

# OSI & TCPIP Model

## What is OSI Model ?

So, The OSI or Open Systems Interconnection Model is a way to understand how computers communicate with each other over a network. It's like a blueprint that helps us visualize how data is sent and received between devices. Let's understand with an analogy again.

Imagine you want to send a letter to a friend. You write the letter in the application layer, put it in an envelope in the presentation layer, and address it in session layer. Then, you give it to a mail carrier which is the transport layer who takes it to a sorting office in network layer. The sorting office figures out how to get the letter to your friend's neighbourhood to the data link layer and finally, it's delivered to their mailbox at physical layer. The OSI Model breaks down this process into seven layers, each with a specific job:

- Layer 1 or **Physical Layer** : This is the physical connection between devices, like cables or Wi-Fi.
- Layer 2 or **Data Link Layer**: This layer ensures data is delivered between devices on the same network. This is done with the help of MAC Addresses.
- Layer 3 or **Network Layer** : This layer routes data between different networks. It takes help of IP address.
- Layer 4 or **Transport Layer**: This layer manages data flow and error control between devices. This is done with the help of protocols like TCP and UDP.
- Layer 5 or **Session Layer**: This layer establishes and manages connections between applications.
- Layer 6 or **Presentation Layer**: This layer formats data for the application layer. Examples can be picture, videos and document files.
- Layer 7 or **Application Layer**: This layer is where applications like email and web browsers interact with the user.

Each layer communicates with the layers above and below it, ensuring that data is transmitted correctly. The OSI Model helps us understand how these layers work together to enable communication between devices on a network.

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# TCP/IP Model

Though we have already discussed the OSI Model, we should also take a look at the TCP/IP Model. The OSI Model is more like a blueprint than the actual working model. The actual working model that works in the real world is the TCP/IP Model, which is the deduced version of the original OSI Model. Unlike OSI Model, the TCP/IP Model have only 4 layers. These are:

- **Application Layer:** This is where the actual data, like a web page or email, is created. It's like you writing a letter to your friend.
  - **Transport Layer:** This layer ensures the data is delivered completely and in the right order, like a mail carrier delivering your letter to your friend's house.
  - **Internet Layer:** This layer is responsible for addressing and routing the data, like the postal service figuring out where to send your letter based on the address.
  - **Network Access Layer:** This layer handles the physical connection between devices, like the cables or Wi-Fi that allow your computer to connect to the network.
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