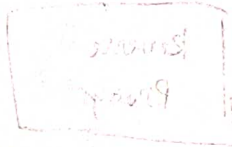


5) TCP v/s UDP Crash Course

TCP and UDP are Layer 4 protocols

Layer 4 is the transport Layer, having ports attached.

A machine has an ip, but on that machine multiple applications might be running. So the port number is used to distinguish between multiple applications running on that machine.



TCP → Transmission Control Protocol



HTTP → Layer 7 protocol internally uses

TCP → (Layer 4) protocol

Databases use TCP all the time, UDP is used in some.

[Pros of TCP]

- * Acknowledgement: TCP attaches some additional info to each packet, like sequence no etc. to make sure the packet has been received.

- * Guaranteed Delivery \rightarrow If the packet is not received. Server will not send an ack. Server will re-request the packet from the sender.

- * (S.S.S) V.Imp Connection based \rightarrow The client and the server, they need to communicate with one-another and for that, they have to form a unique connection between them.

[This is required to hold a stateful connection.]

- * [*** Makes it slow] Congestion Control \rightarrow When the server gets overloaded with packets, the client has the capability to [tcp feature]. It will send data only when the network can handle it essentially.

- * Ordered Packets \rightarrow Internet does not guarantee ordering of packets, and the server sees the sequence and orders them.

(Cons)

- * Larger Packets \rightarrow Because Seq/Ack have to be attached.
- * More Bandwidth \rightarrow more data is needed to send large packets.
- * Slower than udp
- * Stateful \rightarrow (will be explained.)

Cons of browser to client app if a possible connection is
interrupted on the server side. No need to tell the

Server memory: Since TCP is stateful, hence each

connection has to be maintained. This requires some
memory to be allocated on the server.

Hence there is a limit on the no. of tcp connections
the server can have.

UDP \rightarrow (User Datagram Protocol)

CONS

- * No Acknowledgement -
- * No Guaranteed Delivery -
- * No Congestion Control - Traffic or no traffic the user does not care.
- * No ordering of Packets
- * No Security \rightarrow Since the algo is stateless it does not

Maintain a secure connection, hence anyone can

send data to the server.

Pros

- * Smaller packets
- * Less Bandwidth
- * Faster than tcp
- * Stateless → [Discussed in programming Patterns playlist]



Kill the server and bring it back again, and send message from anyone, and it will ~~never~~ serve the request.

No need for establishing secure connection first.

* (No memory Required)