TCP/IP MODEL, Unit1

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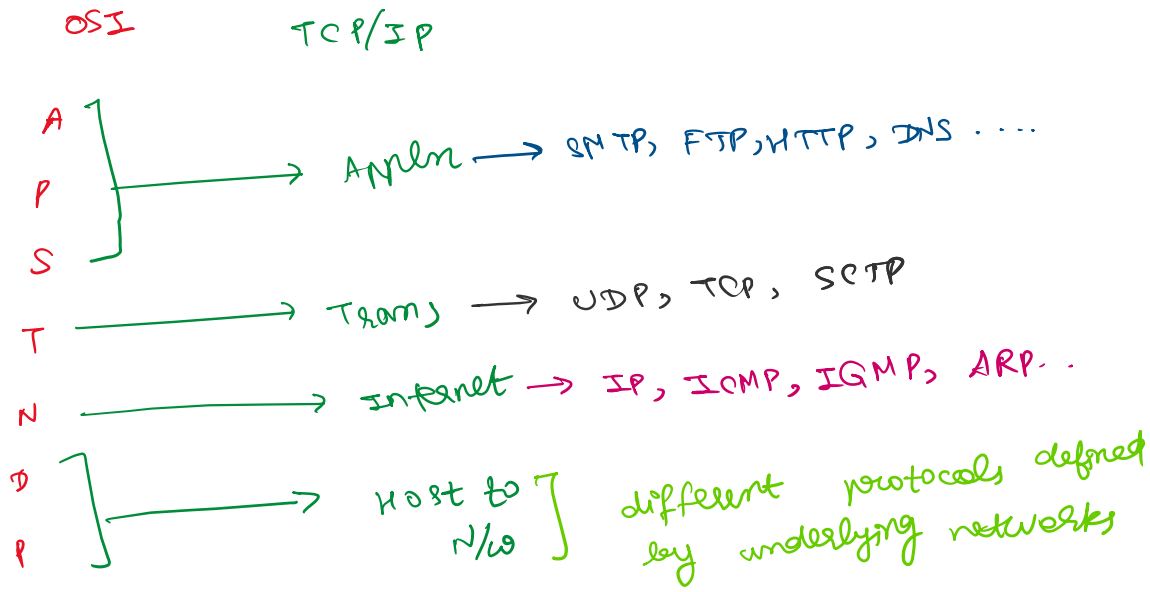
History

Once upon a time, the US DOD (Department of Defence) wanted to interconnect computers from different manufacturers and different types. Then, the OSI Model standardization was very slow – each party in the community had to agree – only then standard would be published. So, DOD could not use the OSI Model, and decided to develop its own model – it developed ARPA (Advanced Research Project Agents), with a set of protocols called TCP/IP. Then DOD forced all its computers and networks to use TCP/IP.



At every layer, the corresponding protocol to be used is mentioned.

The internet layer supports connectionless communication in the network protocol – no connection is established before starting data transmission – so each data packet will contain entire information about the destination. Also, since the packet has the complete destination information, it may take a different path to reach the destination – this leads to delay, or loss, or even loss of packets carrying the same message. It is the job of the final layer to rearrange the packets and correct all errors.

The transport layer is like OSI Model – with UDP and TCP. Also, SCTP (Screen Control Transmission Protocol) is used – it is mainly used for multi-media communication (voice over data).

OSI Model	*TCP/IP Model*
7 strict layers (vertical), more modularity and clear interfaces	4 loose layers (horizontal), less modularity and unclear interfaces
protocol independent	protocol dependent

model -> protocol	protocol -> model
both connection-oriented and connectionless services	only connectionless services
protocols are hidden	protocols are not hidden

In TCP/IP Model, the protocols were developed first and then the model was developed – so it is not possible to remove one protocol and add another protocol of the same type.

In OSI Model, only the reference model was developed, and any kind of protocol can be used.

Guided Media: There exists a physical connectivity between devices, which is provided by coaxial cable or fibre optic cable.

Unguided Media: No physical media exists (transmission medium cannot be seen) – communication is done through air, via radio propagation.