TCP & UDP

The Transmission Control Protocol provides a communication service at an intermediate level between an application program and the Internet Protocol. TCP is used extensively by many applications available by internet, including the World Wide Web (WWW), E-mail, File Transfer Protocol, Secure Shell, peer-to-peer file sharing, and streaming media applications.

Designed in 1980, User Datagram Protocol is a simple message based connectionless service used for real time data transfer such as media, online games and multicasting purposes.

TCP	UDP
Connection-Oriented protocol	Connectionless protocol
Rearranges data packet in the order specified	No inherent order as all packet are independent.
Speed of TCP is slower than UDP	Faster than TCP
There is absolute guarantee that the data transferred remains intact and arrives in the same order in which it was sent.	No guarantee that message or packet will reach at all.
Header size- 20 bytes	8 bytes
SYN, SYN-ACK,ACK	No Handshakes
HTTP,HTTPs,FTP,SMTP,Telnet	DNS,DHCP,TFTP,
TCP is suited for applications that require high reliability, and transmission time is relatively less critical.	UDP is suitable for applications that need fast, efficient transmission, such as games. UDP's stateless nature is also useful for servers that answer small queries from huge numbers of clients.
Data is read as a byte stream, no distinguishing indications are transmitted to signal message (segment) boundaries.	Packets are sent individually and are checked for integrity only if they arrive. Packets have definite boundaries which are honored upon receipt, meaning a read operation at the receiver socket will yield an entire message as it was originally sent.
TCP does error checking and error recovery. Erroneous packets are retransmitted from the source to the destination.	UDP does error checking but simply discards erroneous packets. Error recovery is not attempted.
Acknowledgement segments	No Acknowledgment

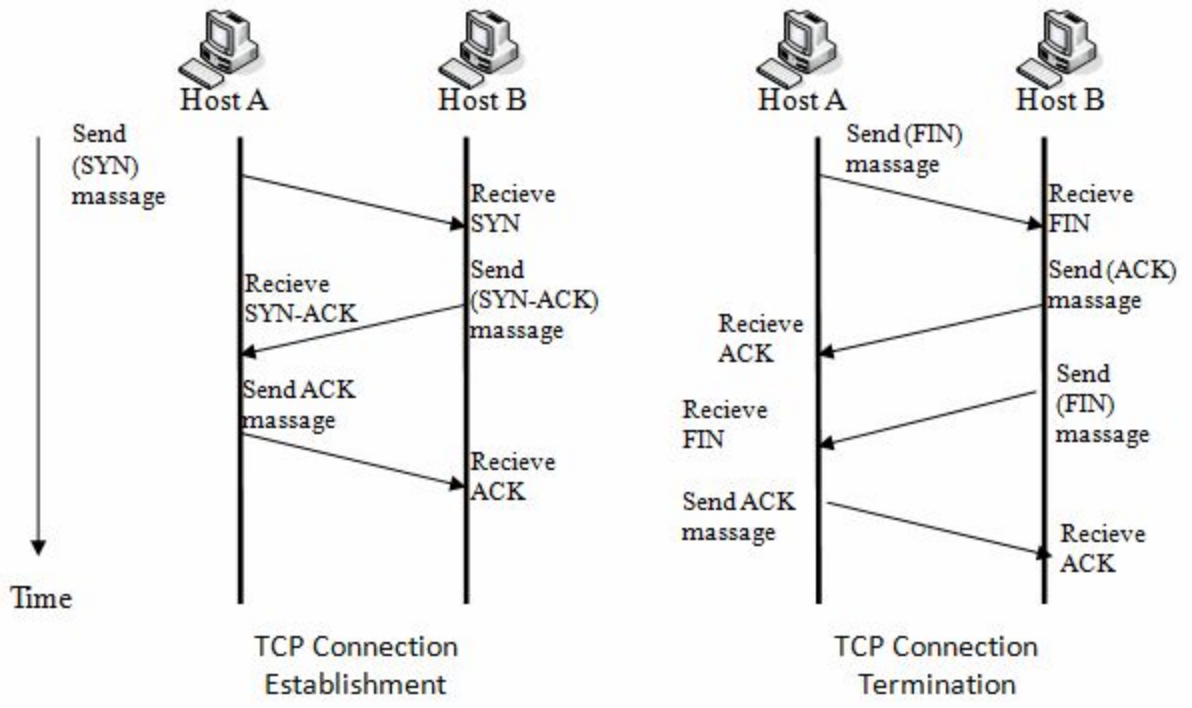

Figure 2.1. TCP session establishment and termination

UDP