

Introduction

CS158

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Outline

- Applications of Networks
- Introduction to Network Hardware

Applications of Networks

- We begin this semester's discussion of networks with some examples of what they are used for.
- We consider:
 - Business Application
 - Home Applications
 - Mobile Applications

Business Applications

- Companies often have several computers.
- For example, computers might be used to keep track of production, inventories, and payroll.
- We want to be able to share resources between these systems.
- Resources might be **physical**, such as printers, scanners, etc.; or **non-physical**, such as data.
- A typical organization for such resources is to have **Servers**, which provide resources; and **Clients**, which can make use of the resource.
- This is called the Client-Server model.
- Communication is done over a network.

More on Business Applications

- Networking computers within a company also creates important communication channels for employees such as e-mail.
- Networks between companies can be used to automate orders between suppliers and their assemblers.
- Finally, networks between suppliers and consumers permits shopping over a network (**e-commerce**).

Home Applications

- Access to remote information. For example, flight information
- Person-to-Person communication. Emails, chat-rooms, instant messaging.
- Interactive Entertainment. World of Warcraft, Othello, Chess online, etc.
- Electronic Commerce. Amazon, E-bay, iTunes, BitTorrent, tax-forms online, etc.

Mobile Users

- People are carrying their lives on their Smartphones or PDAs.
- This includes: contact-lists, photos, video clips, music.
- They also obtain information on these devices about: movies, maps, locations of their friends etc.
- Networks are needed for such devices:
 - To make phone calls
 - To send data between headsets and phones
 - To synchronize this data with a computer
 - To send and receive data over the internet

Network Hardware

- There are two main types of transmission technologies:
 - **Broadcast links:** A single communication is shared by all machine on the network. Short messages called packets are sent by any machine and are received by all others (called **multicast** if subset of all others). An address on the packet says who it was intended for.
 - **Point-to-point links:** these consists of many connections between pairs of machines. Paired machines can be viewed as edges in a graph. A packet might have to traverse several edges to get from its source to its target destination. Transmission from one sender to one receiver is sometimes called **unicasting**.

Broadcast Networks

Point-to-Point Networks