

The OSI (Open Systems Interconnection) model describes seven distinct layers that computer systems use to communicate over a network. The layers are:

1. **Physical Layer:** Handles the physical connection between devices, including cables and switches.
2. **Data Link Layer:** Responsible for node-to-node data transfer and error detection, managing MAC addresses.
3. **Network Layer:** Manages data routing, forwarding, and addressing through IP addresses.
4. **Transport Layer:** Provides end-to-end communication services, ensuring complete data transfer and error recovery.
5. **Session Layer:** Manages connections between computers, establishing and maintaining sessions.
6. **Presentation Layer:** Translates data between the application and network format, handling encryption and compression.
7. **Application Layer:** Serves as the interface between end-user applications and network services, using protocols like HTTP and SMTP.

The OSI model helps in isolating and troubleshooting network issues by dividing communication into these layers. Although the modern Internet relies on the simpler TCP/IP model, the OSI model is still widely used for understanding and visualizing network operations. It offers a universal language for networking, promotes specialization, and allows for the integration of new technologies without disrupting the network structure.