OSI Model

	DARPA	OSI Level		OSI Explanation		OSI Unit	OSI Examples
Sharing Resources	Application Layer (Telnet, FTM, SMTP, DNS, RIP, SNMP)	7 Application Service Functions	App. Software & Network Apps.	Provides services to applications. These are not applications themselves. Inter-process Communication (IPC is RPC, DCOM, Named Pipes and Mail Slots that allow applications to split processing between client and server i.e. three–tier to make clients thinner). Network API (this is Winsock, TAPI, Redirection, Servers, NetBIOS API)		APDU, messages	Interface, HTTP, SMTP, FTP, TFTP Telnet, WWW, Email, Remote Interaction, Gateway (can operate at lower levels)
		6 Presentation Service Functions	Data Conversion Utilities	Converts the information for ASCII to EBCDIC for example. Also called the Syntax layer. Translation, encryption, compression.		PPDU, messages	SNMP, POP, SMTP, JPEG, TIFF, MPEG, MIDI
		5 Session Service Functions	Network Operating System/Network Services	This establishes, manages and terminates connections between applications. It sets up, coordinates and terminates conversations, exchanges and dialogs between applications. Security, name recognition, logging,.		SPDU, messages	RPC, error checking, SPX, NetBIOS, DECnet, AppleTalk, POP/25, Port 80, RPC Portmapper,
Network Protocols & Network Security (peer-to-peer/domain)	Host-to-host Transport Layer (TCP, UDP)	4 Transport Networking Functions		Provides transparent transfer of data between systems and is responsible for error recovery and flow control. It will retransmit if necessary. Accepts message from Session layer and chops it up. Monitors buffers.		TPDU, segments	Reliability, error checking, TCP, UDP, SPX
	Internet Layer (IP, ARP, IGMP, ICMP)	3 Network Networking Functions		It routes the frames among networks. Frame fragmentation. Addressing. Are you out there? Virtual Circuits, switching, naming. Is concerned with operating the subnet. Determines the physical path.		Datagrams, Packet	Software address, Routers, IP, RIP?, OSPF, ICMP, Brouter
Hardware	Network Interface layer (Ethernet, Token Ring, Frame Relay, ATM)	2 Data Link Communications Functions	Network	This layer has two sub-layers shown on the right. Error control between nodes. Adds a header and a checksum trailer. Layer One does NOT add or remove any headers or trailers. Frame error checking. Frame traffic control by telling sending node to back off when buffer full.	Logical Link Control (LLC) Layer – error free transfer. Device driver. MAC Layer – check frame errors,	Frames	Hardware address, bridges, Intelligent hubs, NIC, Ethernet, Token Ring, ISDN, SONET, ATM, ARCNET, SLIP, PPP, 802.2, SNAP, ARP, Brouter, Switch
		1 Physical Communications Functions		Connects the entity to transmission media. Concerned with transmission of a bit stream over a communications channel. Does not add or remove headers or trailers.		Bits	NIC, Pins, wires, volts, repeaters, Connectors, wireless transmission (radio), microwave, fiber, CAT 1-5, Co-ax, ADSL, ISDN, X.21, EIA/TIA-232, HSSI, EIA/TIA-449

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