OSI (Open Systems Interconnection) Model

The OSI Model (Open Systems Interconnection Model) is **a conceptual framework that divides network communication into seven layers**. Each layer is responsible for specific functions, and it explains the process of data communication step by step. The layers of the OSI Model are as follows:

1. Physical Layer

This layer deals with the **physical medium necessary for data transmission**. It includes cables, electrical signals, and network devices such as hubs and repeaters.

2. Data Link Layer

This layer bundles the data transmitted from the physical layer into **frames and is responsible for error detection and correction**, as well as flow control. **Ethernet and switches** are part of this layer. Using **MAC Addresses**.

3. Network Layer

This layer **handles routing data** to its destination **using IP** addresses. **Routers** and the IP protocol are included in this layer.

4. Transport Layer

This layer **ensures the reliability of data transmission, establishes sessions, and controls data flow**. **TCP and UDP protocols** are representative of this layer.

5. Session Layer

This layer **manages communication sessions**, opening and closing sessions before and after data transmission. It includes synchronization and session management.

6. Presentation Layer

This layer performs functions like **data format conversion**, **encryption, and compression**, preparing the data for use by the application layer.

7. Application Layer

This is the layer that users directly interact with, allowing **application software to use network services**. **HTTP, FTP, and SMTP are examples of protocols in this layer**.

This model is useful for understanding how each layer interacts in real-world networks and helps in diagnosing and solving network issues.