

# Chapter 1

## Introduction

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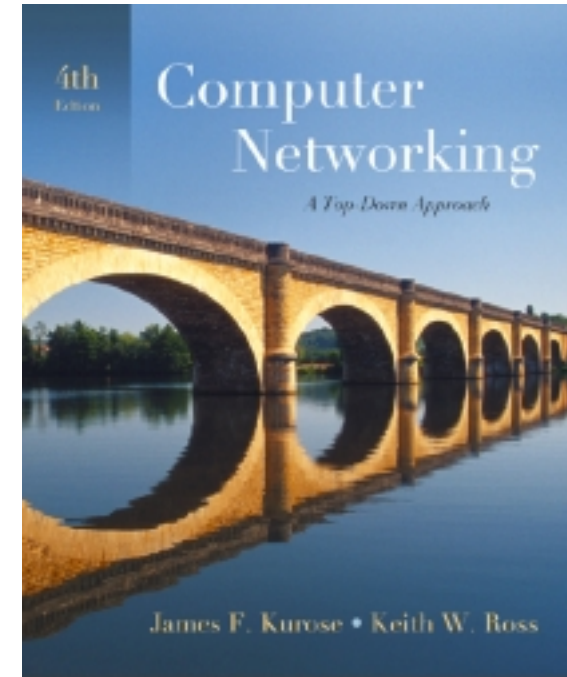
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*Computer Networking:  
A Top Down Approach ,  
4<sup>th</sup> edition.*

*Jim Kurose, Keith Ross  
Addison-Wesley, July  
2007.*

# Chapter 1: Introduction

## Our goal:

- ❑ get “feel” and terminology
- ❑ more depth, detail *later* in course
- ❑ approach:
  - ❖ use Internet as example

## Overview:

- ❑ what's the Internet?
- ❑ what's a protocol?
- ❑ network edge; hosts, access net, physical media
- ❑ network core: packet/circuit switching, Internet structure
- ❑ performance: loss, delay, throughput
- ❑ security
- ❑ protocol layers, service models
- ❑ history

# Chapter 1: roadmap

## 1.1 What *is* the Internet?

## 1.2 Network edge

- end systems, access networks, links

## 1.3 Network core

- circuit switching, packet switching, network structure

## 1.4 Delay, loss and throughput in packet-switched networks

## 1.5 Protocol layers, service models

## 1.6 Networks under attack: security

## 1.7 History

# What's the Internet: "nuts and bolts" view



PC



server



wireless laptop



cellular handheld

- millions of connected computing devices:  
*hosts = end systems*

- ❖ running *network apps*

- *communication links*

- ❖ fiber, copper, radio, satellite

- ❖ transmission rate = *bandwidth*



access points



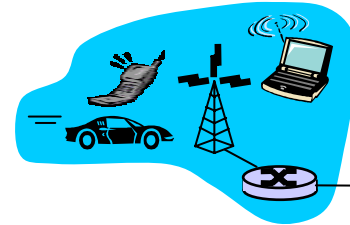
wired links



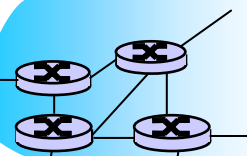
router

- *routers*: forward packets (chunks of data)

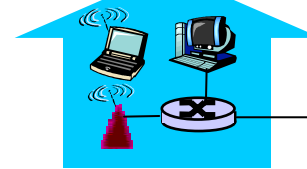
Mobile network



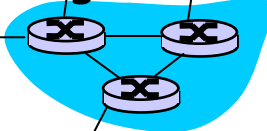
Global ISP



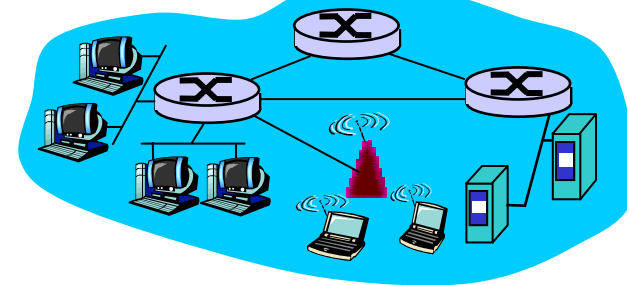
Home network



Regional ISP



Institutional network



# "Cool" internet appliances



IP picture frame  
<http://www.ceiva.com/>



Web-enabled toaster +  
weather forecaster



World's smallest web server  
<http://www-ccs.cs.umass.edu/~shri/iPic.html>



Internet phones