**The OSI networking model**

OSI stands for **Open Systems Interconnection model**

It describes seven layers that computer systems use to communicate over a network, which characterizes and standardizes the communication functions of a telecommunication or computing system without regard to its underlying internal structure and technology.

It contains 7 layers namely:

1. **Physical Layer**- responsible for the transmission and reception of unstructured raw data between a device and a physical transmission medium.
2. **Data link layer**- provides node-to-node data transfer i.e., a link between two directly connected nodes.
3. **Network Layer**- provides the functional and procedural means of transferring packets from one node to another connected in different networks.
4. **Transport Layer-** responsible for the delivery of the entire message from source-to-destination (end-to-end)
5. **Session Layer-** used to establish, maintain and synchronizes the interaction between communicating devices.
6. **Presentation Layer-** ensures that communicating machines can interoperate properly.
7. **Application Layer -** allows the user to access the network

**Diagrammatic representation**

**OSI TCP/IP**

**Sender**

Application layer

Application Layer

Presentation Layer

Session Layer

Transport layer

Transport layer

Internet layer

Network Layer

**Receive**r

Datalink Layer

Network access layer

Physical Layer

Reciver

**The TCP/IP**

It stands for Transfer Control Protocol/Internet Protocol.

It is a suite of communication protocols used to interconnect network devices on the internet.

It specifies how data is exchanged by providing end-end communication that identifies how it should be broken into packets.

It has 4 layers namely:

1. **Application layer**-Provides apps with standardized exchange.
2. **Transport Layer**-maintains end to end communication.
3. **Network layer**-transports packets across network boundaries.
4. **Physical Layer**-consists of protocols that operate only on a link as nodes or hosts interconnect on the network.

**NB :** Thee main differences of the two protocols is that layer 7,6&5 in OSI are combined to form the application layer in the TCP/IP model.

**Differences between TCP/IP & OSI**

| **OSI** | **TCP/IP** |
| --- | --- |
| OSI represents Open System Interconnection. | TCP/IP model represents the Transmission Control Protocol / Internet Protocol. |
| OSI is a generic, protocol independent standard. It is acting as an interaction gateway between the network and the final-user. | TCP/IP model depends on standard protocols about which the computer network has created. It is a connection protocol that assigns the network of hosts over the internet. |
| The OSI model was developed first, and then protocols were created to fit the network architecture’s needs. | The protocols were created first and then built the TCP/IP model. |
| It provides quality services. | It does not provide quality services. |
| The OSI model represents defines administration, interfaces and conventions. It describes clearly which layer provides services. | It does not mention the services, interfaces, and protocols. |
| The protocols of the OSI model are better unseen and can be returned with another appropriate protocol quickly. | The TCP/IP model protocols are not hidden, and we cannot fit a new protocol stack in it. |
| It is difficult as distinguished to TCP/IP. | It is simpler than OSI. |
| It provides both connection and connectionless oriented transmission in the network layer; however, only connection-oriented transmission in the transport layer. | It provides connectionless transmission in the network layer and supports connecting and connectionless-oriented transmission in the transport layer. |
| It uses a horizontal approach. | It uses a vertical approach. |
| The smallest size of the OSI header is 5 bytes. | The smallest size of the TCP/IP header is 20 bytes. |
| Protocols are unknown in the OSI model and are returned while the technology modifies. | In TCP/IP, returning protocol is not difficult. |