Computer Networking

COMP347 2006

Reference Books

- T: *Computer Networks*, latest ed by Andrew Tanenbaum. (T3: 3rd ed)
- BDC4: *Business Data Communications*, 4th ed. by William Stallings
- BDC3: 3rd ed. by Stallings and van Slyke

Study Guide

- Lecturers: Len Hamey (1-3,10-12), Rajan Shankaran (4-9)

Assessment

- Assignments.
  - 0: Due next week.
  - 1: SFTP.
  - 2: Case study.
- Practical work – start week 2.
- Tutorials – start week 2.
- Plagiarism.
- Special consideration.
- Election of liaison committee reps.
Revision

The Internet: “nuts and bolts” view

- millions of connected computing devices: *hosts, end-systems*
  - PC’s workstations, servers
  - PDA’s phones, toasters running *network apps*
- communication links
  - fiber, copper, radio, satellite
- *routers*: forward packets (chunks) of data thru network

The Internet: “nuts and bolts” view

- *protocols*: control sending, receiving of msgs
  - e.g., TCP, IP, HTTP, FTP, PPP
- *Internet*: “network of networks”
  - loosely hierarchical
  - public Internet versus private intranet
- Internet standards
  - RFC: Request for comments
  - IETF: Internet Engineering Task Force

What’s the Internet: a service view

- communication *infrastructure* enables network applications:
  - WWW, email, games, e-commerce, database, voting, file (MP3) sharing
- communication services:
  - connectionless
  - connection-oriented
What’s a protocol? (KR1.2)

human protocols:
• “what’s the time?”
• “I have a question”
• introductions
• … specific msgs sent
• … specific actions taken when msgs received, or other events

network protocols:
• machines rather than humans
• Protocols govern all communication activity in Internet
• protocols define format, order of msgs sent and received among network entities, and actions taken on msg transmission, receipt

Service Primitives

• Five service primitives for implementing a simple connection-oriented service.

<table>
<thead>
<tr>
<th>Primitive</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LISTEN</td>
<td>Block waiting for an incoming connection</td>
</tr>
<tr>
<td>CONNECT</td>
<td>Establish a connection with a waiting peer</td>
</tr>
<tr>
<td>RECEIVE</td>
<td>Block waiting for an incoming message</td>
</tr>
<tr>
<td>SEND</td>
<td>Send a message to the peer</td>
</tr>
<tr>
<td>DISCONNECT</td>
<td>Terminate a connection</td>
</tr>
</tbody>
</table>
IP address, Port

Web srv  
Browser  
Time srv

Transport

Port 80  
Port 123

IP network

IP address 137.111.11.26