CIS 630
Distributed Systems

Lecture 3

Overview

▸ Begin to look specifically at networks.

▸ From a high level.

▸ All of the architectural models and fundamental models earlier have one thing in common:

  ▸ A network connecting everything together.

Networks

- A network is composed of
  - Transmission media
  - Hardware devices
  - Software components

- We call the hardware devices and software components collectively a "communication subsystem".

- Devices and computers that use the network for communication purposes are called *hosts*.

- The term *node* refers to any computer or switching device attached to the network.

The Internet

▸ The Internet is a single communication subsystem split into distinct subnetworks (subnets) that act as routing units.

intranet

ISP

backbone

satellite link

desktop computer:
server:
network link:
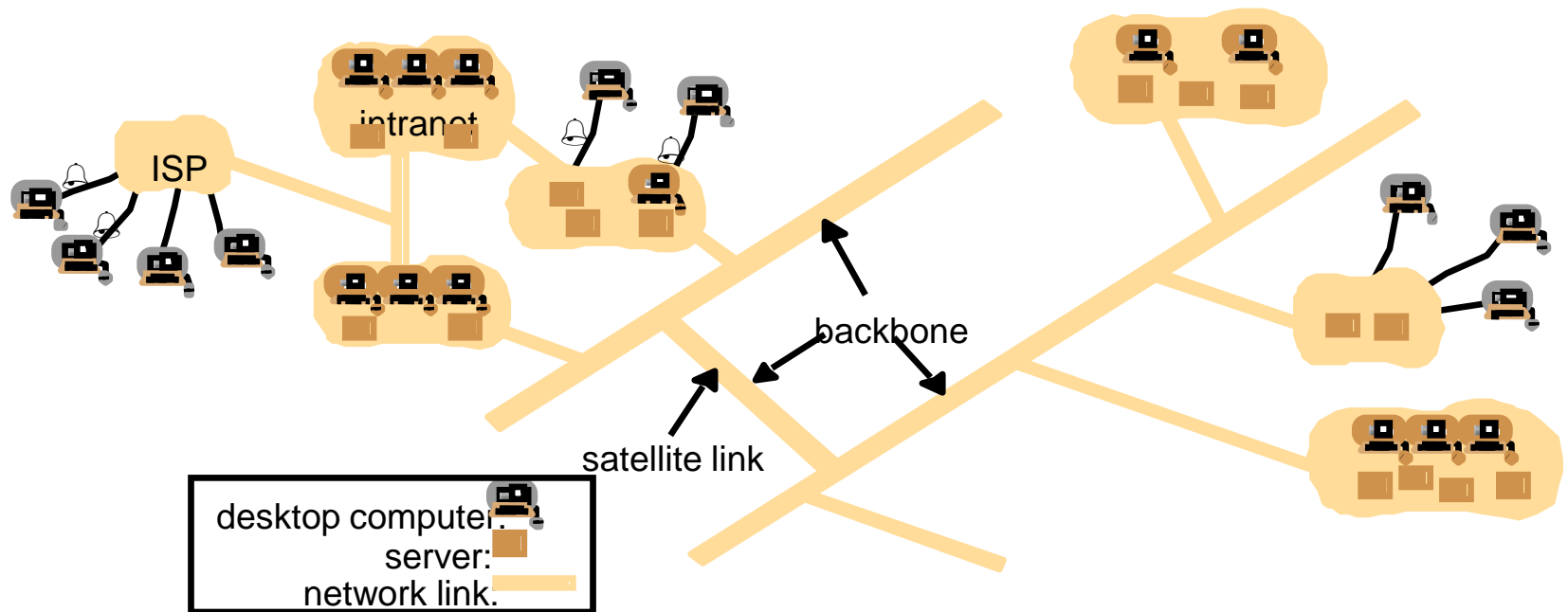
Requirements of Networks

‣ What sorts of requirements typically get imposed on networks?

‣ Performance
  ‣ Latency and data transmission rates
‣ Scalability
  ‣ Tolerate addition of many nodes
‣ Reliability
‣ Security
‣ Mobility
‣ Quality of Service
  ‣ Performance guarantees/bounds.
‣ Multicasting
  ‣ Facilitate more than point-to-point pair wise transfers.

‣

Types of networks

▶ **Personal area networks**

  ▶ Bluetooth

▶ **Local area networks (LAN)**

  ▶ University or corporate network

▶ **Wide area networks (WAN)**

▶ **Metropolitan area networks (MAN)**

  ▶ DSL/Cable networks

▶ **Wireless LAN/WAN/MAN**

  ▶ Cellular data networks

▶ **Internetworks**

  ▶ Multiple interoperating networks connected via routers or gateway devices.

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