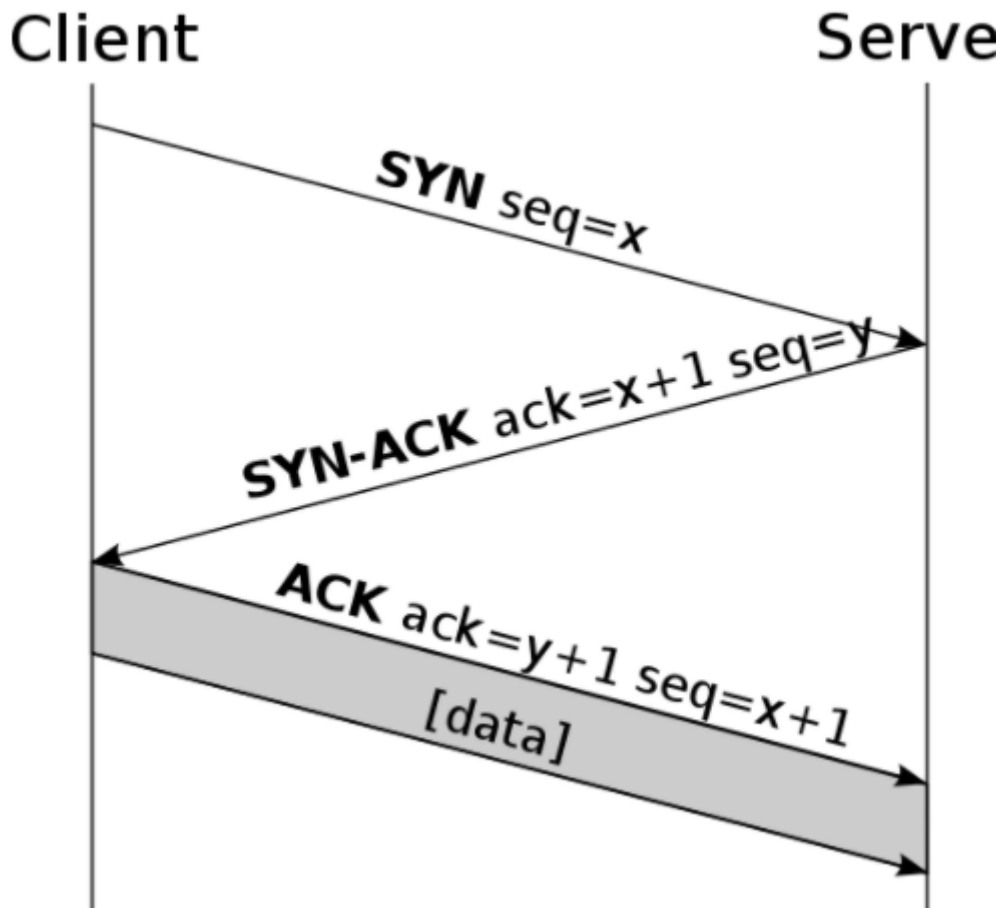# TCP vs UDP

TCP - Transmission Control Protocol

Reliability is TCP is maintained by:

- Acknowledgement Number
- Squencing
- Checksum

Handshake
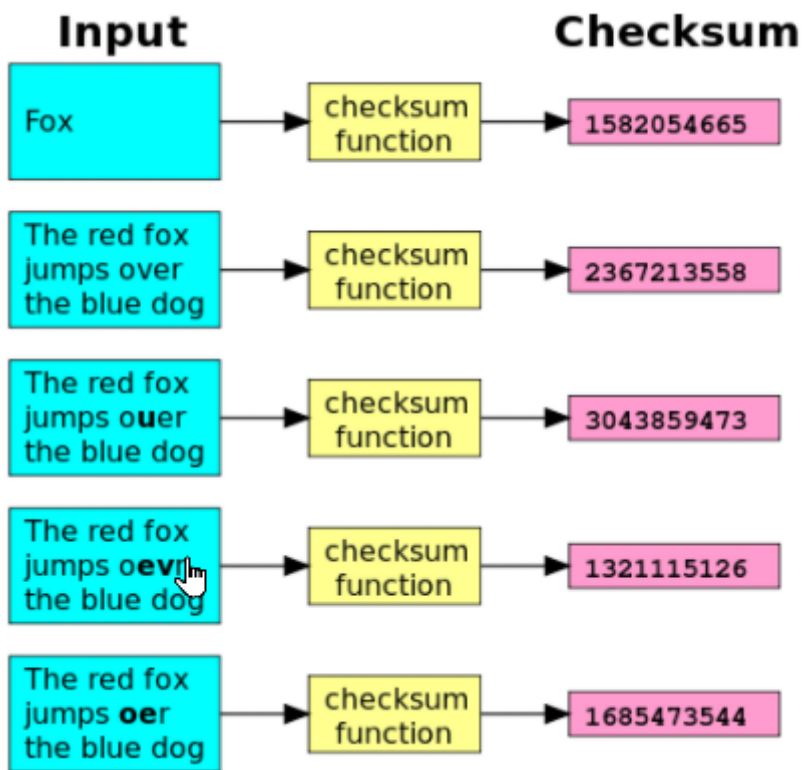
- SYN packet
- SYN / ACK
- ACK

Squence Numbers:

TCP assigns numbers to DATA segments and then sends them to the recieving device. These are then acknowledged.

Checksum

Calculation that runs against data.

Input → Checksum

Input		Checksum
Fox	checksum function	1582054665
The red fox jumps over the blue dog	checksum function	2367213558
The red fox jumps **ou**er the blue dog	checksum function	3043859473
The red fox jumps o**ev**r the blue dog	checksum function	1321115126
The red fox jumps **oe**r the blue dog	checksum function	1685473544

HEADER

Source port		Destination Port	
Sequence number			
Acknowledgment number			
DO	RSV	Flags	Window
Checksum		Urgent pointer	
Options			

UDP User Datagram Protocol

This will keep sending data without caring if the data is being recieved or not.

UDP header format

0	15	16	31
Source port		Destination port	
UDP length		Checksum	

TCP vs UDP

TCP	UDP
• Connected	• Connectionless
• State Memory	• Stateless
• Byte Stream	• Packet/Datagram
• Ordered Data Delivery	• No Sequence Guarantee
• Reliable	• Lossy
• Error Free	• Error Packets Discarded
• Handshake	• No Handshake
• Flow Control	• No Flow Control
• Relatively Slow	• Relatively Fast
• Point to Point	• Supports Multicast
• Security: SSL/TLS	• Security: DTLS