

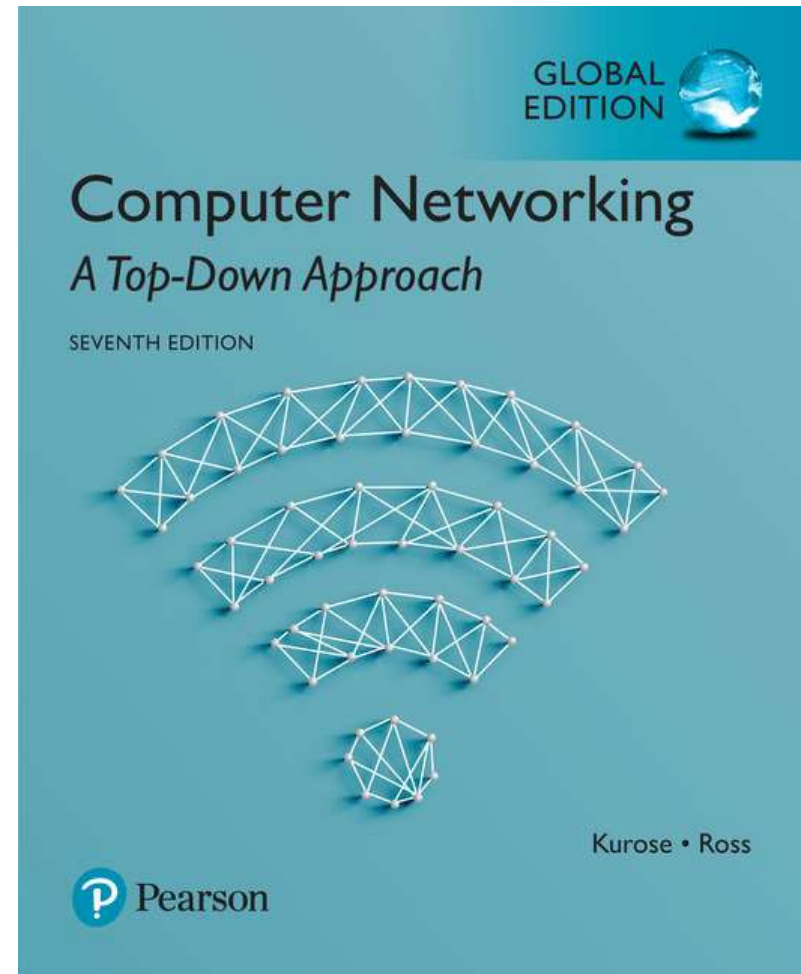
제1강 : 인터넷과 프로토콜

Computer Networking: A Top Down Approach

컴퓨터 네트워크
(2019년 1학기)

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Pre-study Test :

1) 통신 링크의 전송속도 측정 단위는 무엇인가?

(What is the measurement unit of transmission speed of communication links?)

- ① Bits per second
- ② Bytes per second
- ③ Packets per second
- ④ Characters per second

2) 이웃 네트워크 장치들간에 데이터를 전송하기 위해 전송에 사용되는 개체는 무엇인가?

(What is the which is used to transmit data between neighboring network devices?)

- ① link
- ② switch
- ③ router
- ④ host

3) 인터넷의 스위치에 의해 교환되는 정보 단위는 무엇인가?

(What is the information unit which is exchanged by the switch of Internet?)

- ① bit
- ② byte
- ③ packet
- ④ segment

4) 사용자들에게 인터넷 접속 서비스를 제공하는 회사는 무엇인가?

(What is the enterprise which provides Internet access services for end users?)

- ① ISO
- ② ISP
- ③ OSI
- ④ IETF

5) 인터넷의 프로토콜 구조는 무엇인가?

(What is the protocol architecture of Internet?)

- ① TCP/IP
- ② OSI
- ③ SNA
- ④ DECNET

6) 두개 이상의 통신 개체들간에 교환되는 메시지의 포맷과 교환 순서를 정의하는 것을 무엇이라 하는가?

(What is the thing which defines the format and the order of messages exchanged between two or more communicating entities?)

- ① program
- ② process
- ③ interface
- ④ Protocol

7) 인터넷이란 무엇인가?

(What is the Internet?)

- ① network of hosts
- ② network of links
- ③ network of switches
- ④ networks of networks

Chapter 1: introduction

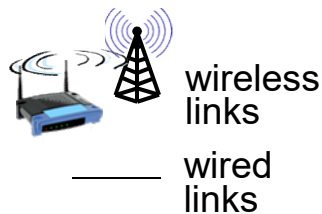
overview:

- 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

What's the Internet: “nuts and bolts” view



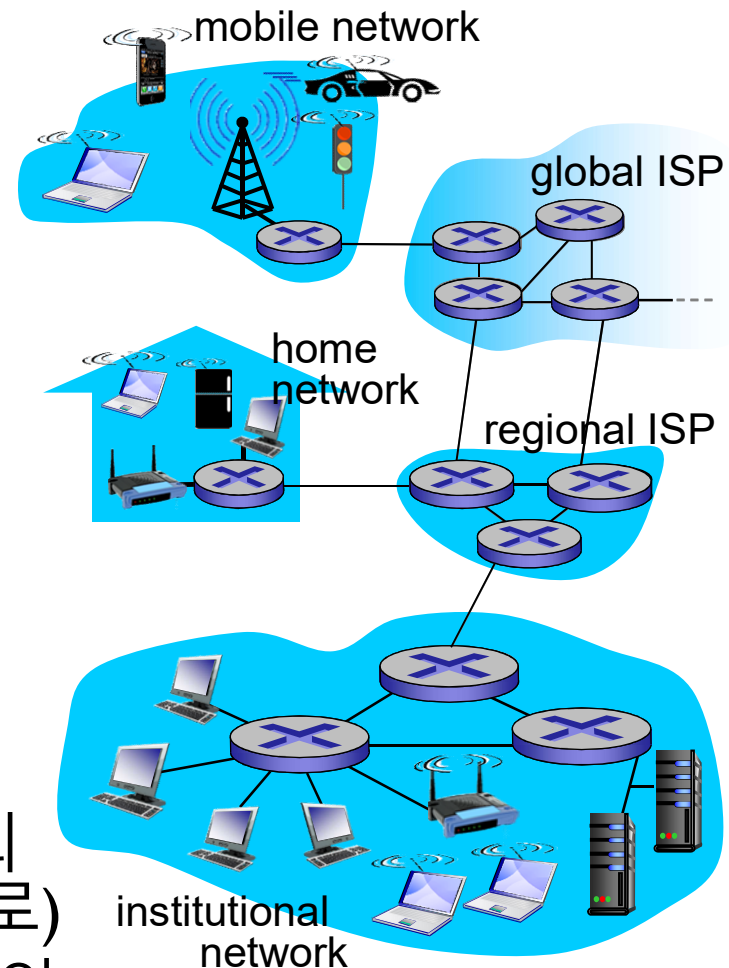
- billions of connected computing devices:
 - *hosts* = *end systems*
 - running *network apps*



- *communication links*
 - fiber, copper, radio, satellite
 - transmission rate: *bandwidth*



- *packet switches*: forward packets (chunks of data)
 - *routers* : 네트워크간의 패킷 교환(일반적으로)
 - *Switches* : 네트워크내의 패킷 교환(일반적으로)



“Fun” Internet-connected devices



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



Web-enabled toaster +
weather forecaster



Tweet-a-watt:
monitor energy use



Internet
refrigerator



Slingbox: watch,
control cable TV remotely



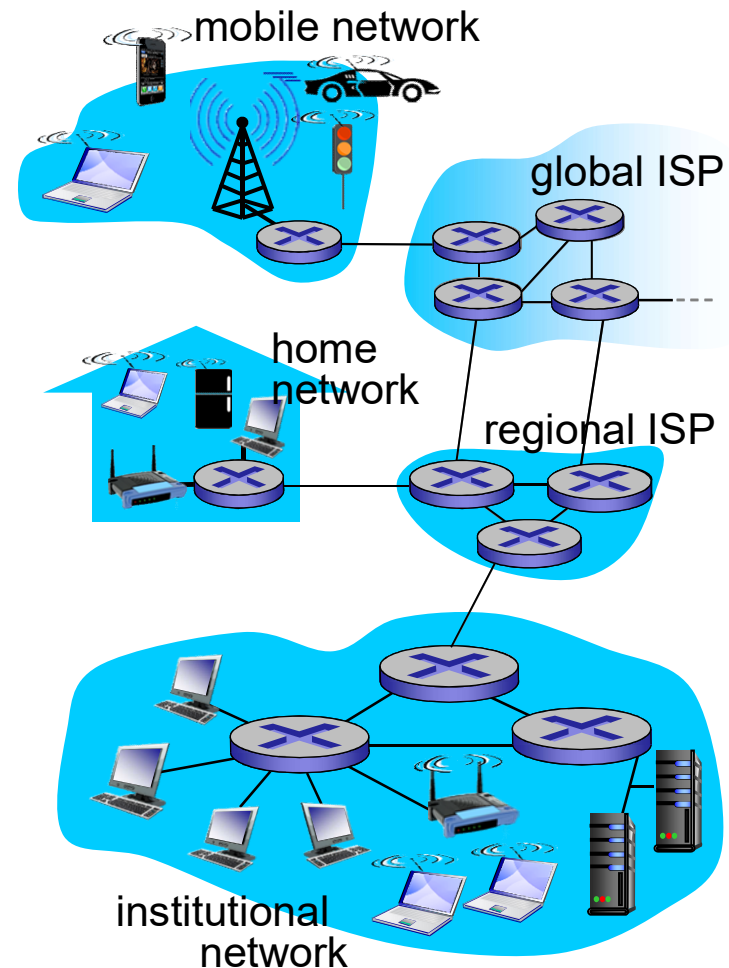
sensorized,
bed
mattress



Internet phones

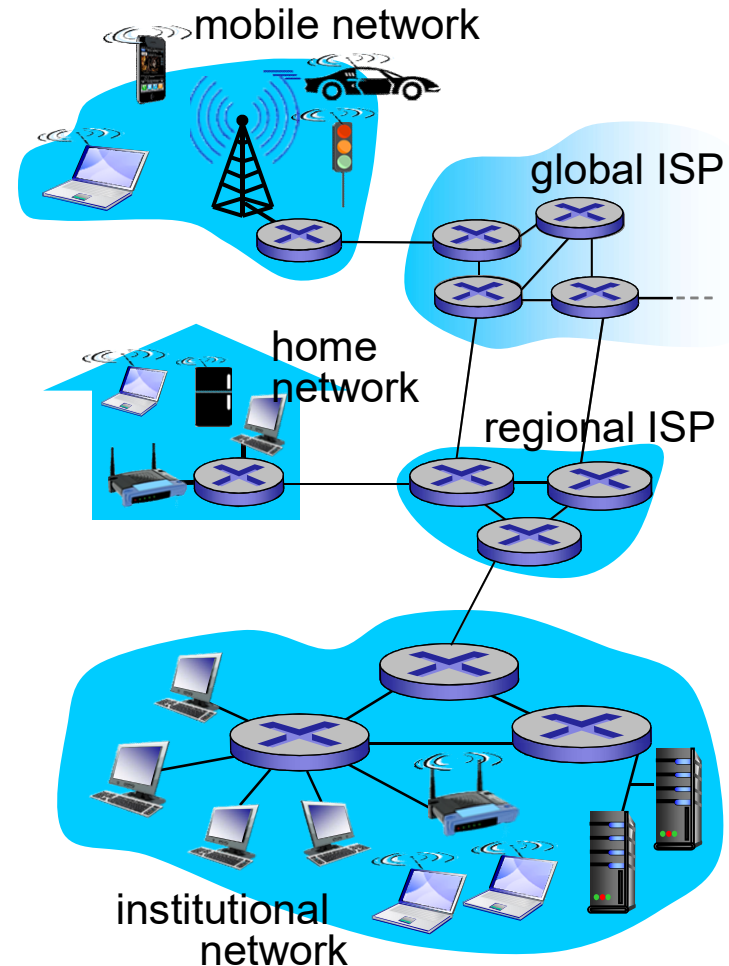
What's the Internet: “nuts and bolts” view

- **Internet: “network of networks”**
 - 개별 네트워크 독립적 운영
 - 운영 조직 : ISP(Internet Service Provider)
 - ISP : 다수의 네트워크 관리 가능
 - Interconnected ISPs
- **protocols** control sending, receiving of messages
 - 구성 요소간의 연결 및 정보 전송 규칙
 - e.g., TCP, IP, HTTP, Skype, 802.11
- **Internet standards**
 - RFC: Request for comments
 - IETF: Internet Engineering Task Force



What's the Internet: a service view

- *infrastructure that provides services to applications:*
 - Web, VoIP, email, games, e-commerce, social nets, ...
- *provides programming interface to apps*
 - hooks that allow sending and receiving app programs to “connect” to Internet
 - provides service options, analogous to postal service
 - 예 : 소켓 API



What's the Internet ?

“다수의 호스트들이 링크와 스위치로 연결되어
네트워크를 구성하고,

네트워크들이 다시 라우터로 연결된 네트워크로써,

다양한 응용에 대해 통신 서비스를 제공하는
인프라스트럭처(분산 시스템)”

What's a protocol?

human protocols:

- “what's the time?”
- “I have a question”
- introductions

... specific messages sent

... specific actions taken
when messages received,
or other events

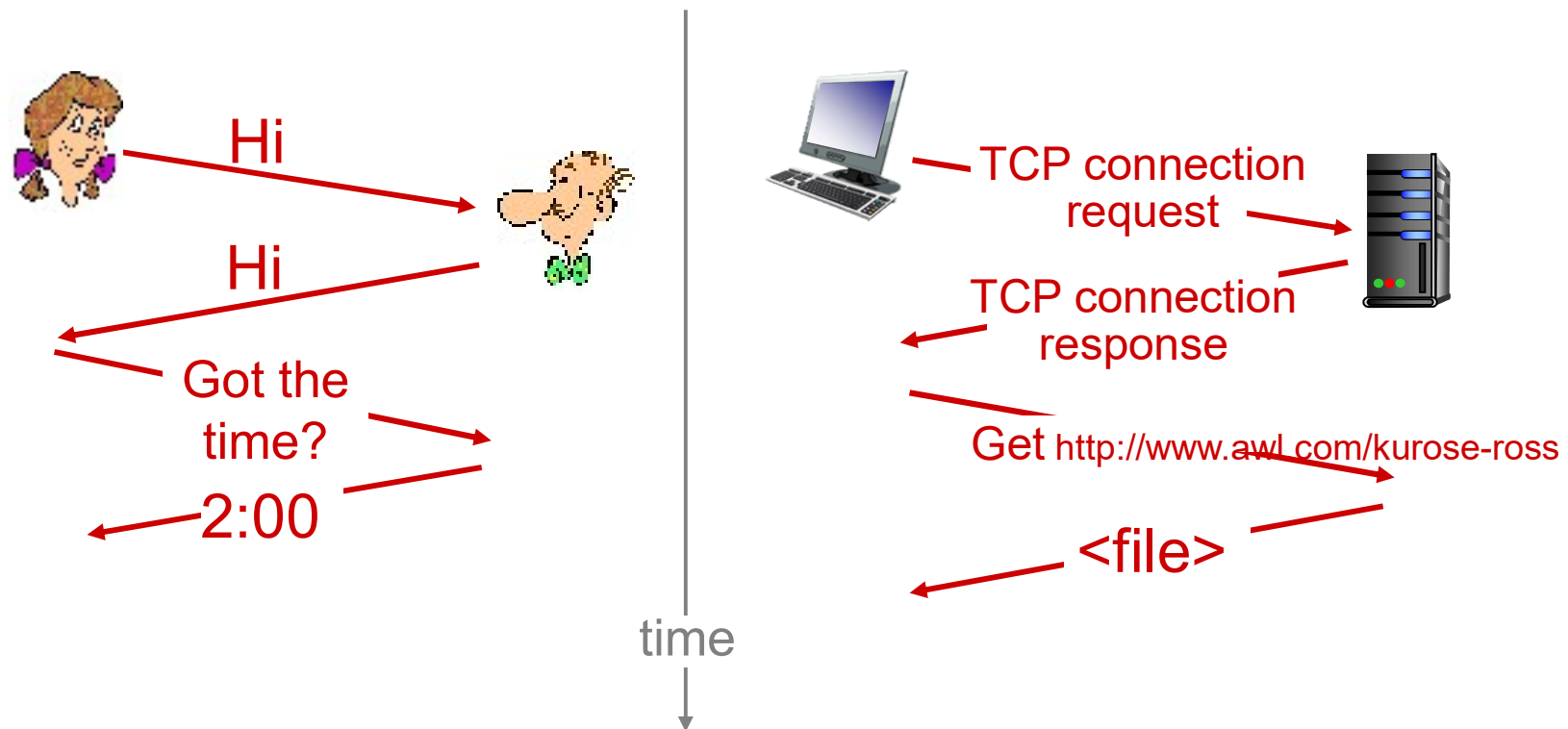
network protocols:

- machines rather than humans
- all communication activity in Internet governed by protocols

protocols define format, order of messages sent and received among network entities, and actions taken on message transmission, receipt

What's a protocol?

a human protocol and a computer network protocol:



Q: other human protocols?

What protocols do you know?

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