

Announcements

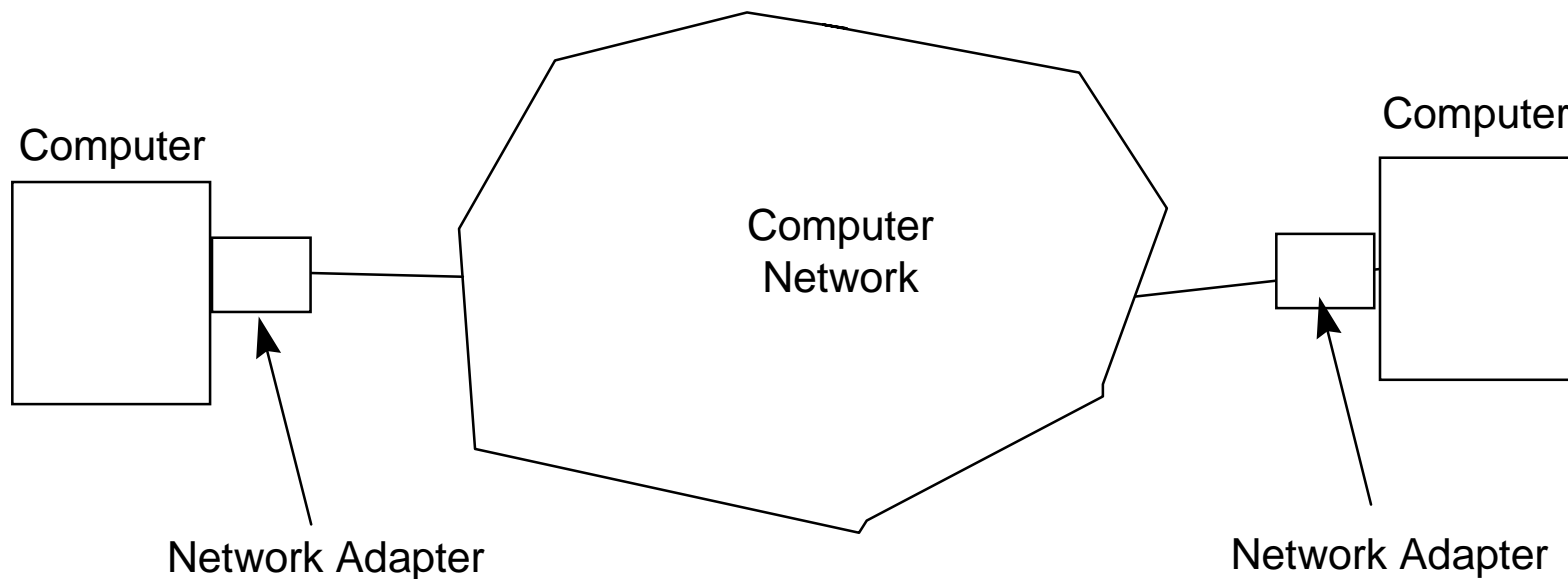
- Handouts
 - class syllabus
 - programming assignment #1 (includes computer account)
 - department newsletter
- Enrollment
 - there are 40 people in the class, and 12 on the wait list
 - due to the size of the room and projects enrollment will not be increased
 - priority to fill drops will be given to senior CS undergrads
 - this class will be offered again in the spring
- Required Background
 - must have 311 and 330 (412 or 430 would be helpful)
 - strong working knowledge of C or C++ (take your pick)
 - willingness to work in a group environment

Announcements (cont.)

- Required Work
 - will require about the same amount of effort as 412
 - 412 a (slightly) harder project to debug
 - 417 project is (by design) more ambiguous
 - will need to write project proposals plus the code
- Materials
 - Tanenbaum, “Computer Networks”, **3rd Edition**
 - Nichols, Buttlar, and Farrell, “Pthreads Programming”
 - Handouts from Web page
- Reading (for this week)
 - Chapter 1

Networks

- Communication between semi-autonomous computers
- Attached to host system by an adapter



Many Types of Networks

- Physical Media
 - copper wires (Ethernet, RS232-C, V.32, etc.)
 - fiber optics (ATM, FDDI)
 - air (IR, Radio, micro-wave)
- Speeds (link not aggregate)
 - low
 - modems (few k bits/sec)
 - pagers
 - medium
 - Ethernet (10-100 Mbps)
 - Token Ring (16 Mbps)
 - high
 - ATM (155-655 Mbps)
 - Myrinet (600-1200 Mbps)
 - SONET (OC-48 - 2488 Mbps)

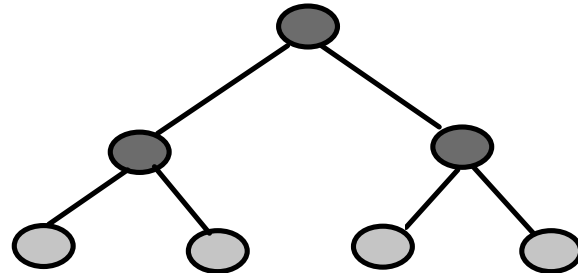
Network Topologies

- How are the communicating objects connected
- Fully connected - link between all sites
- Partially connected
 - links between subset of sites
 - can be an arbitrary graph
- Hierarchical networks
 - network topology looks like a tree
 - internal nodes route messages between different sub-trees
 - if an internal node fails, children can not communicate with each other
 - star network - hierarchical network with single internal node

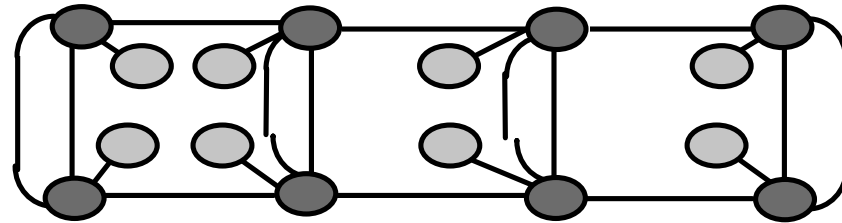
Network Topologies

● Network device ○ Processor

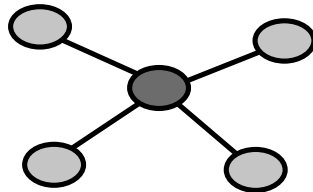
- Tree



- Mesh



- Star (Ethernet 10Base-, physical only)



A Network is not an Island

- Reason for networks is to share information
 - must be able to communicate in a common language
 - called protocols
 - The nice thing about protocols is that there are so many of them!
- Protocols
 - must be unambiguous and followed exactly
 - rule of thumb for good protocol implementations
 - be rigorous in what you generate
 - be liberal in what you accept
 - there are many different aspects to protocols
 - electrical through web services

Layering

- Layers provide information hiding
 - doesn't matter what lower level layers use as long as higher layers speak the same protocol.

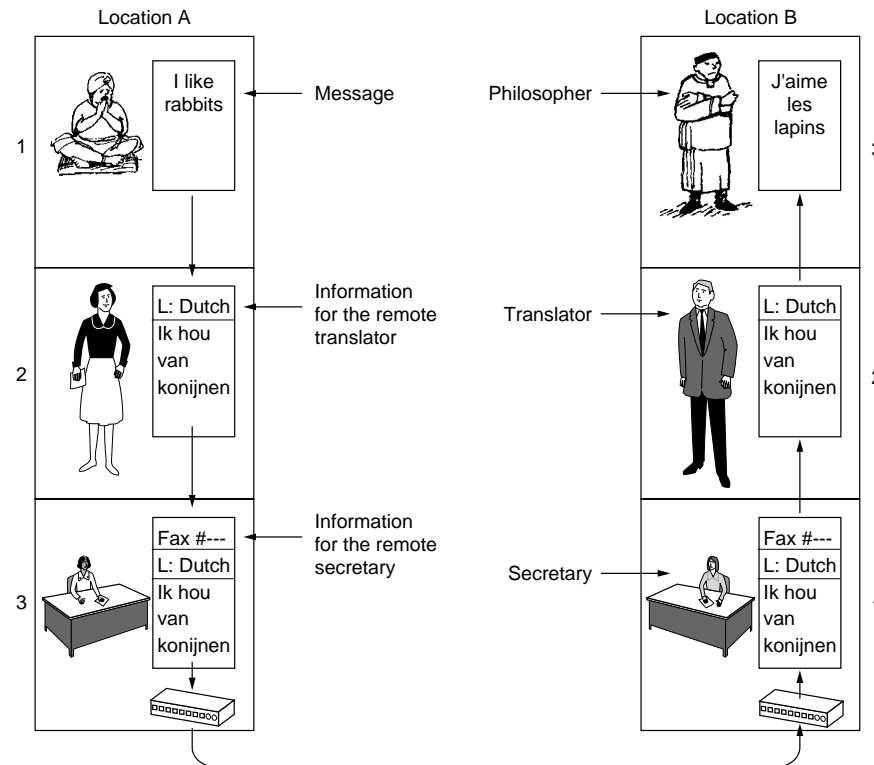


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