

Networks

CSCI 10 - Santa Clara University - Fall 2016
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- Homework 3 had a slight delay and will be up shortly
 - Midterm grades were high: Median 88 and Mean 87.9

The Internet



Addressing

- IPv4 - 32 bit number; written in "256" using dot-decimal notation
 - IPv6 - 128 bit number;

An IPv4 address (dotted-decimal notation)

172 . 16 . 254 . 1

↓ ↓ ↓ ↓

10101100.00001000.11111110.00000001

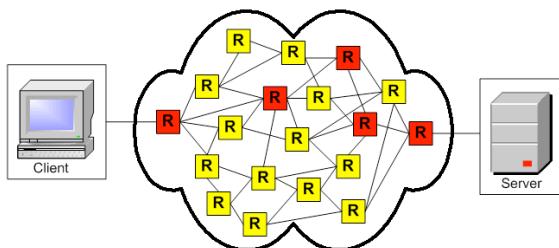
One byte = Eight bits

Thirty-two bits (4×8) or 4 bytes

An IPv6 address (in hexadecimal)

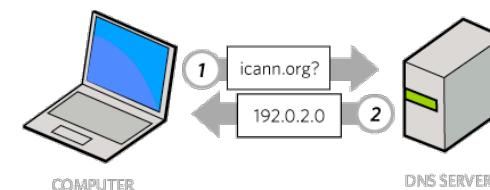
Navigating

- Routers are used to "locally" find paths



Naming

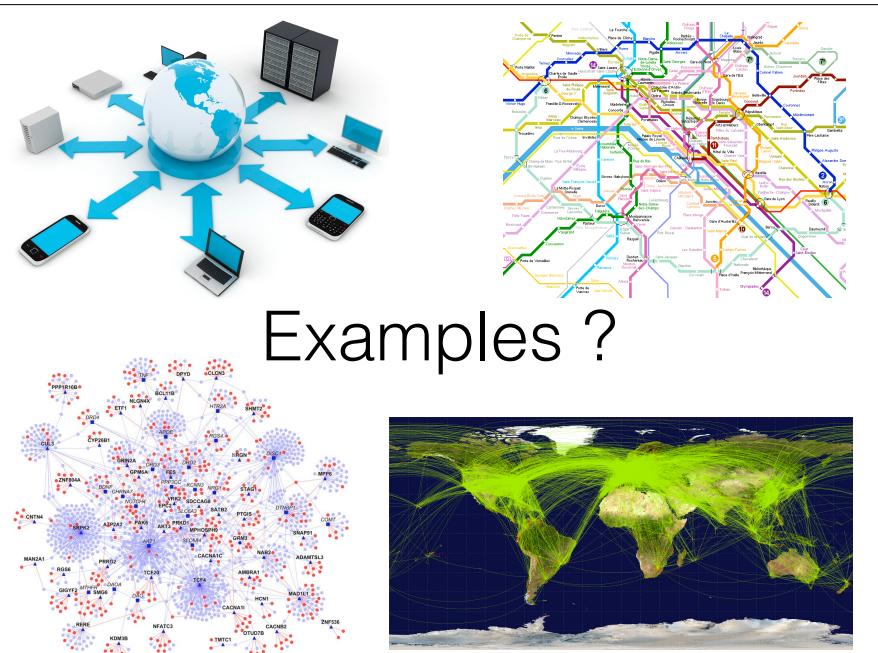
- DNS servers are used to bind names (google.com) to IP addresses like 172.217.4.110.
- Naming is hierarchical



What is a network?

Nodes - singular entities; considered indivisible; may have attributes and qualities

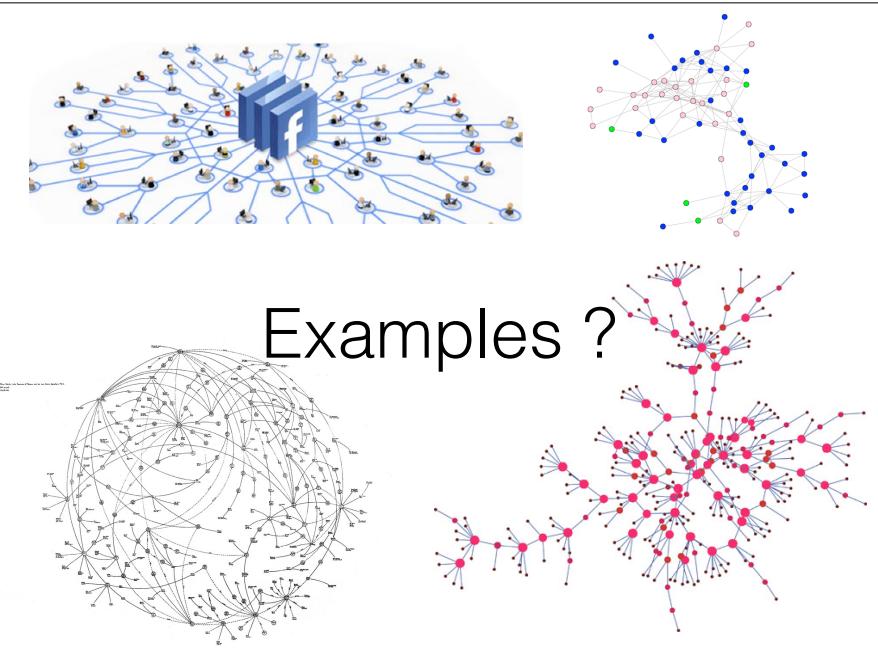
Links - a connection between two nodes; may have attributes and qualities



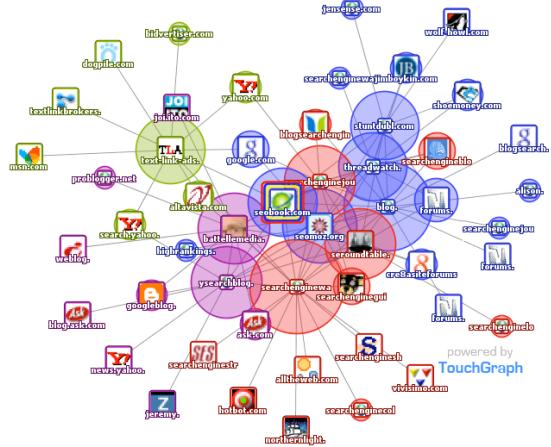
What is a social network?

Actors - individuals and organizations

Dyadic ties - social interactions between two actors



The Web Graph and Random Walks



What is a graph?

Vertices - Similar to a point in geometry

Edges - Connect two vertices

