Lecture 29: network layer summary

addressing
  - hierarchical address space
  - classful addresses A, B, C
  - CIDR classless interdomain routing

one address per-interface
127.0.0.1/8 - loopback (localhost)
192.168.0.0/16 - private addresses
10.0.0.0/8 - private
172.0.0.0/12 - private
222.222/16 - (maybe) example address

some multicast range
0.0.0.0 - broadcast in local network
255.255.255.255 - broadcast in local net
sending a packet

based on prefix
- local subnet?
- ARP (address resolution protocol)
- send packet on local link
- not a local address
- longest prefix match
- send to next hop router
- /0

- on next hop router
- slice off the link layer header
- repeat
nice network layer extras

ICMP - internet control message protocol
  - ping
  - errors (s.a. destination unreachable)

DHCP - dynamic host configuration protocol
  - get an IP address, gateway, DNS, netmask
  - used mostly for
    - address reuse (ISP would do this)
    - assigning private IP addresses

NAT - network address translation
  -
proactive routing
- link-state routing
  - nice and stable, resilient to link failures
  - bit of extra overhead
  - OSPF - open shortest path first
- distance vector routing
  - RIP routing information protocol

Autonomous systems (AS)
- BGP - border gateway protocol
  - routes by prefix
  - decided by policy
  - based on AS path