Lab Task: 09

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Roll No: 20p-0101

Subject: Computer Networks Lab

Submitted To Respected Ma’am: Hurmat Hidayat

Section: BCS-5B

####786#####

1. What is the source and destination port numbers?

Answer:

Computer IP Address:

The computer IP Address is **192.168.1.122**

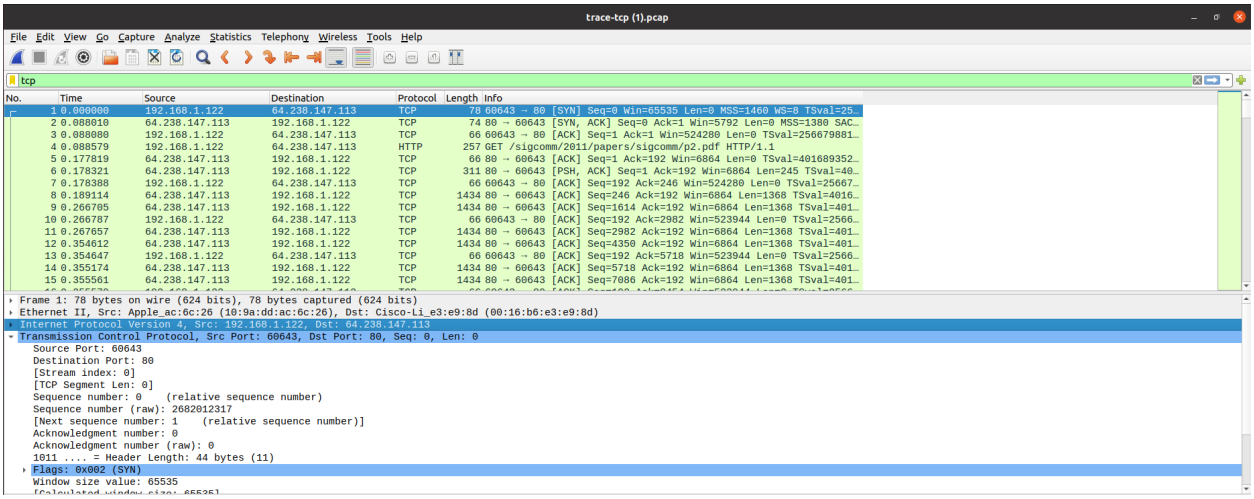
TCP Port:

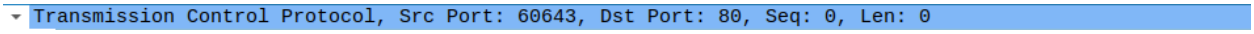
The TCP Port is **60643.**

IP Address Of Destination Computer:

The IP Address of destination computer is **64.238.147.113**

Visual Demonstration:





2. What is the sequence number of the TCP SYN segment that is used to initiate the TCP connection? What is it in the segment that identifies the segment as SYN segment?

Answer:

SYN Flag:

The SYN Flag is set to 1 and it indicates that this segment is a SYN segment.

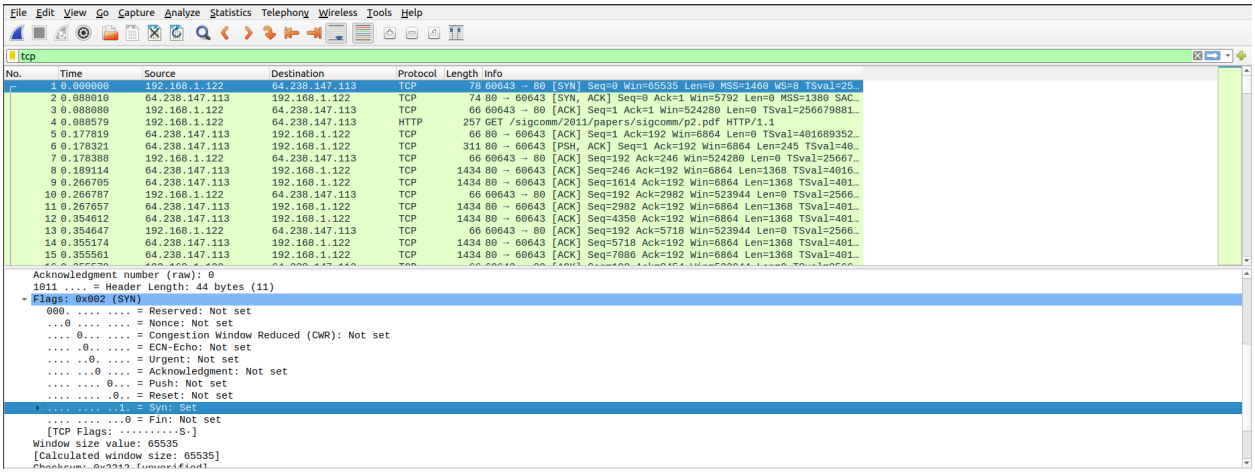
Sequence Number Of TCP SYN Segment:

The sequence number of the TCP SYN segment is used to initiate the TCP connection between the client computer and destination is:

Sequence Number: 64.238.147.113.

The value is “0” in the trace.

Visual Demonstration:



3. What is the sequence number of the SYNACK segment sent by the server…..?

Answer:

Sequence Number From Destination To Client Computer:

Sequence number of the SYNACK segment from destination to the client computer in reply to the SYN has the value of 0 in this trace.

Value Of Acknowledgement Field:

The value of acknowledgement field in the SYNAK segment is 1.

Calculating Acknowledgment Value:

The value of the Acknowledgement field in the SYNACK segment is determined by destination by adding 1 to the initial sequence number of SYN segment from the client

computer.

SYN Segment Initiated By Client Computer:

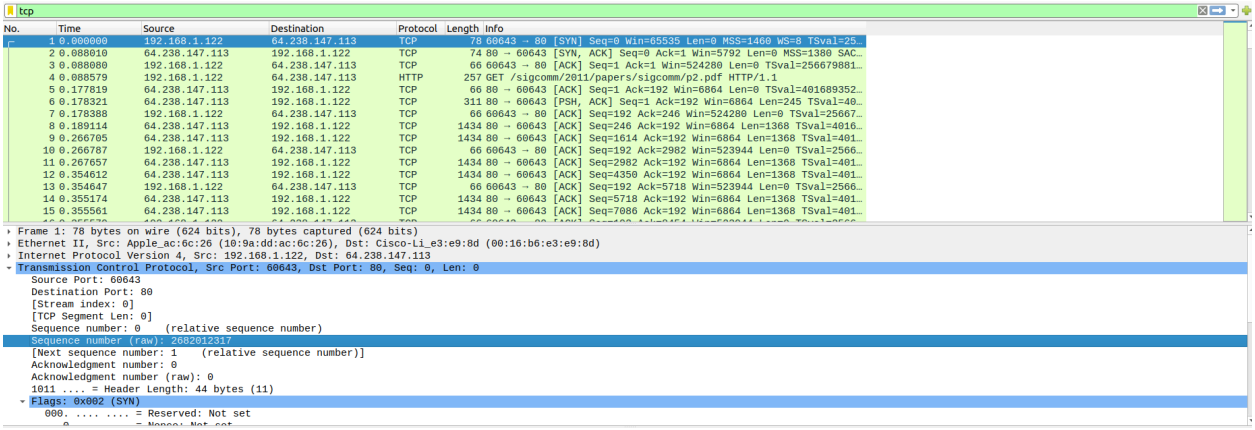
The sequence number of the SYN segment initiated by the client computer is 0.

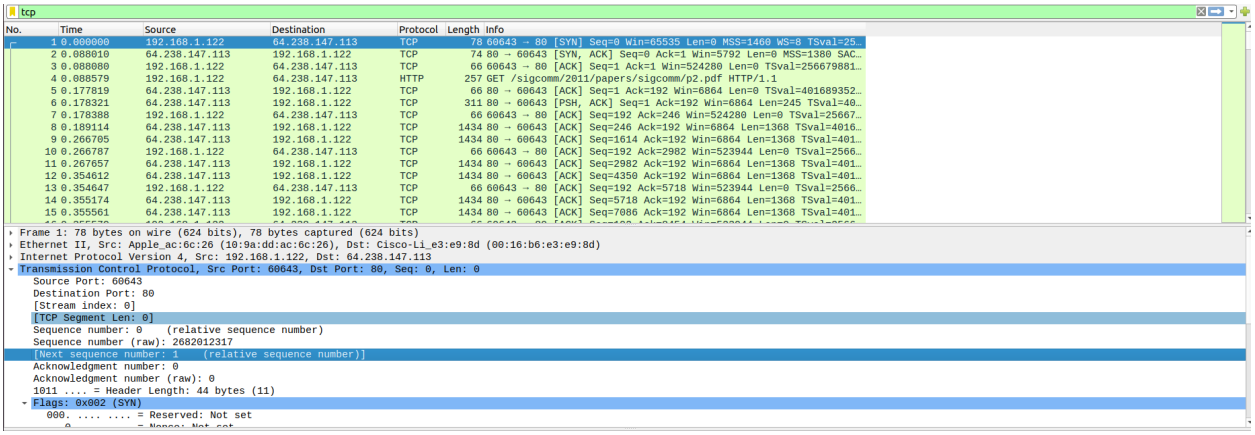
SYN Flag And Acknowledgement Flag In The Segment:

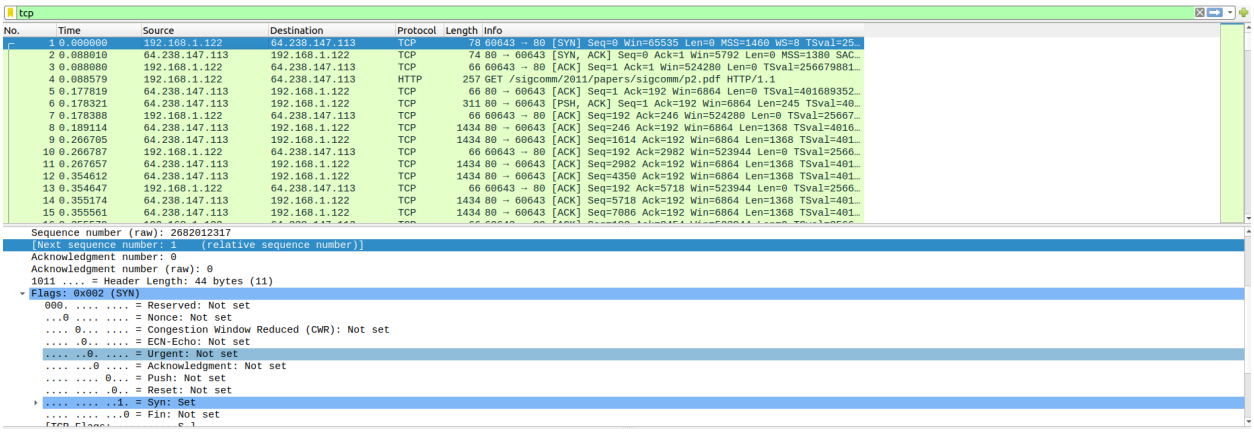
The SYN flag and Acknowledgement flag in the segment are set to 1.

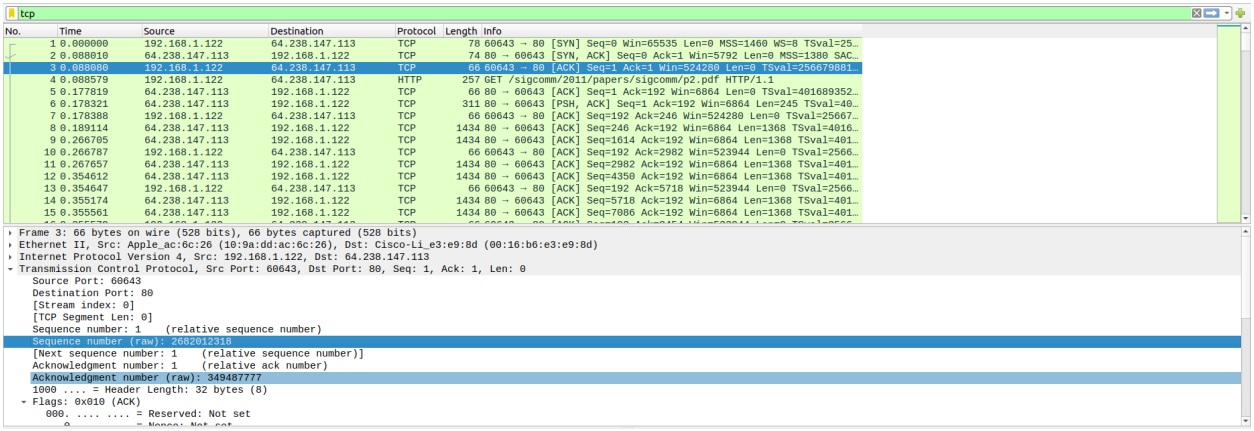
These flag indicate that this segment is a SYNACK Segment.

Visual Demonstration:






tcp
No. Time Source Destination Protocol Length Info
1 0.000000 192.168.1.122 64.238.147.113 TCP 78 60643 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=8 TSval=25…
2 0.088010 64.238.147.113 192.168.1.122 TCP 74 80 → 60643 [SYN, ACK] Seq=0 Ack=1 Win=5792 Len=0 MSS=1380 SAC…
3 0.088080 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=1 Ack=1 Win=524280 Len=0 TSval=256679881…
4 0.088579 192.168.1.122 64.238.147.113 HTTP 257 GET /sigcomm/2011/papers/sigcomm/p2.pdf HTTP/1.1
5 0.177819 64.238.147.113 192.168.1.122 TCP 66 80 → 60643 [ACK] Seq=1 Ack=192 Win=6864 Len=0 TSval=401689352…
6 0.178321 64.238.147.113 192.168.1.122 TCP 311 80 → 60643 [PSH, ACK] Seq=1 Ack=192 Win=6864 Len=245 TSval=40…
7 0.178388 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=192 Ack=246 Win=524280 Len=0 TSval=25667…
8 0.189114 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=246 Ack=192 Win=6864 Len=1368 TSval=4016…
9 0.266705 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=1614 Ack=192 Win=6864 Len=1368 TSval=401…
10 0.266787 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=192 Ack=2982 Win=523944 Len=0 TSval=2566…
11 0.267657 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=2982 Ack=192 Win=6864 Len=1368 TSval=401…
12 0.354612 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=4350 Ack=192 Win=6864 Len=1368 TSval=401…
13 0.354647 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=192 Ack=5718 Win=523944 Len=0 TSval=2566…
14 0.355174 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=5718 Ack=192 Win=6864 Len=1368 TSval=401…
15 0.355561 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=7086 Ack=192 Win=6864 Len=1368 TSval=401…
Sequence number (raw): 2682012317
[Next sequence number: 1 (relative sequence number)]
Acknowledgment number: 0
Acknowledgment number (raw): 0
1011 .... = Header Length: 44 bytes (11)
Flags: 0x002 (SYN)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... .... = Congestion Window Reduced (CWR): Not set
.... .0.. .... = ECN-Echo: Not set
.... ..0. .... = Urgent: Not set
....0 .... = Acknowledgment: Not set
.... 0... = Push: Not set
.... .0.. = Reset: Not set
....1. = Syn: Set
....0 = Fin: Not set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2 0.088010 64.238.147.113 192.168.1.122 TCP 74 80 → 60643 [SYN, ACK] Seq=0 Ack=1 Win=5792 Len=0 MSS=1380 SAC…
3 0.088080 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=1 Ack=1 Win=524280 Len=0 TSval=256679881…
4 0.088579 192.168.1.122 64.238.147.113 HTTP 257 GET /sigcomm/2011/papers/sigcomm/p2.pdf HTTP/1.1
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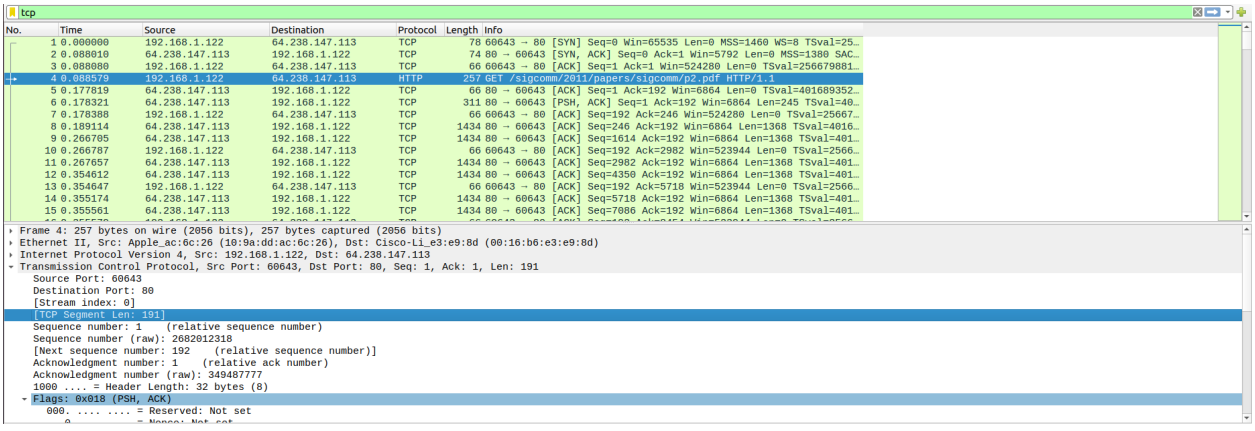
12 0.354612 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=4350 Ack=192 Win=6864 Len=1368 TSval=401…
13 0.354647 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=192 Ack=5718 Win=523944 Len=0 TSval=2566…
14 0.355174 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=5718 Ack=192 Win=6864 Len=1368 TSval=401…
15 0.355561 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=7086 Ack=192 Win=6864 Len=1368 TSval=401…
Frame 3: 66 bytes on wire (528 bits), 66 bytes captured (528 bits)
Ethernet II, Src: Apple_ac:6c:26 (10:9a:dd:ac:6c:26), Dst: Cisco-Li_e3:e9:8d (00:16:b6:e3:e9:8d)
Internet Protocol Version 4, Src: 192.168.1.122, Dst: 64.238.147.113
Transmission Control Protocol, Src Port: 60643, Dst Port: 80, Seq: 1, Ack: 1, Len: 0
Source Port: 60643
Destination Port: 80
[Stream index: 0]
[TCP Segment Len: 0]
Sequence number: 1 (relative sequence number)
Sequence number (raw): 2682012318
[Next sequence number: 1 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
Acknowledgment number (raw): 349487777
1000 .... = Header Length: 32 bytes (8)
Flags: 0x010 (ACK)
000. .... = Reserved: Not set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No. Time Source Destination Protocol Length Info
1 0.000000 192.168.1.122 64.238.147.113 TCP 78 60643 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=8 TSval=25…
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3 0.088080 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=1 Ack=1 Win=524280 Len=0 TSval=256679881…
4 0.088579 192.168.1.122 64.238.147.113 HTTP 257 GET /sigcomm/2011/papers/sigcomm/p2.pdf HTTP/1.1
5 0.177819 64.238.147.113 192.168.1.122 TCP 66 80 → 60643 [ACK] Seq=1 Ack=192 Win=6864 Len=0 TSval=401689352…
6 0.178321 64.238.147.113 192.168.1.122 TCP 311 80 → 60643 [PSH, ACK] Seq=1 Ack=192 Win=6864 Len=245 TSval=40…
7 0.178388 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=192 Ack=246 Win=524280 Len=0 TSval=25667…
8 0.189114 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=246 Ack=192 Win=6864 Len=1368 TSval=4016…
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11 0.267657 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=2982 Ack=192 Win=6864 Len=1368 TSval=401…
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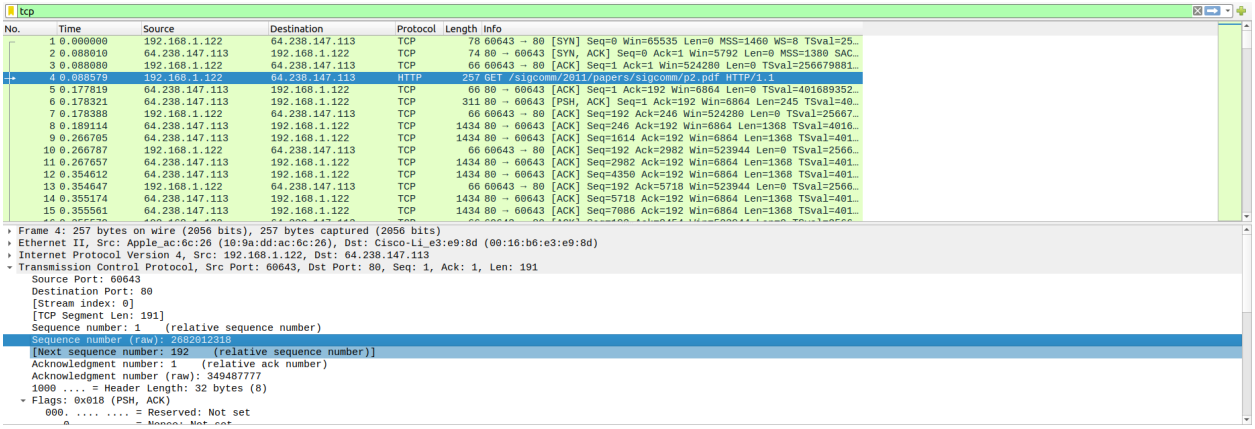
15 0.355561 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=7086 Ack=192 Win=6864 Len=1368 TSval=401…
Frame 4: 257 bytes on wire (2056 bits), 257 bytes captured (2056 bits)
Ethernet II, Src: Apple_ac:6c:26 (10:9a:dd:ac:6c:26), Dst: Cisco-Li_e3:e9:8d (00:16:b6:e3:e9:8d)
Internet Protocol Version 4, Src: 192.168.1.122, Dst: 64.238.147.113
Transmission Control Protocol, Src Port: 60643, Dst Port: 80, Seq: 1, Ack: 1, Len: 191
Source Port: 60643
Destination Port: 80
[Stream index: 0]
[TCP Segment Len: 191]
Sequence number: 1 (relative sequence number)
Sequence number (raw): 2682012318
[Next sequence number: 192 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
Acknowledgment number (raw): 349487777
1000 .... = Header Length: 32 bytes (8)
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set

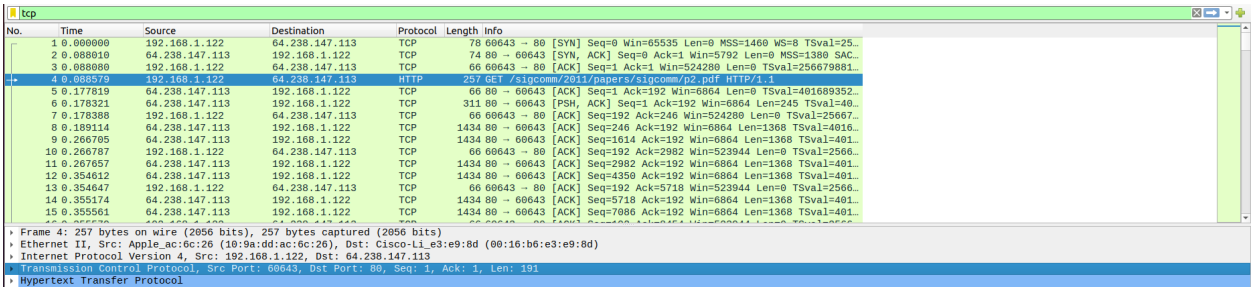


4. What is the length of each of the first six TCP segments?

Answer:

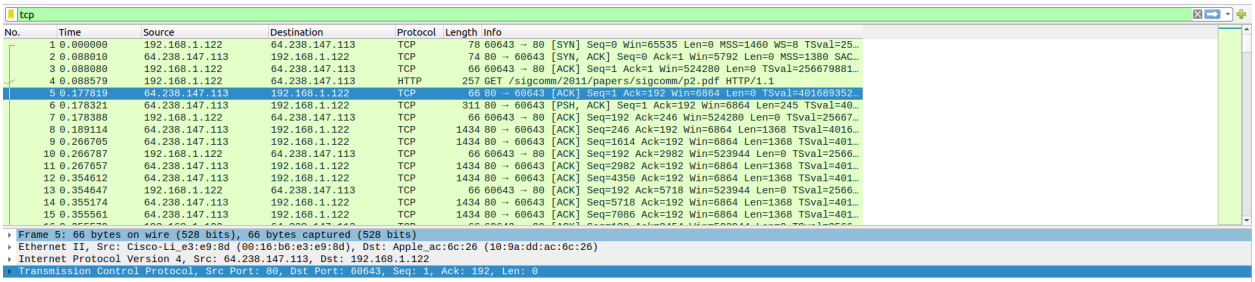
Length Of The First TCP Segment:

The length of the first TCP segment is **“191”.**



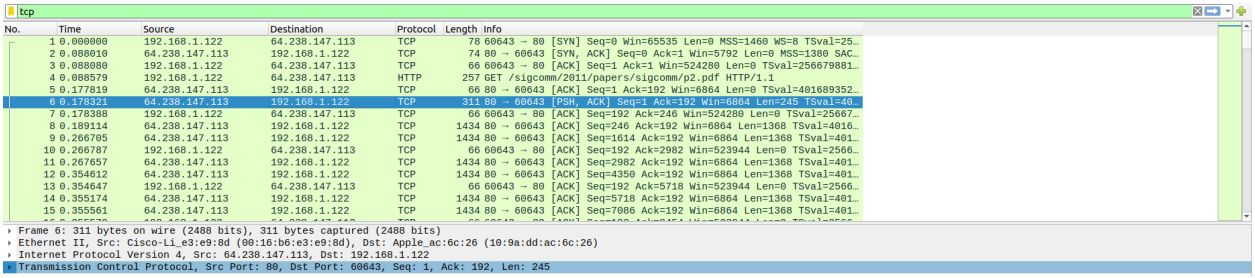
Length Of The Second TCP Segment:

The length of the second TCP segment is **“0”.**



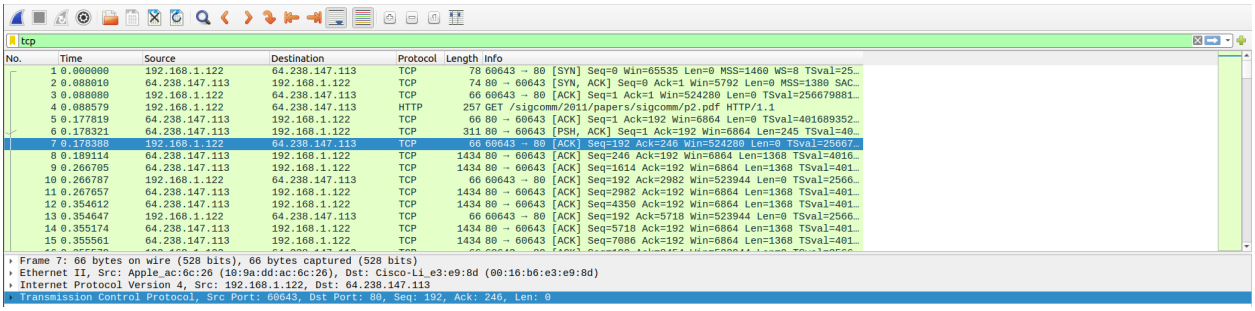
Length Of The Third TCP Segment:

The length of the third TCP segment is **“245”.**



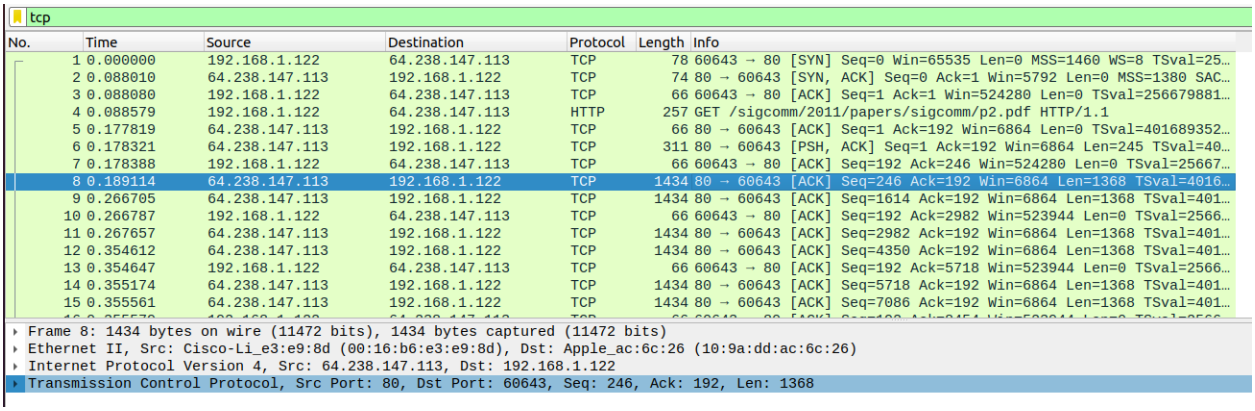
Length Of The Fourth TCP Segment:

The length of the fourth TCP Segment is **“0”.**



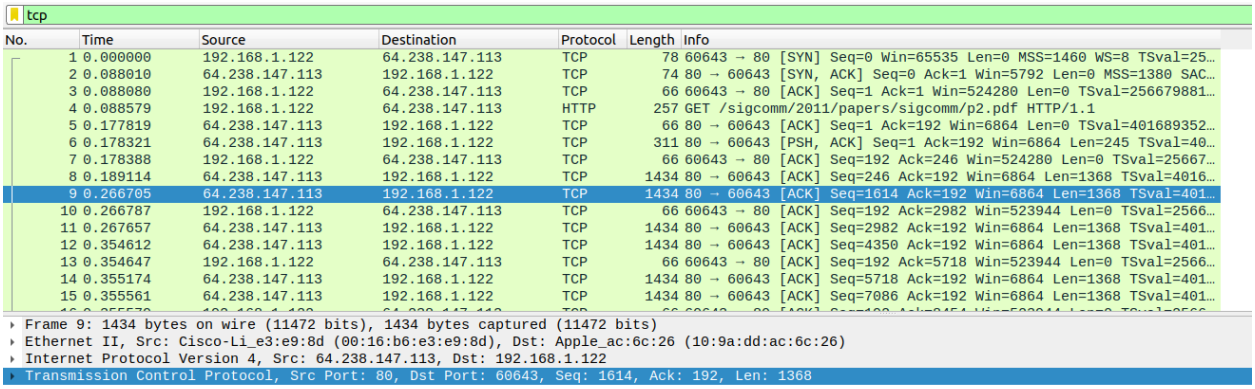
Length Of The Fifth TCP Segment:

The length of the fifth TCP Segment is **“1368”**.



Length Of The Sixth TCP Segment:

The length of the sixth TCP segment is **“1368”.**



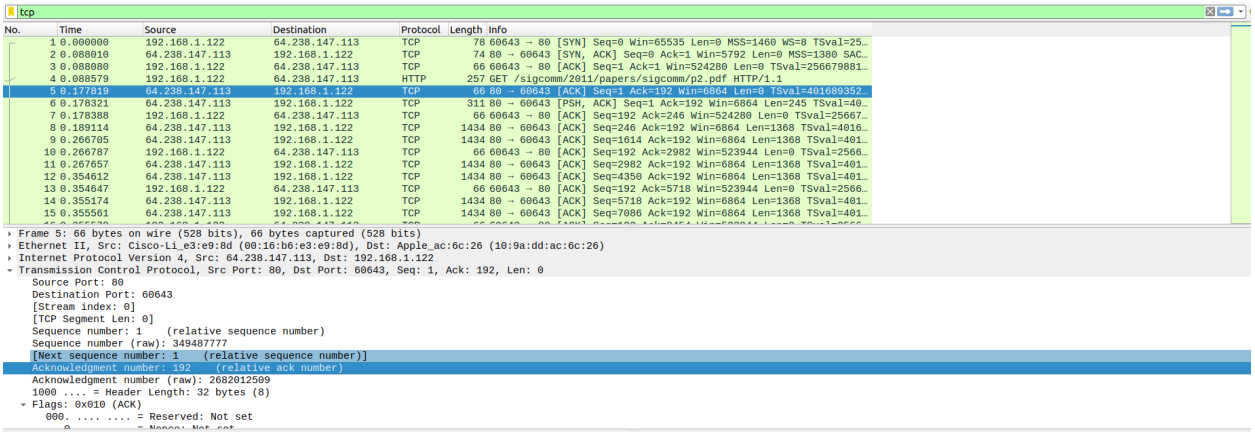
5. Are there any retransmitted segments in the trace file? What did you check for (in the trace) in order to answer this question?

Answer:

In the packet number 5 and 6 the acknowledgment number is same so we can determine through this data that there was retransmission in the trace file.

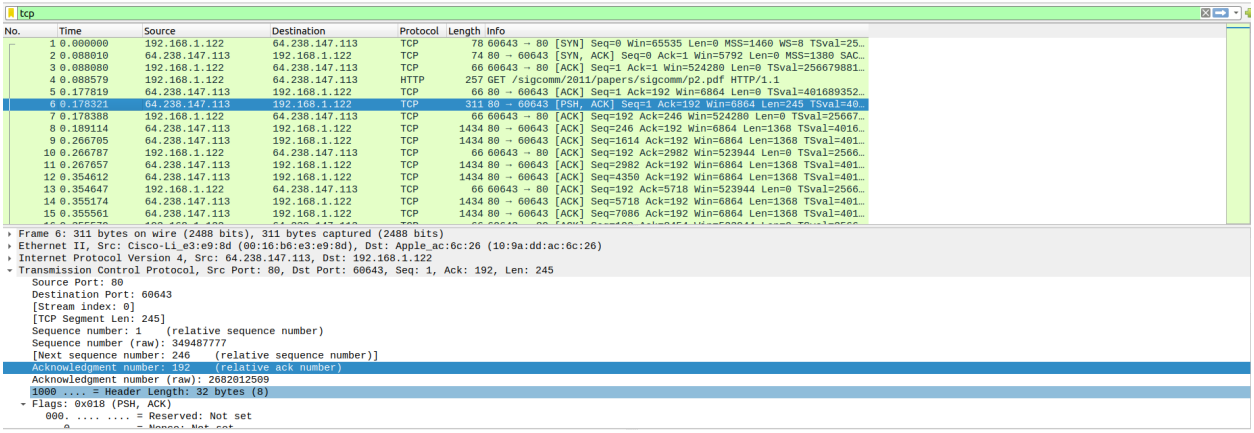
Packet 5:

For packet 5 visual demonstration is below,



Packet 6:

For packet 6 visual demonstration is below,


tcp
No. Time Source Destination Protocol Length Info
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3 0.088080 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=1 Ack=1 Win=524280 Len=0 TSval=256679881…
4 0.088579 192.168.1.122 64.238.147.113 HTTP 257 GET /sigcomm/2011/papers/sigcomm/p2.pdf HTTP/1.1
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7 0.178388 192.168.1.122 64.238.147.113 TCP 66 60643 → 80 [ACK] Seq=192 Ack=246 Win=524280 Len=0 TSval=25667…
8 0.189114 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=246 Ack=192 Win=6864 Len=1368 TSval=4016…
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15 0.355561 64.238.147.113 192.168.1.122 TCP 1434 80 → 60643 [ACK] Seq=7086 Ack=192 Win=6864 Len=1368 TSval=401…
Frame 6: 311 bytes on wire (2488 bits), 311 bytes captured (2488 bits)
Ethernet II, Src: Cisco-Li_e3:e9:8d (00:16:b6:e3:e9:8d), Dst: Apple_ac:6c:26 (10:9a:dd:ac:6c:26)
Internet Protocol Version 4, Src: 64.238.147.113, Dst: 192.168.1.122
Transmission Control Protocol, Src Port: 80, Dst Port: 60643, Seq: 1, Ack: 192, Len: 245
Source Port: 80
Destination Port: 60643
[Stream index: 0]
[TCP Segment Len: 245]
Sequence number: 1 (relative sequence number)
Sequence number (raw): 349487777
[Next sequence number: 246 (relative sequence number)]
Acknowledgment number: 192 (relative ack number)
Acknowledgment number (raw): 2682012509
1000 .... = Header Length: 32 bytes (8)
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set

END…..