

Speed and the Client/Server Model

Section 1.6 and 1.7

2/13/06

CS120 The Information Era

1

Speed & Client/Server Model

- Learning Objectives:
 - Section 1.6 & 1.7 on pp. 19-24
- Understand how speed is measured when transferring data across a network
 - Identify where bottlenecks may occur and why
- Learn about the Client/Server Model
 - Which computer is doing what
 - Where is the data?

2/13/06

CS120 The Information Era

2

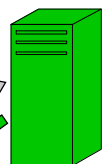
Let's transfer some data...

Upload: transfer data from local to remote computer



Local Computer

Internet



Remote Computer

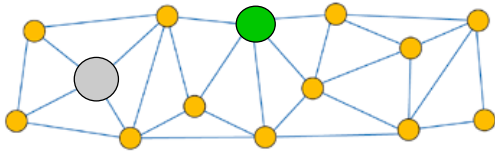
Download: transfer data from remote to local computer

2/13/06

CS120 The Information Era

3

The Internet



- Let's *download* a file from euler.math.pacificu.edu to your home computer
- How fast can we get the data?
 - Find a path from green to grey

2/13/06

CS120 The Information Era

4

Bandwidth (Network Speed)

- Amount of data transferred in a fixed amount of time
- kilobits (kb) per second (kbps)
 - kilobits per second; 1 kbps = 1000 bits/second
- kilobytes (KB) per second (KBps)
 - kilobytes per second; 1 KBps = 1024 bytes/second
 - 1 byte = ?? bits
- modem: 56 kilobits per second
- DSL: 768 kilobits per second
- **Q1: How long will it take to download a 1 MB file with a 56 kilobits per second modem?**

2/13/06

CS120 The Information Era

5

Your Network Speed

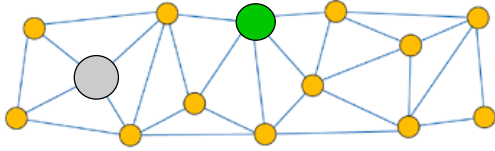
- How is *your* network speed determined?
 - modem bandwidth
 - Internet Service Provider speed
 - network traffic (congestion)
- **Bottleneck**
 - Link that gives the lowest bandwidth
 - may be due to congestion
- **Q2: What factors may affect congestion?**

2/13/06

CS120 The Information Era

6

The Internet



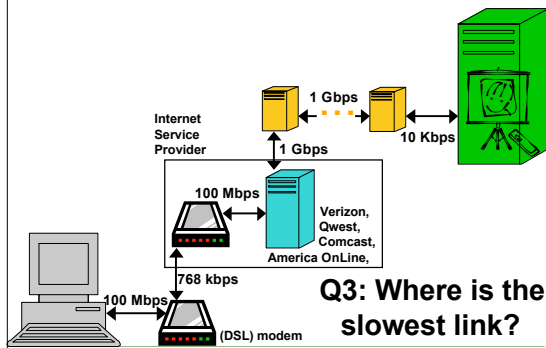
- How fast can data get from green to grey?
- Let's zoom in on the network....

2/13/06

CS120 The Information Era

7

The Network, Zoomed



2/13/06

CS120 The Information Era

8

How to connect to the 'Net

- Modem (dial-up)
 - 28.8 kbps or 56 kbps
 - DSL
 - 768 kbps or 3 Mbps
 - Cable modem
 - 6 Mbps
 - Fiber optic cable
 - 100 Mbps
- Broadband**
(advertised speeds)
- **Q4: How fast can we go in this lab?**
 - <http://bandwidthplace.com/speedtest/>

2/13/06

CS120 The Information Era

9

The Client/Server Model

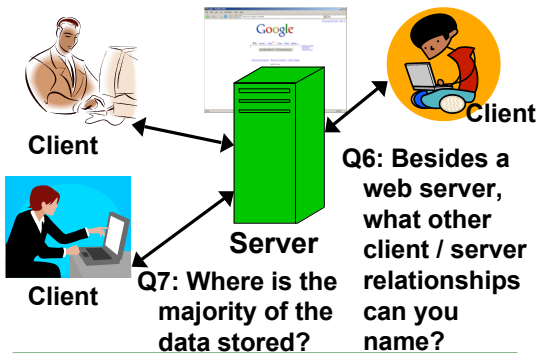
- Describes the roles computers play when they interact on the network
 - A client is the computer that requests information from the server
 - The server is a computer that provides a service for (many) clients
- The client/server interaction is the foundation for all Internet communication

2/13/06

CS120 The Information Era

10

Let's look at a web page ...



2/13/06

CS120 The Information Era

11

Client/Server

- A computer can be both a client and a server
 - viewed differently by each remote computer
 - connecting to a chat session
 - client
 - sending an image during a chat session
 - server
- **Q8: When else is your local computer a server?**

2/13/06

CS120 The Information Era

12

Web-Based Software Hosting

- Traditionally, you install software on your computer from a CD or DVD
 - the program is copied to your hard drive
 - need to download updates to get new features/bug fixes
- Recently, some companies began providing software via the web
 - no install, just visit a web page
 - Application Service Providers
- **Q9: Why might this be a good or bad idea?**

2/13/06

CS120 The Information Era

13

Web-Based Software Hosting

- Write a Word document in a web page
 - <http://us.ajax13.com/en/ajaxwrite/>
- Create Adobe PDF Files
 - <http://createpdf.adobe.com/>
- Image manipulation
 - <http://kodak.com/>
 - <http://target.com/>
- **Q10: Where is the data? Where is the work?**
- **Q11: Which of these are you likely to use?**

2/13/06

CS120 The Information Era

14
