CMSC417 Spring 2016 Lecture #7 2/22/2016

Agenda

⇒ Administrivia
- ☐ 7 → 6 projects (dates moved a bit)
- ☐ p2 will go out today or tomorrow (due 3/11)
- ☐ midnight
- ☐

⇒ Internet Protocol

CMSC417 Spring 2016

Internet Protocol (IP)

⇒ an internet vs. the Internet
⇒ IP service model
- best effort service
  if you give me a valid packet, the network will try to get it to the destination
- bad things can happen to packets
  - lost
  - delayed (out of order)
  - duplicated
  - corrupted

⇒ Packet Header
- version (either v4 or v6) focus on v4 here
- header length (including options in 32-bit words)
- DSCP (Quality of Service info, generally unused)
- ECN (used for advanced congestion control)
- total length (of the packet)
- identifier, (should be unique for a reasonable time, used in fragment reassembly)
- flags (zero, don't fragment, more fragments)
- frag offset (# of 8-byte blocks to count before this data should be stored)
- TTL (time to live, decreases by one at each hop, packet dropped and error message sent at 0)
- protocol (what's inside this? TCP, UDP, ICMP)
- header checksum (1s compliment of header taking it as 16-bit words)
- source/destination
- options (additional IP features)

IP header deeper dive)

⇒ fragmentation
⇒ checksum
⇒ IP address format

Fragmentation)

⇒ Problem: different link layers support different maximum frame (and thus packet) sizes
- called MTU (maximum transmission unit)
- what happens if a packet is too big?
- it's fragmented and reassembled