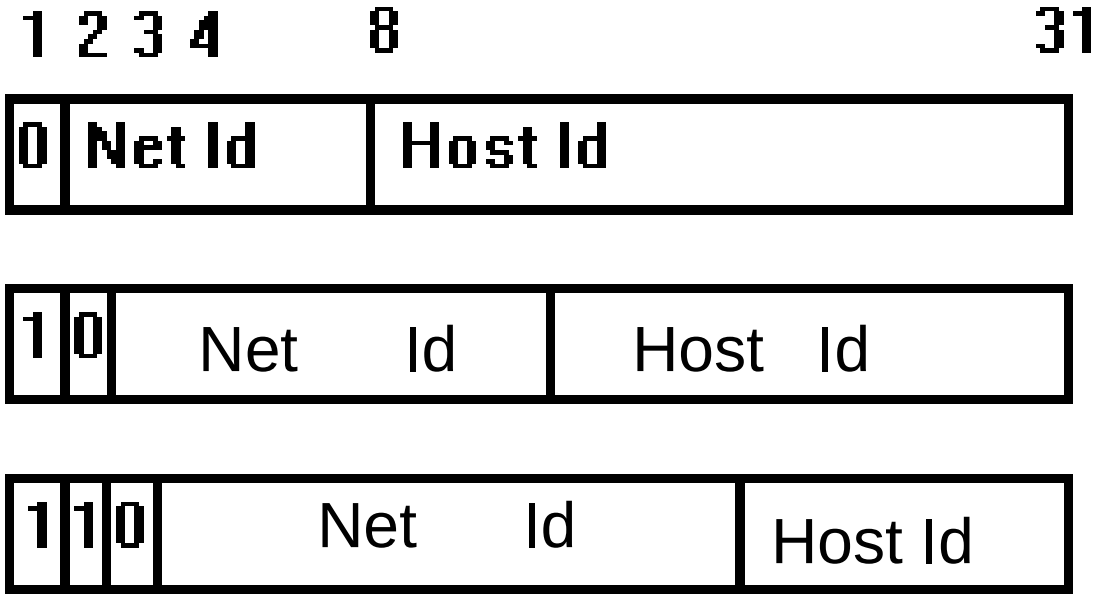
Destination address	Source address	type	data	crc



Internet Addresses

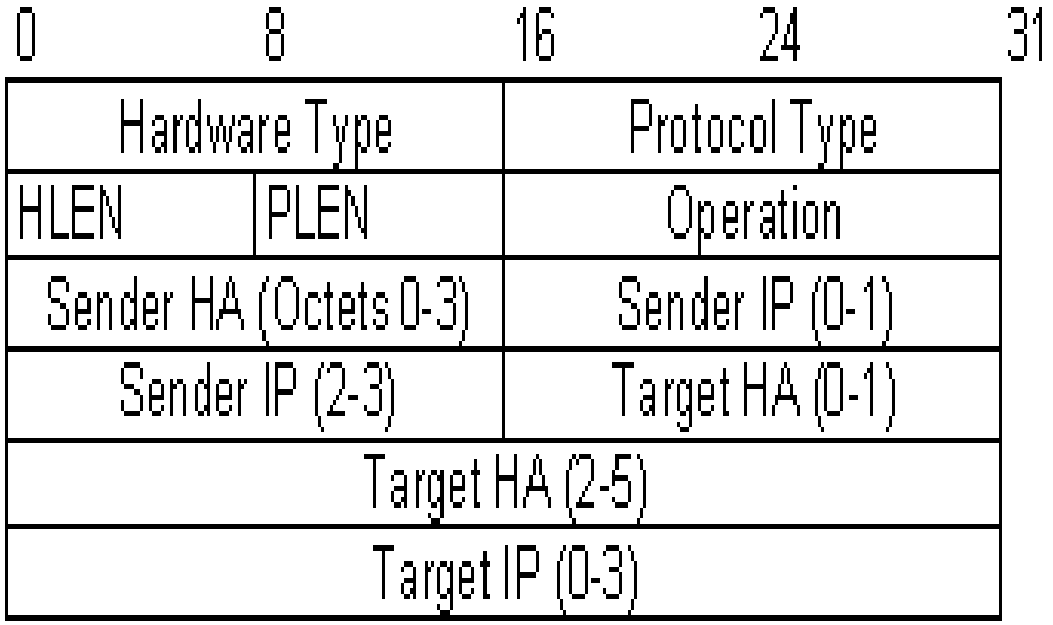
- Contain Host and Network Id’s
- Each Id is universal and unique
- Assigned to connections to internet
- Different classes
  - Class A
  - Class B
  - Class C
  - See diagram
- Take format like 128.10.2.30

Internet Addresses (cont'd)



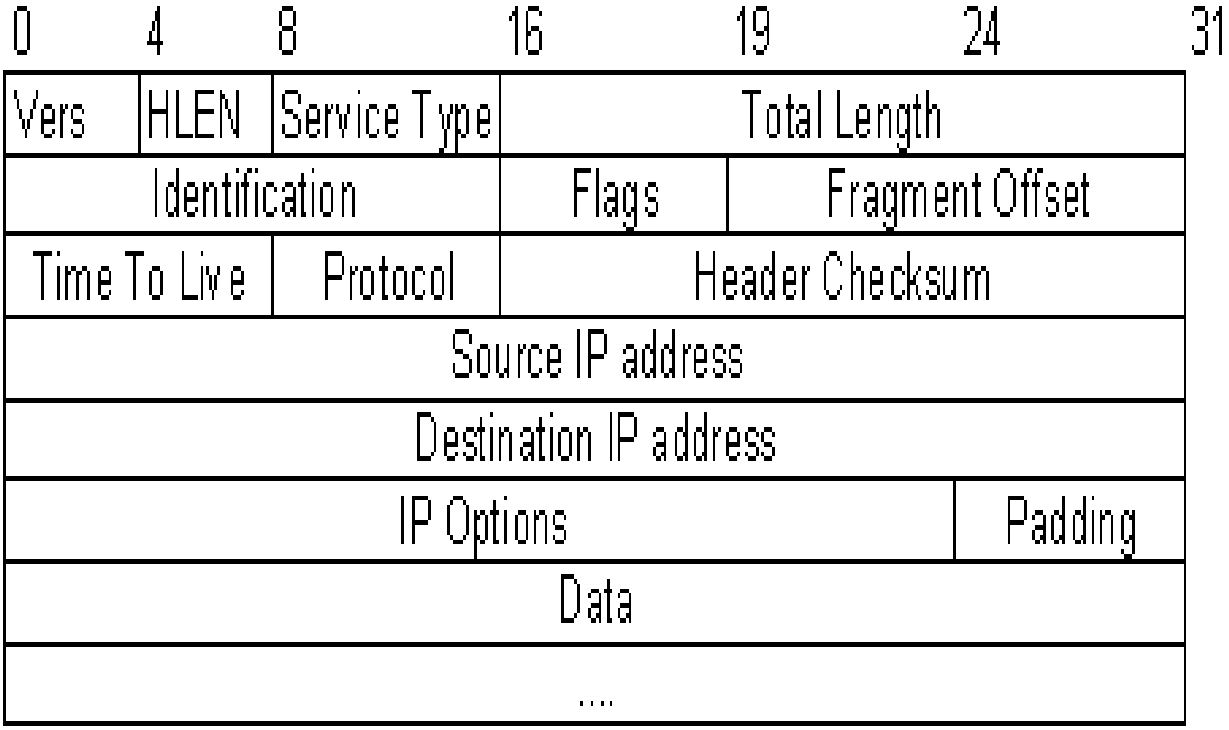
Mapping IP and Physical addresses

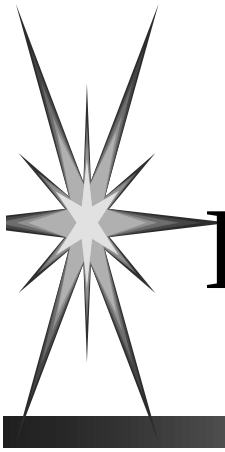
- Direct Mapping
- ARP
- RARP



Internet Protocol

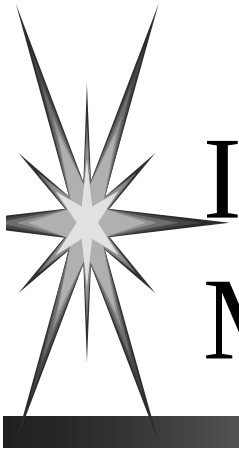
- Provides virtual network
- Unreliable, Connectionless, Best-effort Packet Transmission Protocol





IP Routing

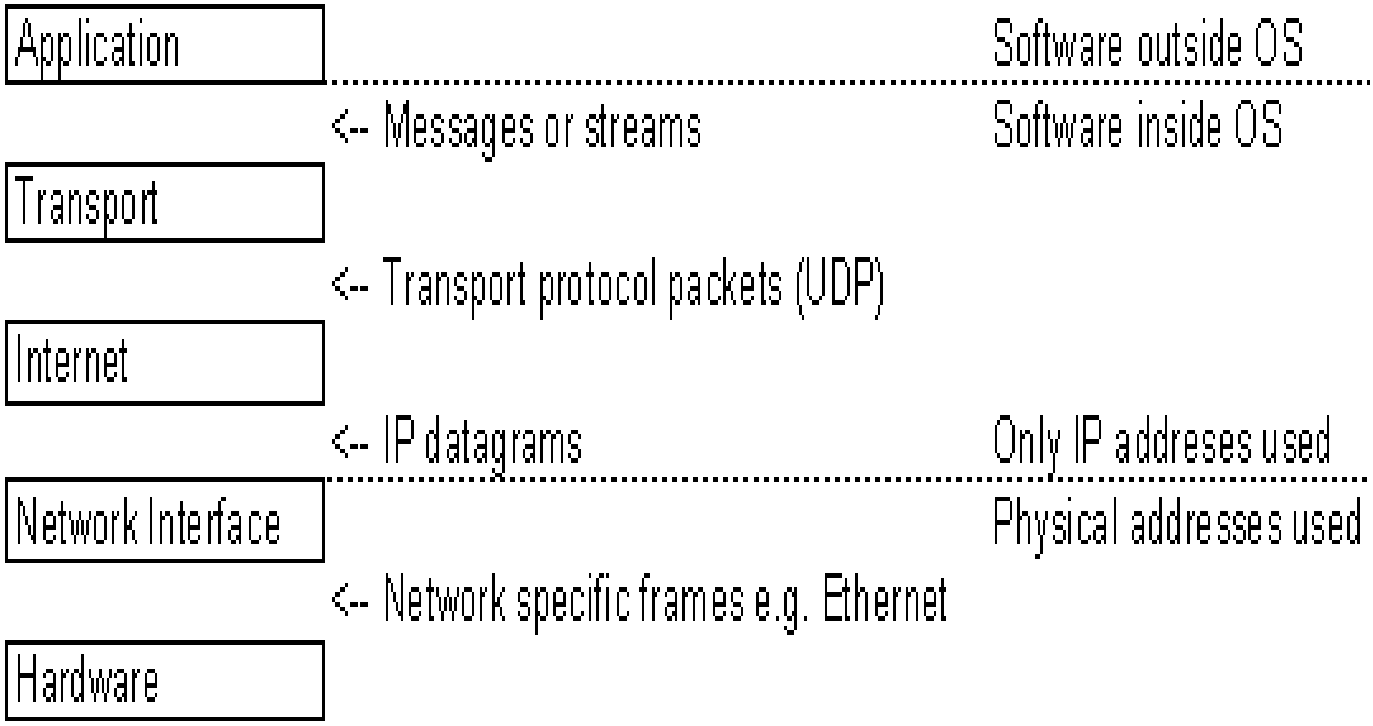
- Direct & Indirect
- Direct delivery
  - Can IP be reached directly (without going through a router)
  - Efficient
- Indirect delivery
  - Use routers
  - Next-hop routing



ICMP - Internet Control Message Protocol

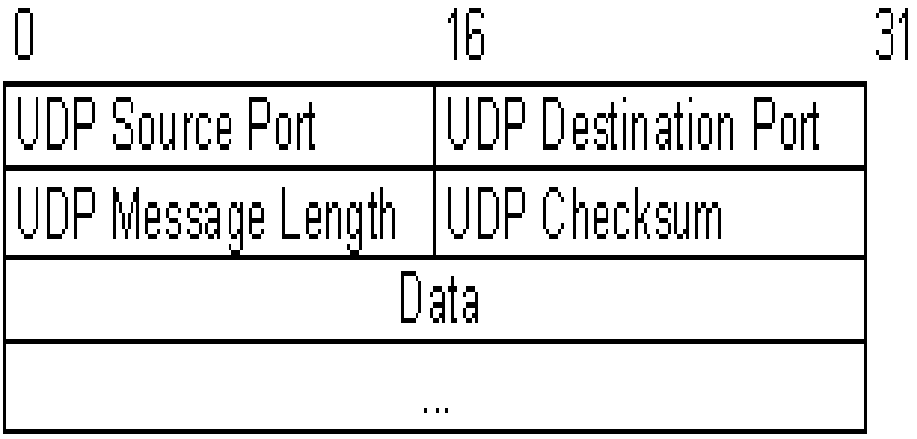
- Error reporting mechanism
- Used by Routers and Hosts
- At IP level
- Travels in IP datagram

Layering Communication Software



UDP - User Datagram Protocol

- Provides ports and allows applications to communicate
- Unreliable, connectionless service
- Uses IP
- Header:



TCP - Transmission Control Protocol

- Connection Oriented, Reliable Stream Service
- Uses IP