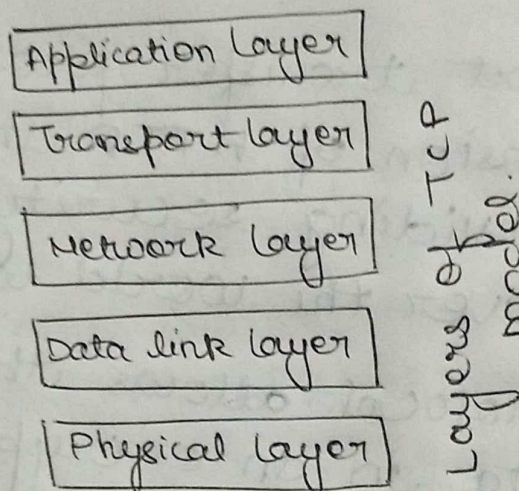


TCP Model

Transmission control protocol / Internet Protocol (TCP/IP) is a practical network model developed by the Department of Defense (DoD) in the 1960s to support communication between different network devices on the internet.

TCP is a set of communication protocol that supports network communication.



① Physical layer

→ Translates message bits into signals for transmission on a medium, i.e. the physical layer is the place where the real communication takes place.

→ Signals are generated depending on the type of media used to connect two devices.

→ It also specifies characteristics like topology (bus, star, hybrid, mesh, ring) line configuration (point-to-point) and transmission modes (simplex, half-duplex, full duplex).

② Data Link Layer (DLL)

→ The DLL is subdivided into 2 layers: MAC (Media Access Control), LLC (Logic Link Control)

→ The MAC layer is responsible for data encapsulation (Framing) of IP packets from the network layer into frames. Framing means DLL adds a header (which contains the MAC address of source and destination) and a trailer (which contains error-checking data) at the beginning and end of IP packets.

→ LLC deals with flow control and error control. Flow control: limits how much data a sender can transfer without overwhelming the receiver. Error control: error in the data transmission can be detected by checking the error detection bits in the trailer of the frame.

③ Network layer

→ The network layer adds IP address/ logical address to the data segments to form IP packets and finds the best possible path for data delivery. IP addresses are addresses allocated to a device to uniquely identify it on a global scale.

→ Some protocols used in Network layer.

→ IP (Internet Protocol): It uses the IP address to determine the best path for the delivery of packets to the destination.

→ ARP (Address Resolution Protocol): Used to find MAC/physical addresses from the IP address.

→ ICMP (Internet Control message Protocol): ICMP is responsible for error reporting.

④ Transport layer

Transport layer is in charge of flow control (controlling the rate at which data is transferred), end-to-end connectivity, and error-free data transmission. Protocols used are:

→ TCP (Transmission Control Protocol)
↳ Connection oriented protocol, which means it requires the formation and termination of connections between devices.

→ UDP (User datagram Protocol)
↳ Connectionless protocol, which means it does not require the establishment and termination of connections between devices.

⑤ Application layer

This is the uppermost layer, which combines the OSI model's session,

presentation and application layers. Users can interact with the application and access network resources through this layer.

Protocols used:

- HTTP
- DNS (Domain Name System)
- SMTP (Simple Mail transfer protocol)
- FTP (File transfer protocol)
- TELNET (Telecommunication Network)