OSI Layers

Application	End User	HTTP, SSH, DNS, FTP	7
Presen-tation	Encryption, Compre-ssion	SSL, TSL, MPEG	6
Session	Auth, Perms	API's, Sockets	5
Transport	Segmenting	TCP, UDP	4
Network	Packets	IP	3
Data Link	Frames, MAC	Ethernet, Bridge	2
Physical	Media	Wireless, Cabling	1

TCP VS UDP

TCP	UDP
3-way handshake	no confirmation
More reliable	Less reliable
Slower	Faster
Arranged packets	Independent packets
error-checking	no error-checking
Heavy	light

Protocols

ARP- Address Resolution Protocl	Translates IP to MAC	
DNS - Domain Name System	Translates domain name to IP	53 TCP/UDP
DHCP - Dynamic Host Config Protocol	Assigns IPs to client on the network	67 UDP
FTP - File Transer Protocol	It's in the name	20 TCP
HTTP - Hypertext Transfer Protocol	Used to display information	80/443 TCP/UDP
SMTP - Simple Mail Transfer Protocol	Common mail send protocol	25/465 TCP
POP3 - Post Office Protocol	retrieves mail from email server and removes it	110/995 TCP
IMAP - Internet Message Access Protocol	retrieves mail from email server and leaves it	143/993 TCP
SSH - Secure Shell	Secure remote commands	22 TCP/UDP

ARP - Address Resolution Protocol

Maps an IP address to a MAC address.
Sender broadcasts an ARP request with the IP address to be mapped.
Owner of the IP address replies with its MAC address.

TCP

Client	Server
SYN (Sync) ->	
	<- SYN,ACK
ACK (Acknowledge) ->	

HUB v Switch

Hub	Switch
Layer 1	Layer 2
Repeats signals mindlessly	finds intended client
cheap and simple	complex but smart

Commands

IPCONFIG	View of IP information of device
NSLOOKUP	Shows connection information with domains
HOSTNAME	shows computer name
Ping	allows simple packet transfer to check connection
tracert	shows packet pathing to requested server
netstat	shows overview of device's network connections with addresses
systeminfo	shows hardware and software details of device

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