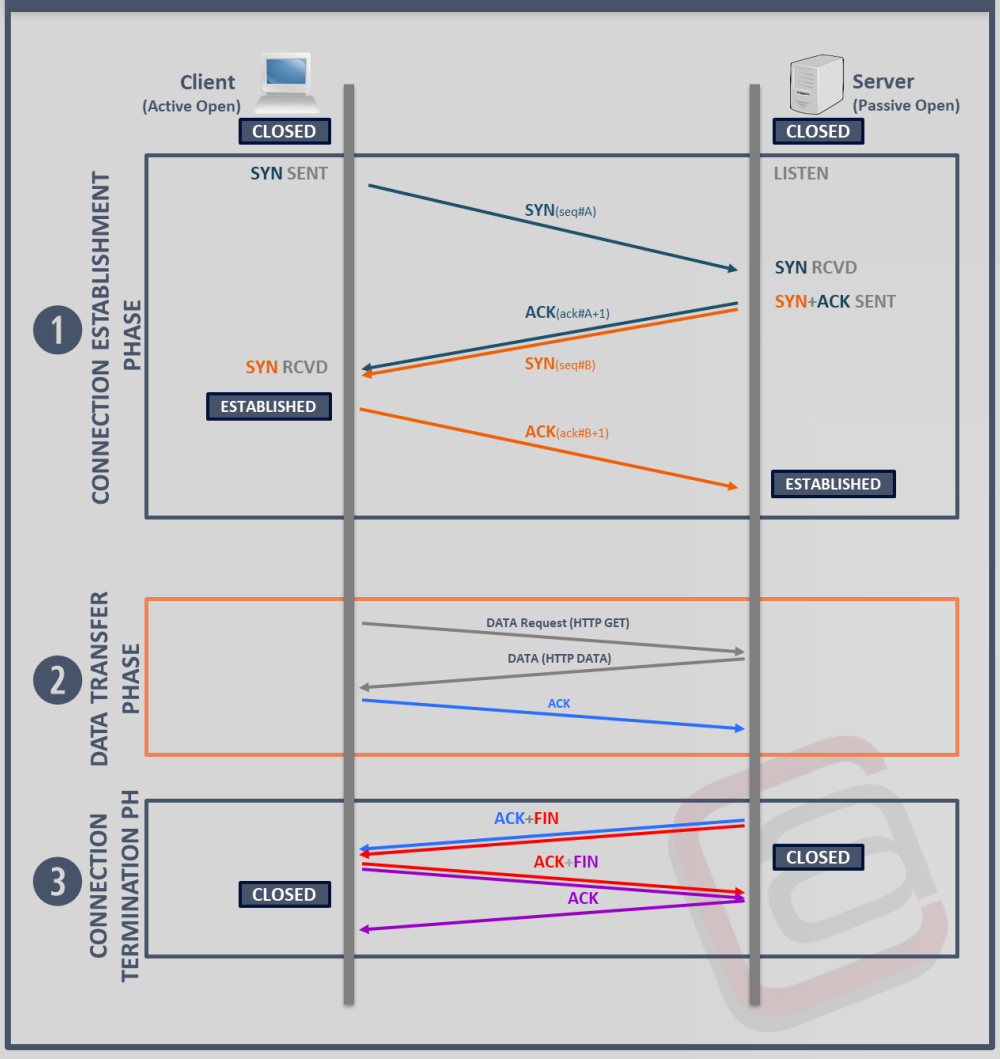
TCP & 3WayHS - Summary Cheat sheet (ATech)

Phase1 3-way handshake is completed & trust relationship is built b/w Sender/Rec

Phase2 The connection is opened and the participant devices start sending data using the agreed sequence and acknowledge numbers that have been agreed in phase1

Phase3 Connection is terminated with FIN flags once all Data transfer is completed

TCP 3-way Handshake Process



TCP Message Types

Message	Description
SYN (Synchronize message)	Used to initiate and establish a connection. It is used to synchronize sequence numbers between devices. **SYN bit =1** in the TCP Header
ACK (Acknowledgement message)	Used to confirm to the other side that it has received the SYN **ACK bit =1** in the TCP Header
SYN-ACK (Synchronize & ACK message)	SYN message from local device & ACK of the previous packet. **SYN bit =1,ACK bit=1** in the TCP Header
FIN (Finish)	Used to terminate a connection. **FIN bit =1** in the TCP Header

TCP CALLS

Active OPEN A device using TCP takes the active role and initiates the connection by sending a TCP SYN message to start the connection. The Device in Active OPEN state is called Client

Passive OPEN Device is waiting for an active OPEN from other. It does not generate any TCP message segment. The Device in Passive OPEN state is called Server

TCP States

State	Description
CLOSED	In-active or Initial state where not TCP activity has begun yet
LISTEN	The device is waiting for contact request
SYN-SENT	The device waits to receive an ACK to the SYN it has sent to the other side
SYN+ACK SENT	The device sends an ACK that it has received the SYN. Also, it sends its own SYN request & waits to receive an ACK from the other side
SYN RCVD	The device has received the SYN for the ACK it sent previously
ESTABLISHED	TCP Handshake has been completed/Established & the device is ready for data transfer now

Transport Layer Ports

Category	Range	Comments
Well Known Ports	0 - 1023	Used by system processes e.g. FTP(21)
Registered Ports	1024 - 49151	For specific services e.g. Port 8080
Private Ports	49152 – 65535	For Private purposes

Important TCP/UDP Ports

Port Number	Protocol	Application
20	TCP	FTP data
21	TCP	FTP control
22	TCP	SSH
23	TCP	Telnet
25	TCP	SMTP
53	UDP, TCP	DNS
67, 68	UDP	DHCP
69	UDP	TFTP
80	TCP	HTTP (WWW)
110	TCP	POP3
161	UDP	SNMP
443	TCP	SSL
16,384–32,767	UDP	RTP-based Voice (VoIP) and Video

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