

Lab04

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Exercise 1:

Q1. IP address of gaia.cs.umass.edu is 128.119.245.12

Client IP address is 192.168.1.102

Port 80 is used to send and receiving TCP segment.

Port 1161 is used by client computer.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.1.102	128.119.245.12	TCP	62	1161->80 [SYN] Seq=232129012 Win=16384 Len=0 MSS=1460 SACK_PERM=1
2	0.023172	128.119.245.12	192.168.1.102	TCP	62	80->1161 [SYN, ACK] Seq=883061785 Ack=232129013 Win=5840 Len=0 MSS=1460 SACK_PERM=1
3	0.023265	192.168.1.102	128.119.245.12	TCP	54	1161->80 [ACK] Seq=232129013 Ack=883061786 Win=17520 Len=0
4	0.026477	192.168.1.102	128.119.245.12	TCP	619	[TCP segment of a reassembled PDU]
5	0.041737	192.168.1.102	128.119.245.12	TCP	1514	[TCP segment of a reassembled PDU]
6	0.053937	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232129578 Win=6780 Len=0
7	0.054026	192.168.1.102	128.119.245.12	TCP	1514	[TCP segment of a reassembled PDU]
8	0.054690	192.168.1.102	128.119.245.12	TCP	1514	[TCP segment of a reassembled PDU]
9	0.077294	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232131038 Win=8760 Len=0
10	0.077405	192.168.1.102	128.119.245.12	TCP	1514	[TCP segment of a reassembled PDU]
11	0.078157	192.168.1.102	128.119.245.12	TCP	1514	[TCP segment of a reassembled PDU]
12	0.124085	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232132498 Win=11680 Len=0
13	0.124185	192.168.1.102	128.119.245.12	TCP	1201	[TCP segment of a reassembled PDU]
14	0.169118	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232133958 Win=14600 Len=0
15	0.213200	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232135418 Win=17520 Len=0
▶ Frame 3: 54 bytes on wire (432 bits), 54 bytes captured (432 bits)						
▶ Ethernet II, Src: Actionte 8a:70:1a (00:20:e0:8a:70:1a), Dst: LinksysG da:af:73 (00:06:25:da:af:73)						
▶ Internet Protocol Version 4, Src: 192.168.1.102 (192.168.1.102), Dst: 128.119.245.12 (128.119.245.12)						
▼ Transmission Control Protocol, Src Port: 1161 (1161), Dst Port: 80 (80), Seq: 232129013, Ack: 883061786, Len: 0						
Source Port: 1161 (1161)						
Destination Port: 80 (80)						
[Stream index: 0]						
[TCP Segment Len: 0]						
Sequence number: 232129013						
Acknowledgment number: 883061786						
Header Length: 20 bytes						
▶ ... 0000 0001 0000 = Flags: 0x010 (ACK)						
Window size value: 17520						
[Calculated window size: 17520]						
[Window size scaling factor: -2 (no window scaling used)]						
▶ Checksum: 0x7671 [validation disabled]						
Urgent pointer: 0						
▶ [SEQ/ACK analysis]						

Q2. Sequence number is 232293053

197	5.202024	192.168.1.102	128.119.245.12	TCP	326	[TCP segment of a reassembled PDU]
198	5.297257	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232280401 Win=62780 Len=0
199	5.297341	192.168.1.102	128.119.245.12	HTTP	104	POST /etherlab-labs/lab3-1-reply.htm HTTP/1.1 (text/plain)
200	5.389471	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232291321 Win=62780 Len=0
201	5.447807	128.119.245.12	192.168.1.102	TCP	60	80->1161 [ACK] Seq=883061786 Ack=232293053 Win=62780 Len=0
▶ Frame 199: 104 bytes on wire (832 bits), 104 bytes captured (832 bits)						
▶ Ethernet II, Src: Actionte 8a:70:1a (00:20:e0:8a:70:1a), Dst: LinksysG da:af:73 (00:06:25:da:af:73)						
▶ Internet Protocol Version 4, Src: 192.168.1.102 (192.168.1.102), Dst: 128.119.245.12 (128.119.245.12)						
▶ Transmission Control Protocol, Src Port: 1161 (1161), Dst Port: 80 (80), Seq: 232293053, Ack: 883061786, Len: 50						
▶ [122 Reassembled TCP Segments (164090 bytes): #4(565), #5(1460), #7(1460), #8(1460), #10(1460), #11(1460), #13(1147), #18(1460), #19(1460), #20(1460), #21(1460), #22(1460), #23(892), #30(1460), #31(1460), #32						
▶ Hypertext Transfer Protocol						
▶ MIME Multipart Media Encapsulation, Type: multipart/form-data, Boundary: "-----265001916915724"						

Q3.

Sequence	Length	Sample RTT	Estimated RTT
232129013	565	0.02746	0.02746
232129578	1460	0.035557	0.0284742
232131038	1460	0.070059	0.03367
232132498	1460	0.114428	0.043765
232133958	1460	0.139894	0.055781
232135418	1460	0.189645	0.072514

Q4. The first one is 545 bytes. Others are 1440 bytes.

Q5. The minimum advertised window is 5840 and this is advertised in the SYNACK segment. The receiver window does not seem to throttle the sender.

Q6. There are no retransmitted segments in the trace file. Repeat entry, it will appear if a packet is retransmitted.

Exercise 2

Q1. Seq 295

Q2. Seq 296 is server reply SYNACK. Acknowledgement field: 2818463619

Q3. Seq 297 is the sequence sent back from client to SYNACK. Acknowledgement field: 1274095791.
No

Q4. Both client and server close the connection.

Check segments transmission can help to find this. First it is not a 3 or 4 segment closed. And seq 304 and seq 305 indicate that client sends the fin flag while server sends the flag same time. It should be a simultaneous close.

Q5. From client to server: $2818463652 - 2818463619 = 33$ bytes

From server to client: $1247095831 - 1247095791 = 40$ bytes