Lesson: SCP, SFTP, TCP/IP, and UDP

July 14, 2021

Objective

- Get Familiar with SCP, SFTP, TCP, and UDP

- Understand how Internet works

- Transfer files between host and virtual machine using scp

SCP/SFTP

- Securely copy files between local host and remote host

- scp machine@host:filename .

- Let's try to copy files from your host to new virtual machine

- Try to copy a file/folder using SCP/SFTP

Wireshark

- https://www.wireshark.org/

- Monitor network packets

TCP

- Transmission Control Protocol

- IP address system sending packets of information between source device and target device

- TCP breaks message in to pieces and also does the assembling at the receiver end to make sure entire message is in right order
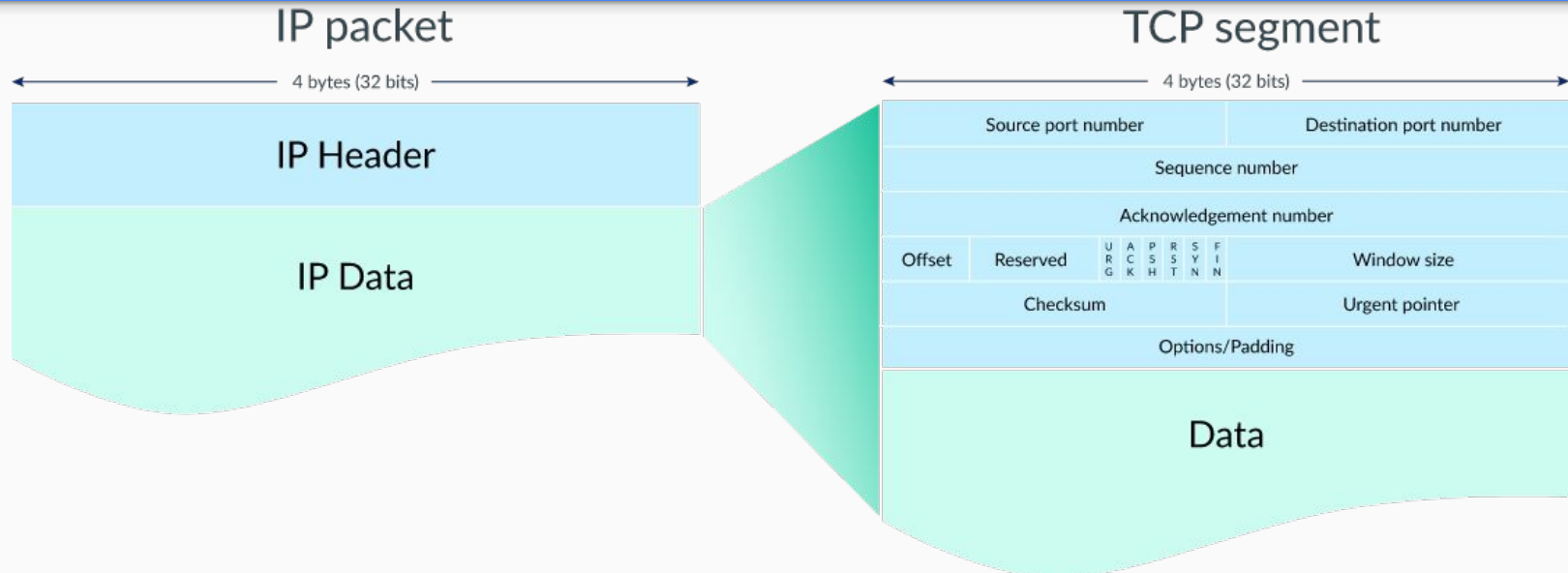
TCP

IP packet | TCP segment

4 bytes (32 bits) | 4 bytes (32 bits)

| IP Header |
| IP Data |

Source port number	Destination port number
Sequence number	
Acknowledgement number	
Offset	Reserved	U R G	A C K	P S H	R S T	S Y N	F I N	Window size
Checksum	Urgent pointer
Options/Padding	
Data	

UDP (User Datagram Protocol)

- UDP is a connectionless protocol

- No reliability

- No Error-recovery

- No Acknowledgement

TCP Packets/UDP Packets
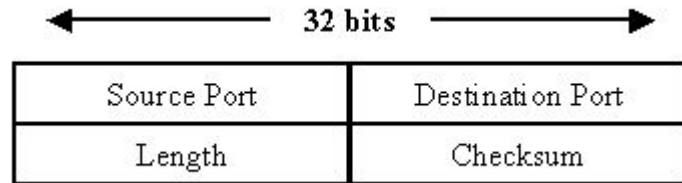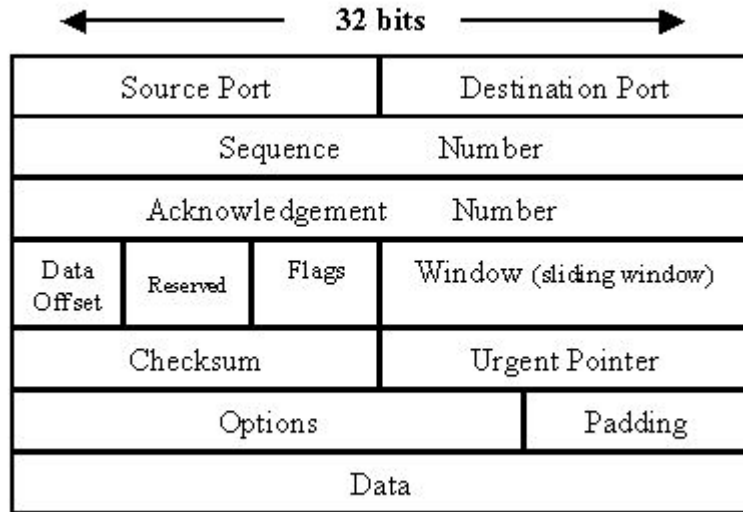
TCP connection establishment (Three way handshake)

Client   Server

SYN | SEQ. Client

SYN-ACK | SEQ. Client + 1 | SEQ. Server

ACK | SEQ. Server + 1 | SEQ. Client + 1
optional: first file

IONOS

SEQ. = Sequence number