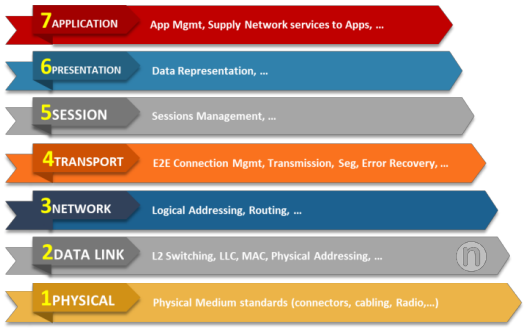
OSI Model – Cheat Sheet (Network Walks) – Part-1 v1.3

What is OSI Model ???

"OSI Model (Open Systems Interconnection) is a standardised Reference Framework for conceptualising data communications between networks"

Official Standard: ISO7498 (1984)

OSI Model Layers & their Functions



Encapsulation: "Preparing & passing the data by any Upper layer to the layer below it, is called Encapsulation"

(Means, going from the application layer all the way down to the physical layer)

Decapsulation: "Decoding data while going Upwards from the physical layer till application layer is called decapsulation"

Protocols at each OSI Layers

7	APPLICATION	DNS, DHCP, FTP, PDU, Telnet, POP3/IMAP, HTTP
6	PRESENTATION	ASCII, JPEG, GIF, SSL, TLS,...
5	SESSION	SIP, PPTP
4	TRANSPORT	TCP, UDP
3	NETWORK	IPv4, IPv6, OSPF, RIP, BGP, ICMP,...
2	DATA LINK	Ethernet, PPP, Frame Relay
1	PHYSICAL	WiFi, USB, Bluetooth, RJ45, SDH, MW/RF,..

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Transport Layer Ports

Category	Range	Comments
Well Known Ports	0 - 1023	Used by system processes e.g. FTP(21)
Registered Ports	1024 - 49151	For specific services e.g. Port 8080
Private Ports	49152 – 65535	For Private purposes

Important Ports on Transport Layer

Port Number	Protocol	Application
20	TCP	FTP data
21	TCP	FTP control
22	TCP	SSH
23	TCP	Telnet
25	TCP	SMTP
53	UDP, TCP	DNS
67, 68	UDP	DHCP
69	UDP	TFTP
80	TCP	HTTP (WWW)
110	TCP	POP3
161	UDP	SNMP
443	TCP	SSL
16,384-32,767	UDP	RTP-based Voice (VoIP) and Video

PDU's in OSI Model

Every Layer has a different name for PDU's (as in this pic). They are called:

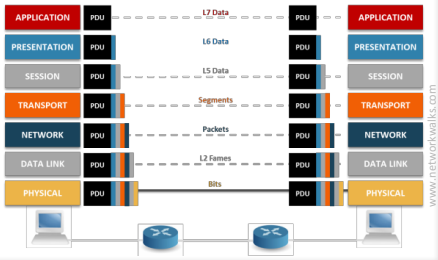
Bits on Physical Layer,

Frames on Data Link Layer,

Packets on Network Layer,

Segments on Transport Layer,

Data on all Application Layer.



*Note

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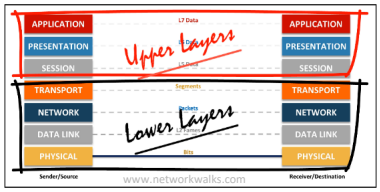
The seven layers of OSI Model are generally divided into two groups.

Layer1-4 are called Media Layers or Lower Layers

Layer5-7 are called Upper Layers or Host Layers



Please Do Not Throw Sausage Pizza Away

All People Seem To Need Data Processing

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Devices at each OSI Layers

7	APPLICATION	Firewalls, IDS, ..
6	PRESENTATION	
5	SESSION	
4	TRANSPORT	Firewalls (Some), ...
3	NETWORK	Routers, L3 Switches, ...
2	DATA LINK	L2 Switches, Bridges, ...
1	PHYSICAL	Hubs, Repeaters, Modems, ...

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