Open Systems Interconnection Model

The OSI (Open Systems Interconnection) model is a theoretical framework that describes how communications should occur between different systems in a network. The OSI model defines seven layers of communication, each with a specific function and role in the overall process. These layers include the physical layer, data link layer, network layer, transport layer, session layer, presentation layer, and application layer. Each layer communicates with the layer directly above and below it, and together they form a complete communication process. The OSI model is important because it provides a consistent way of thinking about and troubleshooting communication issues in a network.

The OSI model can be used for understanding and designing communication protocols in a computer network. It is divided into seven layers, each responsible for a different aspect of network communication:

1. Physical Layer: Deals with the physical connections and transmission of data
2. Data Link Layer: Handles the transfer of data between devices on a single network segment
3. Network Layer: Routes data packets between multiple network segments
4. Transport Layer: Provides end-to-end communication and error checking
5. Session Layer: Establishes, maintains, and terminates connections between applications
6. Presentation Layer: Formats and encrypts data for application use
7. Application Layer: Enables communication between applications and the network

Each layer communicates with the layer directly above and below it, and together they provide the functionality needed for communication across a network. The OSI model is a widely used reference model for network communication and is used as a basis for many other communication protocols.

Layer	Name	Role	Protocols	PDU	Address
7	Application	Initiates contact with the network	http, https, ftp, smtp	Data	
6	Presentation	Formats data, optional compression, and encryption		Data	

Layer	Name	Role	Protocols	PDU	Address
5	Session	Initiates, maintains, and tears down session		Data	
4	Transport	Transports data	TCP, UDP	Segment, Datagram	Port
3	Network	Addressing and routing	IP, ICMP	Packet	IP
2	Data Link	Frame formation	Ethernet II	Frame	MAC
1	Physical	Data is transmitted on the media		Bits	