

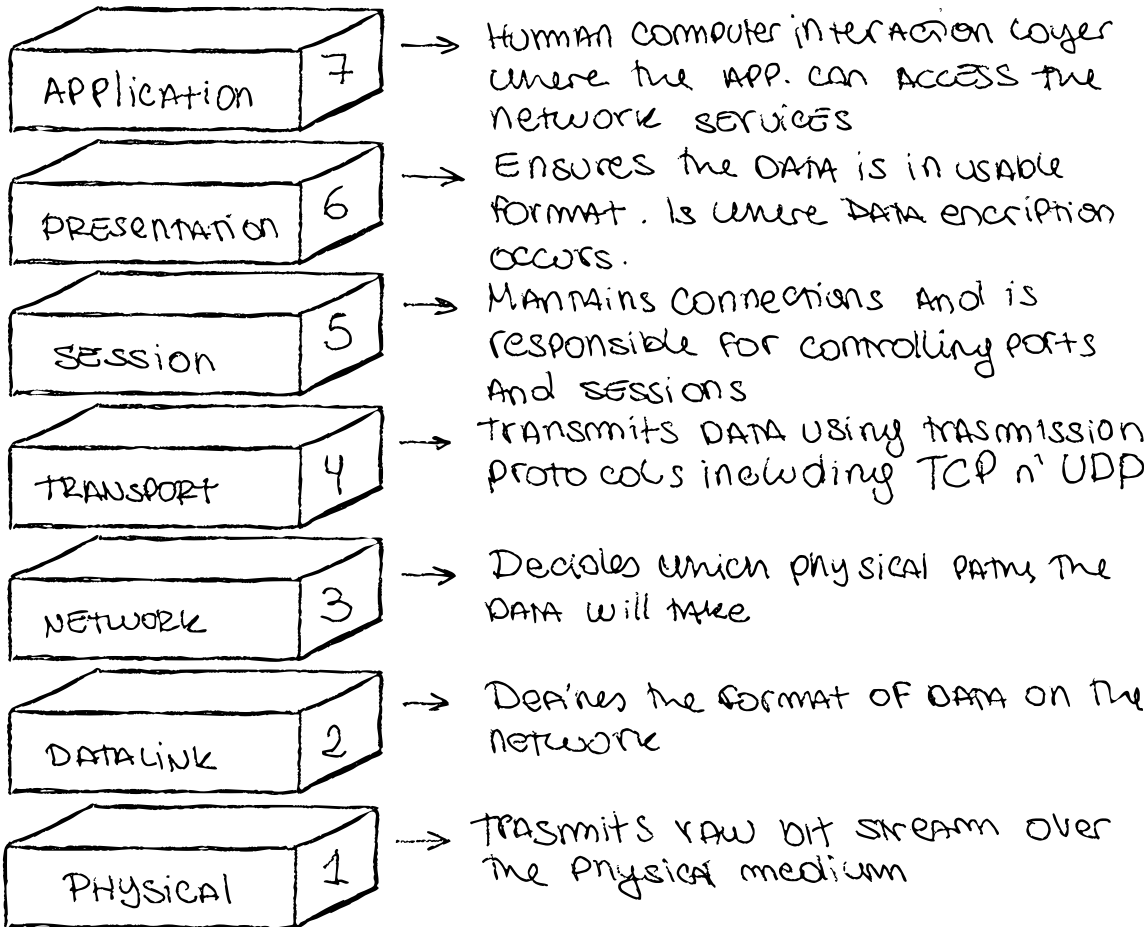
The OSI Model

What is it?

OSI stands for Open System Interconnection, and is a conceptual model created by International Organization for Standardization. (ISO)

It basically establishes a way to communicate two different systems over standard protocols

The OSI model can be seen as a universal language for computer networking. It splits the communication in several layers which at the end of the day defines the model.

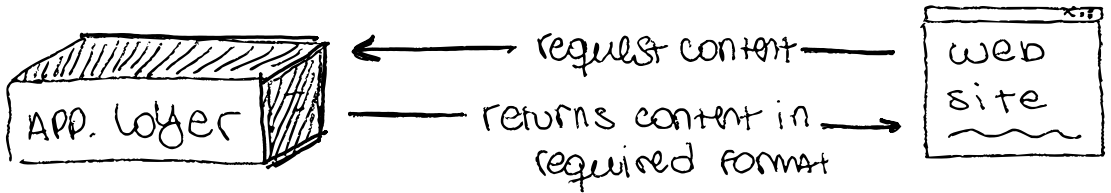


Each layer handles a specific job and communicates with the layer above and below itself.

Although the modern internet does not strictly follow the OSI model (it more closely follows the simpler internet protocol suite), the OSI model is still very useful for troubleshooting network problems.

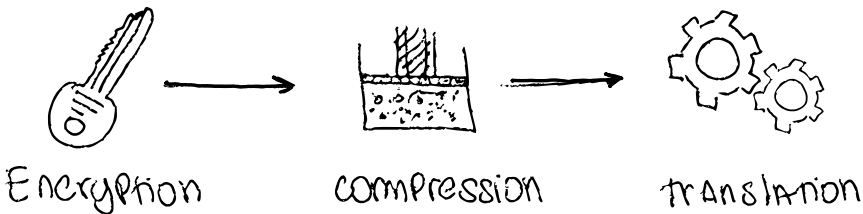
The 7 layers

7. Application layer



The only layer that interacts with the user. Software like browser or email clients interact with the layer 7. Application layer protocols include HTTP and SMTP. Among others like FTP, IRC, SSH, DNS.

6. The Presentation layer.



Layer 6 makes data presentable for apps to consume, responsible for enc., compression and translation of data. Some protocols could be SSL, SSH, IMAP, MPEG, JPEG.

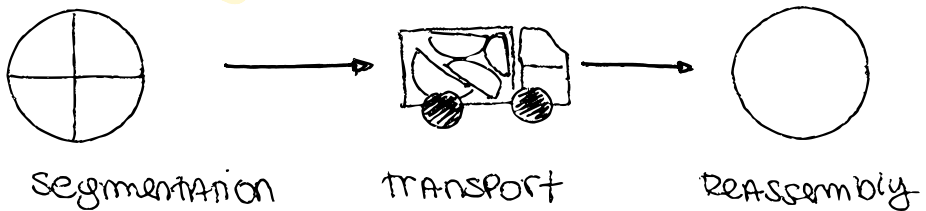
5. Session Layer.



Responsible for opening and closing communication between the two devices. The time spent of an opened session is known by this layer.

This layer also sets checkpoints between data transf. For example, if a 100MB file is being transferred, this session could set a checkpoint every 5MB so in case a disconnect or crash the session can resume from the checkpoint.

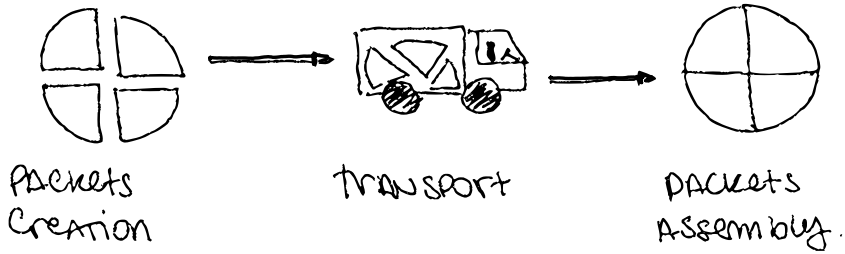
4. Transport Layer



Responsible for the end to end communication. This includes taking data from the session layer breaking it into chunks segments before sending it to layer 3. The transport layer on the receiving device is responsible for reassembling the chunks so the layer 5 can consume it. Some of the protocols managed in this layer are UDP/TCP.

The 4th layer is also responsible for flow control and error control. Flow control determines an optimal speed so the receiver doesn't overwhelm. And error control ensures the complete data is transmitted and performs a req. of retransmission if not.

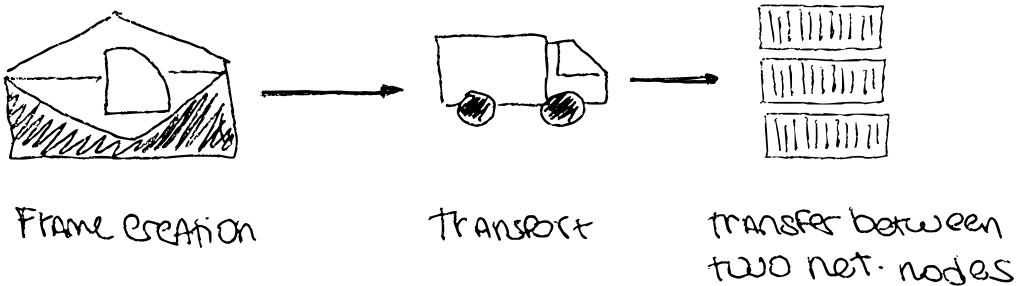
3. The Network Layer.



Responsible for facilitating the data transfer between two networks.

If the two devices are on the same network, then this layer is not necessary. Layer 3 breaks up segments into packets on the receiving device. It also finds the best path (physical) for the data to reach its destination. (this is known as routing)

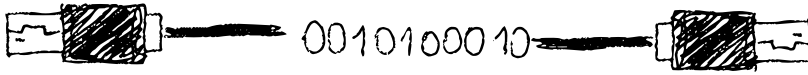
2. Data Link Layer.



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Similar to the 3rd layer, except it transfers data between two devices in the same network. It takes packets and breaks it into smaller pieces called frames. Also in charge of flow and error control in intra-net communication.

1. Physical layer



Sending Cable Bitstream Receiving Cable.

This layer refers to the physical equipment involved in the DATA TRANSFER, such as cables and switches. This is also the layer where DATA is converted into bit stream, which is a string of 1s and 0s. Both physical layers on the communicating devices must agree on a signal convention to distinguish the 1s from the 0s.

