

ISO-OSI Model

| | Functions | Data Flow (PDU-Protocol Data Unit) | |
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| 7 - Application (Network processes to applications) (provides services to applications and a window for applications to gain access to the OSI environment.) | SIP, Telnet, FTP, HTTP, SMTP, POP, RAS, Client/Server Process <- Purpose for Communication -> | Data | <u>Interface from the OSI model to the end user's applications.</u> Transfers information from program to program |
| 6 - Presentation (Data representation) (fulfills the requirement for identifying and agreeing the common syntax (grammar) to be used between two applications.) | MIDI, JPEG, EBCDIC, ASCII, MPEG, SNMP, TIFF <- Syntax Conversion -> | Data | Defines how data will be presented to the Application layer. Provides <u>compression</u> and <u>encryption</u> . Concerned with data structures and negotiation of data transfer syntax. (Translator) |
| 5 - Session (Interhost communication) (provides the synchronization and management of the dialogue between applications.) | SQL, RPC, NETBIOS, NFS (network file system, SUN) <- Transmission Control & Order -> | Data | <u>Communication</u> between network stations are <u>established</u> , managed, and terminated. Manages data exchange between presentation layer entities. (Mediator or Referee) |
| 4 - Transport (End-to-end connections) (supplies the upper layers with a Network Service which has improved quality of service features) | TCP, UDP, SPX Port numbers SEQ/ACK <- Ensures Delivery -> | Segments – term describes logical information groupings. | Responsible for making sure <u>packets are delivered error-free</u> , in sequence, w/o losses or duplications. Reliability, flow control, and error correction between end nodes. |
| 3 - Network (Addresses and best path) (ensures that in a multi-node network the blocks of data arrive at their correct destinations by use of the appropriate call set up and routing procedures) | IPv4 – 32bit IPv6 – 128bit ICMP, Ping <u>Routers</u> <- Routes Data -> | Packets (datagram) | Defines the network address, <u>determines the path</u> . Uses ARP or address table. Determines transport routes and handles the transfer of messages. Provides connectivity and path selection. |
| 2 - Data Link (Access to media) (blocks of data are reliably transmitted over a transmission link) LLC – logical link control (Exec. Depart.) MAC – media access control (Shipping Depart.) | ATM, FDDI, CSMA/CD, CRC, HDLC, PPP, LAPB SAPs (Service Access Points) Frame Relay <u>Switches/Bridges</u> <u>NICs</u> <- Node-to-Node Transmission -> | Frames Allows media independent flow control and sequencing. 48 bit, hexadecimal (00e0.a38d.0800) | Provides error checking and correction. Codes, addresses, and transmits information -Provides resources for multiple upper-layer protocols to share physical media -Physical addressing, network topology, and media access |
| 1 - Physical (Binary transmission) (defines the physical and electrical characteristics of the interface to the network and provides a transparent transmission path for the information across the chosen physical medium) | NIC, Cable, RJ-45 Fiber STP/UTP Token-Ring <u>Hubs/Repeaters</u> <- Bit Conversion & Transmission -> | Bits | Responsible for <u>data transmission on the network media</u> . Defines voltage levels, wire, distances, and connectors for maintaining the link between end systems. Manages hardware connection. |

OSI Model (Cisco)

- Reduces complexity
- Open standard – all vendors can use
- Modularity
- Accelerates innovation and evolution