Binary Lesson 4
Classful IP Addresses

Last modified 9-25-13

IP Addresses (version 4)

- IP addresses are 32 bits long
- Four bytes or "octets"
- Examples:
  - 147.144.1.212
  - 1.2.3.4
  - 192.168.0.1
- Each octet must be in the range 0 to 255

Network and Host Portions Class A Addresses

- An IP address of 1.2.3.4 specifies both the *network* and the *host*
- The *network* portion tells the Internet routers where to send packets
- The *host* portion tells routers on the destination LAN which host the packet is destined for

Network and Host Portions Class A Addresses

- For Class A addresses like 1.2.3.4
  - The *network* portion is the first octet
    1
  - The *host* portion is the last three octets
    2.3.4
- This system was used until 1981

1981: Class A, B, C Addresses

- Class A (1.2.3.4)
  - Network portion: first octet (1)
  - Host portion: last three octets (2.3.4)
- Class B (140.5.6.7)
  - Network portion: first two octets (140.5)
  - Host portion: last two octets (6.7)
- Class C (199.7.8.9)
  - Network portion: first three octets (199.7.8)
  - Host portion: last octet (9)

First Octet Determines Class

- Class A
  - First octet from 1 to 127
- Class B
  - First octet from 128 to 191
- Class C
  - First octet from 192 to 223

Network and Host Portions

- Consider this address: 147.144.0.1
- Class B
  - The first 2 octets determine the network
    - 147.144
  - The last two octets determine the host
    - 0.1

Private Addresses

- These ranges are used only on private networks, and cannot be used on the Internet
  - 10.x.x.x
  - 172-16.x.x – 172.31.x.x
  - 192.168.x.x
  - 169.254.x.x

Loopback Address

- The **loopback address** is
  - 127.0.0.1
- It refers to the machine you are using, and cannot be used to contact any other machine
- All other addresses in that class A network are reserved and unusable on networks
  - 127.0.0.2 – 127.255.255.255