



SY110

Networking – Application Layer

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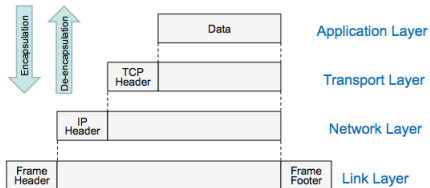
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- 2 Application Layer - Basics
- 3 Application Protocols
- 4 Recap
- 5 Questions



TCP/IP Stack



Headers at higher layers become data at lower layers

Source: IETF RFC 1122

Transport Layer

- TCP & UDP
- Connection-oriented vs. Connection-less
- NAT
- Ports - bridge the application layer to the transport layer
- Datagram



Finally at the top of the TCP/IP stack

- Application Layer processes provide services to the user of a host (or other processes also running at the application layer).

Some Important Protocols

- DHCP - Dynamic Host Configuration Protocol
- DNS - Domain Name System
- HTTP & HTTPS - HyperText Transfer Protocol (Secure)
- SSH - Secure SHell
- RDP - Remote Desktop Protocol
- SFTP - Secure File Transport Protocol
- SMB - Server Message Block protocol
- SMTP - Simple Mail Transfer Protocol
- FTP - File transfer Protocol
- TELNET - unsecure bi-directional ASCII text communicator, old
- IMAP - Internet Message Access Protocol
- IRC - Internet Relay Chat



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Service	Protocol	Port #	Transport	Tool/Software
World Wide Web	HTTP	80	TCP	Web clients/browsers
Secure Web	HTTPS	443	TCP	Web clients/browsers
Domain Name System	DNS	53	UDP	nslookup or for other client app
Secure SHell	SSH	22	TCP	ssh (PuTTY)
Remote Desktop	RDP	3389	TCP	rdesktop (UNIX) Remote Desktop Connection (Windows)
Secure Remote File Transfer	SFTP	22	TCP	WinSCP, FileZilla
Dynamic Host Configuration Protocol	DHCP	67,68	UDP	Built into the operating systems
Network file & printer sharing	SMB	445	TCP	File browser (see "map network drive" in Windows)
Email	SMTP	25	TCP	Email clients and servers

http:

[//en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers](http://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers)



- Memorize HTTP, HTTPS, DNS, and SSH details, to include port numbers
- Be able to discuss the choice of Transport Layer Protocols
- Basic understanding of types of protocols and services available
- Understand the correlation between Application protocols and port numbers



Questions?