

What is the need for standardization for networks?

Standardizing a network means keeping both hardware and software consistent throughout an organization. This strategy means using the same models of PCs, notebooks, and mobile devices as well as same operating systems for the entry type of machine. Though this isn't an issue of conflict or problems between machines.

OSI model

1. Application layer
2. Presentation layer
3. Session layer
4. Transport layer
5. Network layer
6. Data link layer
7. Physical layer

Application layer:

- This layer is closest to the end user.
- Interacts with software applications, for example your web browser (bave, firefox, chrome,etc)
- Http and https are layer 7 protocols
- Functions of layer 7 include → 1. Identifying communication partners  
2. Synchronizing communication

Presentation layer

- Data in the application layer is in “application format”
- It needs to be translated to a different format to send over the network.
- The presentation layers job is to translate between application and network formats
- For example, encryption of data as it is sent and decryption of data as it is received .
- Also translates between different application - layer format.

Session layer

- Controls dialogues (sessions) between communication hosts.
- Establishes, manages, and terminates connections between the local applications (for example, your web browser and the remote application for example, youtube)

Transport layer

- The Transport Layer provides end-to-end communication services for applications.
- It ensures complete data transfer, error recovery, and flow control between hosts.
- This layer segments and reassembles data for efficient transmission and provides reliability with error detection and correction mechanisms.

#### Network layer

- The Network Layer is responsible for data routing, forwarding, and addressing.
- It determines the best physical path for data to reach its destination based on network conditions, the priority of service, and other factors.
- This layer manages logical addressing through IP addresses and handles packet forwarding.

#### Data link layer

- The Data Link Layer is responsible for node-to-node data transfer and error detection and correction.
- It ensures that data is transmitted to the correct device on a local network segment.
- This layer manages MAC ( Media Access control) addresses and is divided into two sublayers: Logical Link Control (LLC) and Media Access Control (MAC).

#### Physical layer

- The Physical Layer is responsible for the physical connection between devices.
- It defines the hardware elements involved in the network, including cables, switches, and other physical components.
- This layer also specifies the electrical, optical, and radio characteristics of the network.