

Network Protocols

Protocol

- Syntax
 - Data formats
 - Signal levels
- Semantics
 - Control Information
 - Error handling
- Timing
 - Speed matching
 - Sequencing

Layered Protocol Architecture

- Each layer is layer-n
- Layer-n Protocol Data Units (PDUs)
- Protocol Stack

Internet versus OSI Stacks

Application
Transport
Network
Link
Physical

Application
Presentation
Session
Transport
Network
Link
Physical

Transport Layer Protocols

- Transmission Control Protocol (TCP) - stream sockets
- User Datagram Protocol (UDP) - datagram sockets
- Choose the protocol based on the application

Connectionless versus Connection-Oriented

- Protocol for each
- Benefits of each
- Drawbacks of each
- Difference from the developer's view
- Why would a developer select UDP?
- What if an application requires both primary characteristics?

Discussion Question

- Connectionless or Connection-Oriented?
 - Telnet
 - File Transfer Protocol (FTP)
 - Domain Name System (DNS)
 - Hypertext Transfer Protocol (HTTP)
 - Streaming
 - Simple Mail Transfer Protocol (SMTP)
 - Voice over IP (VoIP)