

Networking Basics
Inter-computer communication based on layered approach and "protocols":

Application level — HTTP, FTP, telnet, SMTP, POP, IMAP, NTP, etc., etc.
Transport level — TCP (Transmission Control Protocol), UDP (User Datagram Protocol).

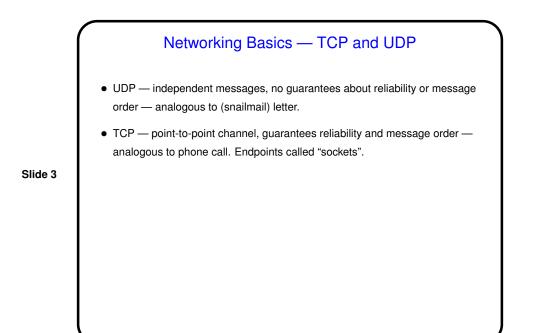
Slide 2 Network level — IP (Internet Protocol — addressing, routing of packets).

Link level — device drivers, etc.

Messages are routed to

A machine ("host"), identified by IPA or name.
A process, identified by "port number" (16 bits). 0 — 1023 are "well-known ports", others available for applications

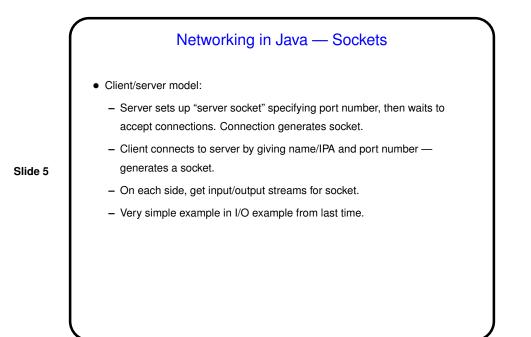
Slide 4

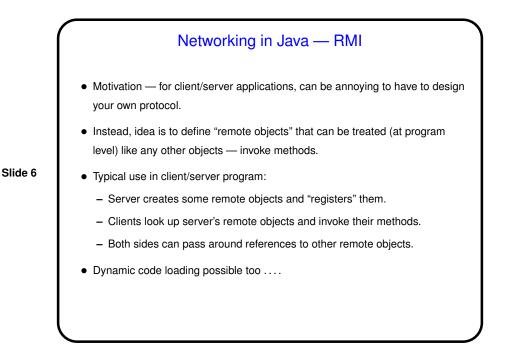


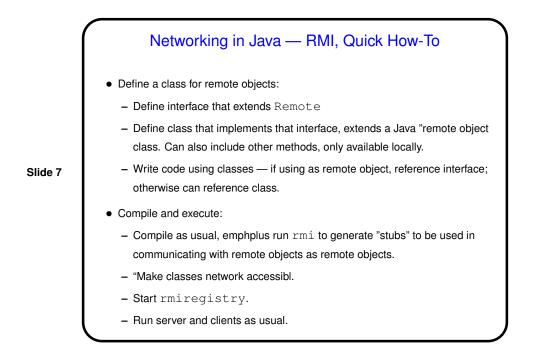
Networking in Java
Classes for communicating at application level — e.g., URL ("show URL" example).
Classes for communicating at network level:

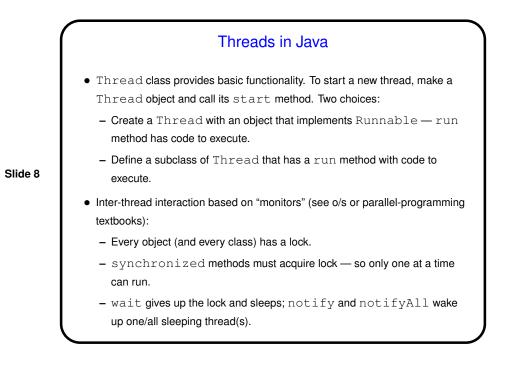
TCP — Socket, ServerSocket.
UDP — Datagram*.

RMI (Remote Method Invocation).









• Lots of new stuff in Java 1.5 / 5.0 (java.util.concurrent package).

Slide 9

Examples

• For examples of multithreading for performance, multithreading with wait and notify, refer to my Web site for CSCI 3366 (parallel programming course).

Slide 10

- Formerly many uses for multithreading in GUIs (e.g., animation), but now most can be accomplished with new features of GUI class (e.g., timers).
- Example of socket communication and threading for concurrency chat example.

