ELEC-4120
Tutorial - 3

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Recap

- IPv4
- IPv6
- NAT

Be sure to review the questions we did in the tutorials.

How Internet works - Annimation

http://www.youtube.com/watch?v=HOaIqQAeaik

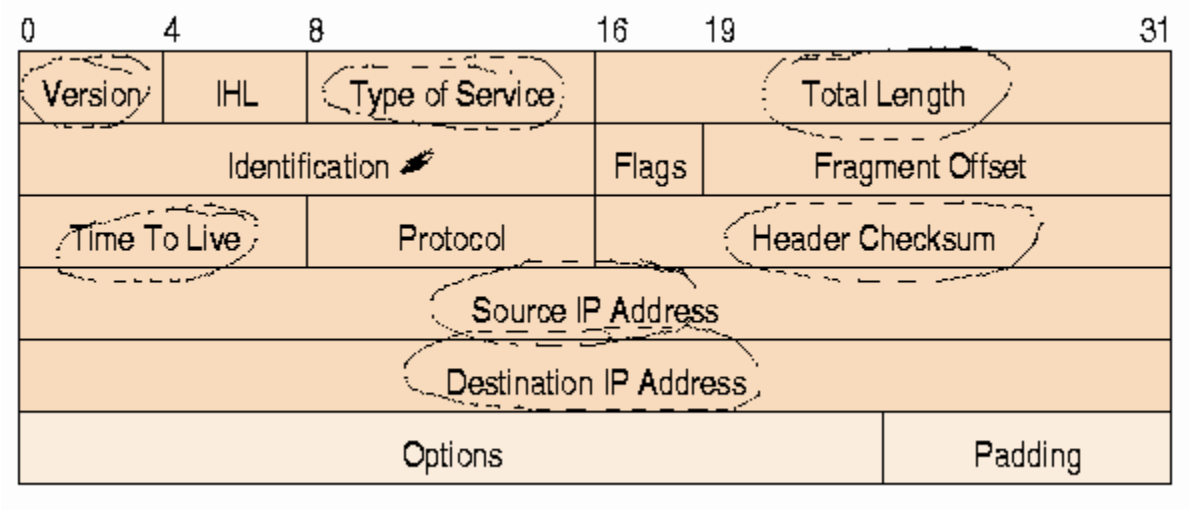
Some cool stuff

1. Ping
2. Traceroute
    a. ‘tracert’ on dos
    b. ‘traceroute’ on linux

Data Packets

- Formatted unit of data
- Carried by Packet switched network

Formatted….



Complete info : http://en.wikipedia.org/wiki/Network_packet#Example:_IP_packets
Brief explanation in this tutorial

Easy ones

- Version - IPv4, IPv6
- Total length
- Identification
- Source IP
- Destination IP

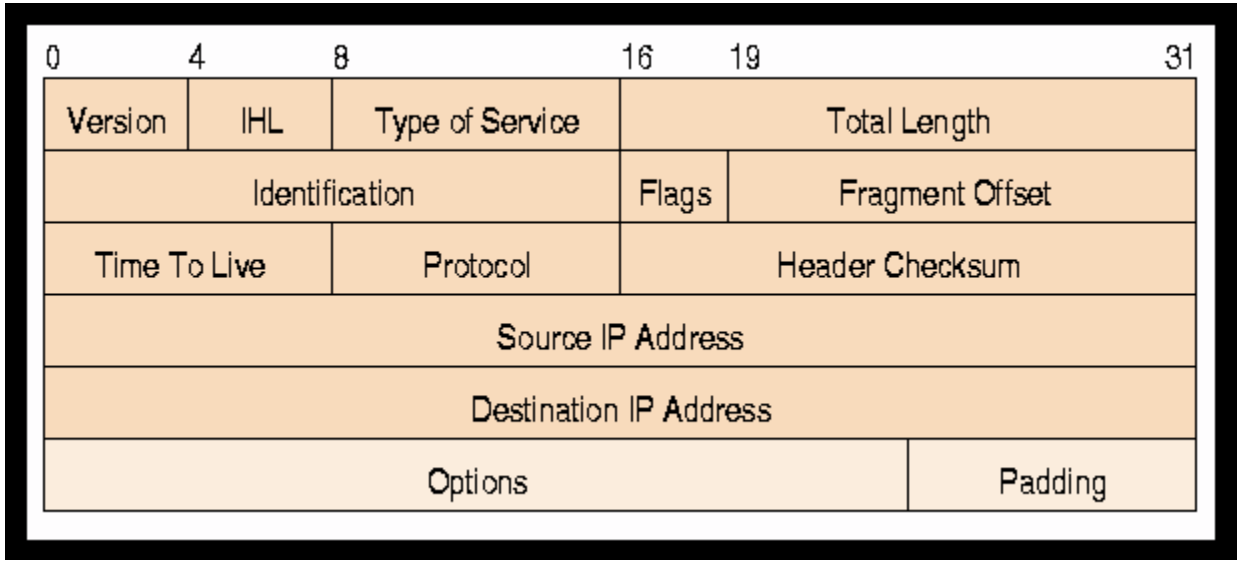
Sometimes Packets get corrupted

- Brief explanation of Parity Check method to recover from error
- Other ways
  - Parity
  - Cyclic Redundancy Check (CRC)
  - 2s Complements

http://www.youtube.com/watch?v=BxCmS7NIDR4

Formatted….

- Now you understand “header checksum”



Time to live

- TTL
- Safeguard - to finish off wrongly directed packets
- The TTL count is decremented (by 1) each time a packet goes through a router

Protocols

- TCP
- UDP
- ICMP

Reliable data transfer

- Packets sometime get lost
- Sometimes packets arrive out of order
- need to recover from losses
  - Checksum
  - Retransmissions

TCP

- Guarantees
  - Error free data packet delivery
  - In order delivery

Suitable for applications which require error free data delivery

UDP

- Connectionless
- No connection establishment
- No acknowledgement and/or retransmission

Suitable for application which can tolerate some

loss of packets

Comparison

TCP	UDP
Reliable	Unreliable
Connection-oriented	Connectionless
Segment retransmission and flow control through windowing	No windowing or retransmission
Segment sequencing	No sequencing
Acknowledge segments	No acknowledgement