Understanding
The OSI Model

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Layer 7: Application

Provides an interface for users to interact with the network.
- i.e Operating Systems, Web Browsers, Email Clients

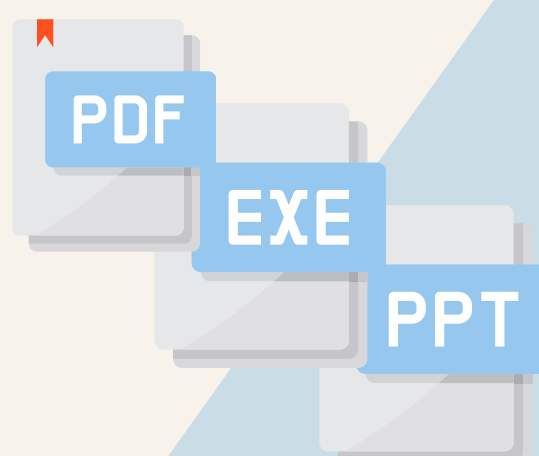Provides the capability for services to operate on the network.
- *Common Protocols*: HTTP, DNS, FTP, Telnet, POP3/IMAP
- *Devices*: PCs, Firewalls, IDS

Layer 6: Presentation

Negotiates & prepares how the data is presented to the user & the network.

Handles encryption, decryption & File Compression
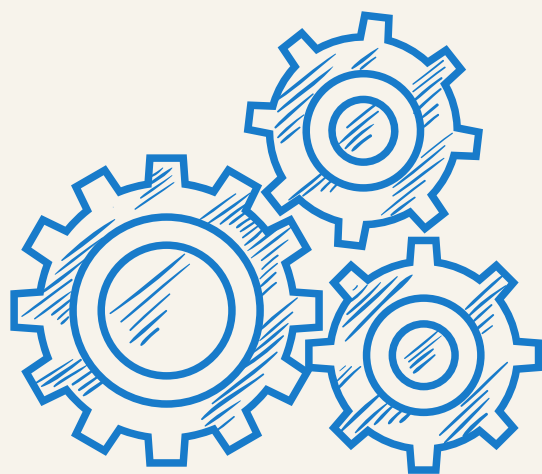- *Example*: File Types, ASCII
- *Devices*: PCs, Firewalls

Layer 5: Session

Oversees the setup, maintenance & termination of Sessions.

Provides management of multiple sessions (each client connection is called a session).

Assigns session ID numbers to each session to keep data streams separate.
- Protocols: SIP, PPTP
- *Devices*: Firewalls

Layer 4: Transport

Provides a transition between the upper & lower layers.

Determines if data delivery will be reliable/connection-oriented (TCP) or unreliable/connectionless (UDP) delivery of data. Data transferred at this layer is called **Segments.**
- *Protocols*: TCP, UDP
- *Devices*: Firewalls

Layer 3: Network

Responsible for routing data across networks & on to the destination, identifying hosts by their logical address (IP Address), determine the best path to send data. Data transferred at this layer is called **Packets**.
- *Protocols*: IPv4, IPv6, EIGRP, OSPF
- *Devices*: Routers

Layer 2: Data Link

Sends and receives traffic on the same network segment (VLAN), provides flow control, verifies data to & from the Physical Layer is error-free. Devices are identified by their physical address (MAC Address). Data transferred at this layer is called **Frames.**
- *Protocols*: Ethernet, PPP, Frame Relay
- *Devices*: Switches, Modems
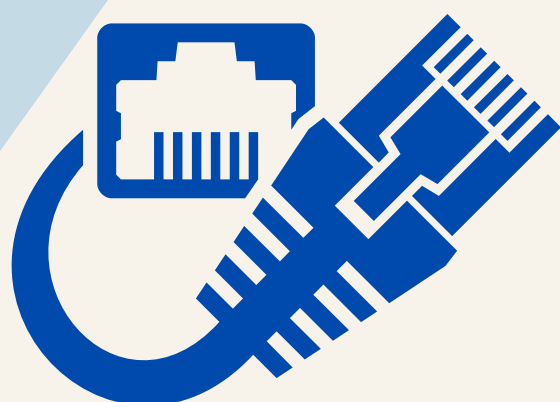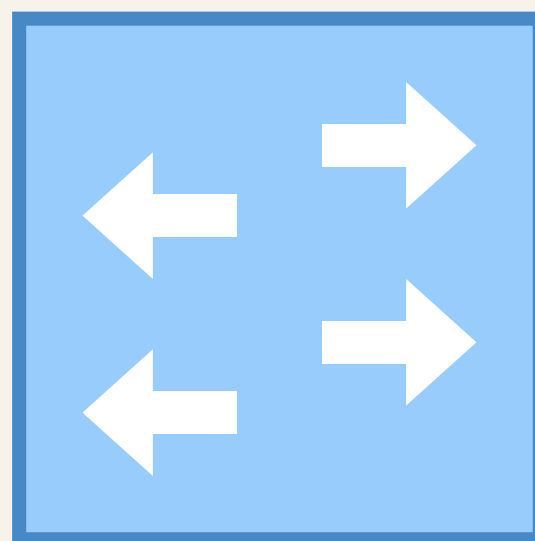
Layer 1: Physical

Converts data to electrical signals to send over the wire.

Data transferred at this layer is called **Bits.**
- *Devices*: Cables, Hubs, Repeaters

Encapsulation:
The process of adding additional headers to data. This is done by the sending host.

De-encapsulation:
The process of opening up encapsulated data. This is done by the receiving host.

ENCAPSULATION

DENCAPSULATION