

1.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp && ip.addr == 130.113.68.10

No.	Time	Source	Destination	Protocol	Length	Info
144	1.956964	172.17.54.168	130.113.68.10	TCP	378	50283 → 80 [PSH, ACK] Seq=131788 Ack=1 Win=65536 Len=324 [TCP segment of a reassembled PDU]
145	1.957440	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=132112 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
146	1.957453	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=133572 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
147	1.957459	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=135032 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
148	1.957473	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=136492 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
149	1.957483	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=137952 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
150	1.957492	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=139412 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
151	1.957500	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=140872 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
152	1.957508	172.17.54.168	130.113.68.10	HTTP	1436	POST /~rzheng/course/CAS4C03W17/Labs/TCP/lab3-1-reply.html HTTP/1.1 (text/plain)
153	1.961749	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=86404 Win=64128 Len=0
154	1.962793	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=89324 Win=64128 Len=0
155	1.962794	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=92244 Win=64128 Len=0
156	1.962795	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=95164 Win=64128 Len=0
157	1.962795	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=98084 Win=64128 Len=0
158	1.962796	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=101004 Win=64128 Len=0

> Frame 152: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

> Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 142332, Ack: 1, Len: 1382

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1382]

Sequence number: 142332 (relative sequence number)

[Next sequence number: 143714 (relative sequence number)]

Acknowledgment number: 1 (relative ack number)

0101 = Header Length: 20 bytes (5)

> Flags: 0x018 (PSH, ACK)

Window size value: 256

0000 00 08 e3 ff fd 9c 60 36 dd 8d ee ba 08 00 45 006.....E.

0010 05 8e 5c 52 40 00 80 06 ef e2 ac 11 36 a8 82 71 ..\R@...6..q

0020 44 0a c4 6b 00 50 37 21 36 9b d8 12 93 07 50 18 D..k.P! 6.....P.

Frame (1436 bytes) Reassembled TCP (143713 bytes)

wireshark_05EEFA6F-3 762A3F92DF_20180307210008_a09604

Packets: 185 · Displayed: 179 (96.8%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 9:06 PM
US 2018-03-07

2.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp && ip.addr == 130.113.68.10

No.	Time	Source	Destination	Protocol	Length	Info
144	1.956964	172.17.54.168	130.113.68.10	TCP	378	50283 → 80 [PSH, ACK] Seq=131788 Ack=1 Win=65536 Len=324 [TCP segment of a reassembled PDU]
145	1.957440	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=132112 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
146	1.957453	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=133572 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
147	1.957459	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=135032 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
148	1.957473	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=136492 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
149	1.957483	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=137952 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
150	1.957492	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=139412 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
151	1.957500	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=140872 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
152	1.957508	172.17.54.168	130.113.68.10	HTTP	1436	POST /~rzheng/course/CAS4C03W17/Labs/TCP/lab3-1-reply.html HTTP/1.1 (text/plain)
153	1.961749	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=86404 Win=64128 Len=0
154	1.962793	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=89324 Win=64128 Len=0
155	1.962794	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=92244 Win=64128 Len=0
156	1.962795	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=95164 Win=64128 Len=0
157	1.962795	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=98084 Win=64128 Len=0
158	1.962796	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=101004 Win=64128 Len=0

> Frame 152: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

> Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 142332, Ack: 1, Len: 1382

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1382]

Sequence number: 142332 (relative sequence number)

[Next sequence number: 143714 (relative sequence number)]

Acknowledgment number: 1 (relative ack number)

0101 = Header Length: 20 bytes (5)

> Flags: 0x018 (PSH, ACK)

Window size value: 256

0000 00 08 e3 ff fd 9c 60 36 dd 8d ee ba 08 00 45 00`6.....E.

0010 05 0e 5c 52 40 00 06 ef e2 ac 11 36 a8 82 71 ..\R@... ..6..q

0020 44 0a c4 6b 00 50 37 21 36 9b d8 12 93 07 50 18 D..k.P! 6.....P.

Frame (1436 bytes) Reassembled TCP (143713 bytes)

wireshark_05EEFA6F-3 762A3F92FDF_20180307210008_a09604

Packets: 185 · Displayed: 179 (96.8%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 9:06 PM 2018-03-07

3.

The image shows a Wireshark packet capture window titled "Wi-Fi". The main pane displays a list of network packets. Packet 9 is selected, showing a TCP SYN packet from 172.17.54.168 to 130.113.68.10. The packet details pane shows the following information:

- Frame 9: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0
- Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)
- Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10
- Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 0, Len: 0
 - Source Port: 50283
 - Destination Port: 80
 - [Stream index: 3]
 - [TCP Segment Len: 0]
 - Sequence number: 0 (relative sequence number)
 - Acknowledgment number: 0
 - 1000 = Header Length: 32 bytes (8)
 - Flags: 0x002 (SYN)
 - 000. = Reserved: Not set

The packet bytes pane shows the raw data in hexadecimal and ASCII. The sequence number 0 is highlighted in the packet details pane.

The Sequence number is 0.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
2	0.003262	172.217.1.10	172.17.54.168	TCP	54	443 → 50265 [RST] Seq=1 Win=0 Len=0
3	1.927720	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [FIN, ACK] Seq=1 Ack=1 Win=256 Len=0
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

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
 >0...1. = Syn: Set
0...0 = Fin: Not set
 [TCP Flags:S]
 Window size value: 64240
 [Calculated window size: 64240]

0000 00 08 e3 ff fd 9c 60 36 dd 8d ee ba 08 00 45 006E.
 0010 00 34 5b ec 40 00 80 06 f5 a2 ac 11 36 a8 82 71 .4[.0... ..6..q
 0020 44 0a c4 6b 00 50 37 1f 0a 9f 00 00 00 00 02 D..k.P7.
 0030 fa f0 c4 70 00 00 02 04 05 b4 01 03 03 08 01 01 ...p.....
 0040 04 02 ..

Transmission Control Protocol 185 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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The SYN flag is set to 1 which indicates that this segment is a SYN segment.

4.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
2	0.003262	172.217.1.10	172.17.54.168	TCP	54	443 → 50265 [RST] Seq=1 Win=0 Len=0
3	1.927720	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [FIN, ACK] Seq=1 Ack=1 Win=256 Len=0
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 0, Ack: 1, Len: 0

Source Port: 80
Destination Port: 50283
[Stream index: 3]
[TCP Segment Len: 0]
Sequence number: 0 (relative sequence number)
Acknowledgment number: 1 (relative ack number)
1000 = Header Length: 32 bytes (8)

Flags: 0x012 (SYN, ACK)

000. = Reserved: Not set
...0 = Nonce: Not set
...0... = Congestion Window Reduced (CWR): Not set
...0... = ECN-Echo: Not set
...0... = Urgent: Not set
...1... = Acknowledgment: Set
...0... = Push: Not set
...0... = Reset: Not set
...1... = Syn: Set
...0... = Fin: Not set
[TCP Flags:A..S.]

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 `6.....E.
0010 00 34 00 00 40 00 3d 06 94 8f 82 71 44 0a ac 11 .4..@.=. ...qD...
0020 36 a8 00 50 c4 6b d8 12 93 06 37 1f 0a a0 80 12 6..P.k.. ..7....
0030 16 d0 3d 68 00 00 02 04 05 b4 01 01 04 02 01 03 ..h.....
0040 03 07 ..

Acknowledgment (tcp.1)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 11:22 PM
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The sequence number is 0.

The value of Acknowledgement field is 1.

In this example, the initial sequence number of the SYN segment from the client computer is 0, and then the server adds 1 to the initial sequence number, therefore the value of the acknowledgement field in the SYN_ACK segment is 1.

A segment will be identified as a SYN_ACK segment if both SYN flag and Acknowledgement flag in the segment are set to 1.

5.

The image shows a Wireshark network traffic analysis window. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. Below the menu is a toolbar with various icons for packet capture and analysis. A display filter bar at the top right shows "Apply a display filter ... <Ctrl-F>" and "Expression...".

The main packet list pane displays a table of captured packets. The columns are No., Time, Source, Destination, Protocol, Length, and Info. The packets are as follows:

No.	Time	Source	Destination	Protocol	Length	Info
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]

The packet details pane for packet 12 shows the following information:

- Frame 12: 1093 bytes on wire (8744 bits), 1093 bytes captured (8744 bits) on interface 0
- Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)
- Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10
- Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 1, Ack: 1, Len: 1039
 - Source Port: 50283
 - Destination Port: 80
 - [Stream index: 3]
 - [TCP Segment Len: 1039]
 - Sequence number: 1 (relative sequence number)
 - [Next sequence number: 1040 (relative sequence number)]
 - Acknowledgment number: 1 (relative ack number)
 - 0101 = Header Length: 20 bytes (5)
 - Flags: 0x018 (PSH, ACK)

The packet bytes pane shows the raw data of the packet, with the first few bytes highlighted in blue:

```

0020 44 0a c4 6b 00 50 37 1f 0a a0 d8 12 93 07 50 18 D..k.P.....P.
0030 01 00 f8 fb 00 00 50 4f 53 54 20 2f 7e 72 7a 68 .... .PO ST /rz
0040 65 6e 67 2f 63 6f 75 72 73 65 2f 43 41 53 34 43 eng/cour se/CAS4C
0050 30 33 57 31 37 2f 4c 61 62 73 2f 54 43 50 2f 6c 03W17/La bs/TCP/1
0060 61 62 33 2d 31 2d 72 65 70 6c 79 2e 68 74 6d 6c ab3-1-re ply.html
0070 20 48 54 54 50 2f 31 2e 31 0d 0a 48 6f 73 74 3a HTTP/1. 1..Host:
0080 20 77 77 77 2e 63 61 73 2e 6d 63 6d 61 73 74 65 www.cas .mcmaste
0090 72 2e 63 61 0d 0a 43 6f 6e 6e 65 63 74 69 6f 6e r.ca..Co nnection
00a0 3a 20 6b 65 65 70 2d 61 6c 69 76 65 0d 0a 43 6f : keep-a live..Co
00b0 6e 74 65 6e 74 2d 4c 65 6e 67 74 68 3a 20 31 34 ntent-Le ngth: 14
00c0 32 36 37 34 0d 0a 43 61 63 68 65 2d 43 6f 6e 74 2674..Ca che-Cont
00d0 72 6f 6c 3a 20 6d 61 78 2d 61 67 65 3d 30 0d 0a rol: max -age=0..
  
```

The bottom status bar shows "Sequence number (tcp)" and "Packets: 185 • Displayed: 185 (100.0%) • Dropped: 0 (0.0%)". The system tray at the bottom right shows the time as 8:03 PM on 03-07-2016.

The sequence number is 1.

6.

The image shows a Wireshark network traffic analysis interface. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. Below the menu is a toolbar with various icons for packet capture and analysis. The main display area is divided into three panes:

- Packet List Pane:** Displays a list of captured packets. Packet 12 is highlighted, showing a TCP segment from 172.17.54.168 to 130.113.68.10. The sequence number is 1, and the length is 1039 bytes. The info column indicates it is a TCP segment of a reassembled PDU.
- Packet Details Pane:** Provides a detailed view of the selected packet. It shows the Ethernet II header, Internet Protocol Version 4 header, and Transmission Control Protocol (TCP) header. The TCP header fields include Source Port (50283), Destination Port (80), Sequence number (1), Acknowledgment number (1), and Flags (PSH, ACK).
- Packet Bytes Pane:** Displays the raw packet data in hexadecimal and ASCII. The ASCII column shows the beginning of an HTTP request: "D..k.P7.P.PO ST /rzh eng/cour se/CAS4C 03W17/La bs/TCP/1 ab3-1-re ply.html HTTP/1. 1..Host: www.cas .mcmaste r.ca..Co nnection : keep-a live..Co ntent-Le ngth: 14 2674..Ca che-Cont rol: max -age=0..".

The bottom status bar shows the sequence number (tcp) and the number of packets displayed (185) and dropped (0).

First Segment:

The Sequence number is 1.

It was sent at 1.937357 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

> Frame 13: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

▼ Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 1040, Ack: 1, Len: 1460

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1460]

Sequence number: 1040 (relative sequence number)

[Next sequence number: 2500 (relative sequence number)]

Acknowledgment number: 1 (relative ack number)

0101 = Header Length: 20 bytes (5)

▼ Flags: 0x010 (ACK)

0000 ... = Reserved, Not set

0020 44 0a c4 6b 00 50 37 1f 0e af d8 12 93 07 50 10 D..k.P7.P.

0030 01 00 a9 84 00 00 2d 2d 2d 2d 2d 57 65 62 4b-- ----WebK

0040 69 74 46 6f 72 6d 42 6f 75 6e 64 61 72 79 63 6c itFormBo undarycl

0050 42 36 33 6a 55 32 45 67 35 53 39 47 6e 4c 0d 0a B63jU2Eg 5S9GnL..

0060 43 6f 6e 74 65 6e 74 2d 44 69 73 70 6f 73 69 74 Content- Disposit

0070 69 6f 6e 3a 20 66 6f 72 6d 2d 64 61 74 61 3b 20 ion: for m-data;

0080 6e 61 6d 65 3d 22 66 69 6c 65 22 3b 20 66 69 6c name="fi le"; fil

0090 65 6e 61 6d 65 3d 22 61 6c 69 63 65 2e 74 78 74 ename="a lice.txt

00a0 22 0d 0a 43 6f 6e 74 65 6e 74 2d 54 79 70 65 3a ".Conte nt-Type:

00b0 20 74 65 78 74 2f 70 6c 61 69 6e 0d 0a 0d 0a 41 text/pl ain....A

00c0 4c 49 43 45 27 53 20 41 44 56 45 4e 54 55 52 45 LICE'S A DVENTURE

00d0 53 20 49 4e 20 57 4f 4e 44 45 52 4c 41 4e 44 20 S IN WON DERLAND

Sequence number (tcp)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 11:40 PM
US 2018-03-07

Second Segment:

The Sequence number is 1040.

It was sent at 1.937839 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

> Frame 14: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

▼ Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 2500, Ack: 1, Len: 1460

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1460]

Sequence number: 2500 (relative sequence number)

[Next sequence number: 3960 (relative sequence number)]

Acknowledgment number: 1 (relative ack number)

0101 = Header Length: 20 bytes (5)

▼ Flags: 0x010 (ACK)

0000 ... = Reserved, Not set

0020 44 0a c4 6b 00 50 37 1f 14 63 d8 12 93 07 50 10 D..k.P7..c....P.

0030 01 00 64 4c 00 00 20 61 63 72 6f 73 73 20 74 68 ..dL.. a cross th

0040 65 20 66 69 65 6c 64 20 61 66 74 65 72 20 69 74 e field after it

0050 2c 20 61 6e 64 20 66 6f 72 74 75 6e 61 74 65 6c , and fo rtunatel

0060 79 20 77 61 73 20 6a 75 73 74 20 69 6e 20 74 69 y was ju st in ti

0070 6d 65 20 74 6f 20 73 65 65 20 69 74 20 70 6f 70 me to se e it pop

0080 20 64 6f 77 6e 20 61 20 6c 61 72 67 65 20 72 61 down a large ra

0090 62 62 69 74 2d 68 6f 6c 65 20 75 6e 64 65 72 20 bbit-hol e under

00a0 74 68 65 20 68 65 64 67 65 2e 20 49 6e 20 61 6e the hedg e. In an

00b0 6f 74 68 65 72 20 6d 6f 6d 65 6e 74 20 64 6f 77 other mo ment dow

00c0 6e 20 77 65 6e 74 20 41 6c 69 63 65 20 61 66 74 n went A lice aft

00d0 65 72 20 69 74 2c 20 6e 65 76 65 72 20 6f 6e 63 er it, n ever onc

Sequence number (tcp)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 11:40 PM
US 2018-03-07

Third Segment:

The Sequence number is 2500.

It was sent at 1.937859 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

> Frame 15: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

▼ Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 3960, Ack: 1, Len: 1460

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1460]

Sequence number: 3960 (relative sequence number)

[Next sequence number: 5420 (relative sequence number)]

Acknowledgment number: 1 (relative ack number)

0101 = Header Length: 20 bytes (5)

▼ Flags: 0x010 (ACK)

0000 ... = Reserved, Not set

0020 44 0a c4 6b 00 50 37 1f 1a 17 d8 12 93 07 50 10 D..k.P7.P.

0030 01 00 9e 87 00 00 6e 20 65 6e 64 21 20 60 49 20n end! `I

0040 77 6f 6e 64 65 72 20 68 6f 77 20 6d 61 6e 79 20 wonder h ow many

0050 6d 69 6c 65 73 20 49 27 76 65 20 66 61 6c 6c 65 miles I' ve falle

0060 6e 20 62 79 20 74 68 69 73 20 74 69 6d 65 3f 27 n by thi s time?'

0070 20 73 68 65 20 73 61 69 64 20 61 6c 6f 75 64 2e she sai d aloud.

0080 20 60 49 20 6d 75 73 74 20 62 65 20 67 65 74 74 `I must be gett

0090 69 6e 67 20 73 6f 6d 65 77 68 65 72 65 20 6e 65 ing some where ne

00a0 61 72 20 74 68 65 20 63 65 6e 74 72 65 20 6f 66 ar the c entre of

00b0 20 74 68 65 20 65 61 72 74 68 2e 20 4c 65 74 20 the ear th. Let

00c0 6d 65 20 73 65 65 3a 20 74 68 61 74 20 77 6f 75 me see: that wou

00d0 6c 64 20 62 65 20 66 6f 75 72 20 74 68 6f 75 73 ld be fo ur thous

Sequence number (tcp) Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 11:40 PM 2018-03-07

Fourth Segment:

The Sequence number is 3960.

It was sent at 1.937873 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

> Frame 17: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0
 > Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)
 > Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10
 > Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 5420, Ack: 1, Len: 1460
 Source Port: 50283
 Destination Port: 80
 [Stream index: 3]
 [TCP Segment Len: 1460]
 Sequence number: 5420 (relative sequence number)
 [Next sequence number: 6880 (relative sequence number)]
 Acknowledgment number: 1 (relative ack number)
 0101 = Header Length: 20 bytes (5)
 Flags: 0x010 (ACK)
 0000 = Reserved, Not set

0020 44 0a c4 6b 00 50 37 1f 1f c8 d8 12 93 07 50 10 D..k.P7.....P.
 0030 01 00 0b eb 00 00 20 49 20 73 68 6f 75 6c 64 20 I should
 0040 74 68 69 6e 6b 21 27 20 28 44 69 6e 61 68 20 77 think! (Dinah w
 0050 61 73 20 74 68 65 20 63 61 74 2e 29 20 60 49 20 as the c at.) 'I
 0060 68 6f 70 65 20 74 68 65 79 27 6c 6c 20 72 65 6d hope the y'll rem
 0070 65 6d 62 65 72 20 68 65 72 20 73 61 75 63 65 72 ember he r saucer
 0080 20 6f 66 20 6d 69 6c 6b 20 61 74 20 74 65 61 2d of milk at tea-
 0090 74 69 6d 65 2e 20 44 69 6e 61 68 20 6d 79 20 64 time. Di nah my d
 00a0 65 61 72 21 20 49 20 77 69 73 68 20 79 6f 75 20 ear! I w ish you
 00b0 77 65 72 65 20 64 6f 77 6e 20 68 65 72 65 20 77 were dow n here w
 00c0 69 74 68 20 6d 65 21 20 54 68 65 72 65 20 61 72 ith me! There ar
 00d0 65 20 6e 6f 20 6d 69 63 65 20 69 6e 20 74 68 65 e no mic e in the

Sequence number (tcp) Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 11:40 PM
US 2018-03-07

Fifth Segment:

The Sequence number is 5420.

It was sent at 1.939489 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

> Frame 18: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

▼ Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 6880, Ack: 1, Len: 1460

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1460]

Sequence number: 6880 (relative sequence number)

[Next sequence number: 8340 (relative sequence number)]

Acknowledgment number: 1 (relative ack number)

0101 = Header Length: 20 bytes (5)

▼ Flags: 0x010 (ACK)

0000 ... = Reserved, Not set

0020 44 0a c4 6b 00 50 37 1f 25 7f d8 12 93 07 50 10 D..k.P7.%.P.

0030 01 00 1d 72 00 00 20 72 6f 75 6e 64 20 74 68 65 ...r... round the

0040 20 68 61 6c 6c 2c 20 62 75 74 20 74 68 65 79 20 hall, b ut they

0050 77 65 72 65 20 61 6c 6c 20 6c 6f 63 6b 65 64 3b were all locked;

0060 20 61 6e 64 20 77 68 65 6e 20 41 6c 69 63 65 20 and whe n Alice

0070 68 61 64 20 62 65 65 6e 20 61 6c 6c 20 74 68 65 had been all the

0080 20 77 61 79 20 64 6f 77 6e 20 6f 6e 65 20 73 69 way dow n one si

0090 64 65 20 61 6e 64 20 75 70 20 74 68 65 20 6f 74 de and u p the ot

00a0 68 65 72 2c 20 74 72 79 69 6e 67 20 65 76 65 72 her, try ing ever

00b0 79 20 64 6f 72 2c 20 73 68 65 20 77 61 6c 6b y door, she walk

00c0 65 64 20 73 61 64 6c 79 20 64 6f 77 6e 20 74 68 ed sadly down th

00d0 65 20 6d 69 64 64 6c 65 2c 20 77 6f 6e 64 65 72 e middle , wonder

Sequence number (tcp) Packets: 185 • Displayed: 185 (100.0%) • Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 11:41 PM 2018-03-07

Sixth Segment:

The Sequence number is 6880.

It was sent at 1.939507 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0

Ethernet II, Src: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c), Dst: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba)

Internet Protocol Version 4, Src: 130.113.68.10, Dst: 172.17.54.168

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 1, Ack: 1040, Len: 0

Source Port: 80

Destination Port: 50283

[Stream index: 3]

[TCP Segment Len: 0]

Sequence number: 1 (relative sequence number)

Acknowledgment number: 1040 (relative ack number)

```

0000  60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00  ^6.....E.
0010  00 28 26 5d 40 00 3d 06 6e 3e 82 71 44 0a ac 11  .(&]@.=. n>.qD...
0020  36 a8 00 50 c4 6b d8 12 93 07 37 1f 0e af 50 10  6..P.k...7...P.
0030  00 3e 90 bd 00 00                                .>....

```

Sequence number (tcp)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 12:16 AM 2018-03-08

The first segment received at 1.939408 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0

Ethernet II, Src: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c), Dst: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba)

Internet Protocol Version 4, Src: 130.113.68.10, Dst: 172.17.54.168

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 1, Ack: 2500, Len: 0

Source Port: 80

Destination Port: 50283

[Stream index: 3]

[TCP Segment Len: 0]

Sequence number: 1 (relative sequence number)

Acknowledgment number: 2500 (relative ack number)

```

0000  60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00  ^6.....E.
0010  00 28 26 5e 40 00 3d 06 6e 3d 82 71 44 0a ac 11  .(&^@.=. n=.qD...
0020  36 a8 00 50 c4 6b d8 12 93 07 37 1f 14 63 50 10  6..P.k...7...cP.
0030  00 55 8a f2 00 00                                .U....

```

Sequence number (tcp)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 12:16 AM 2018-03-08

The second segment received at 1.940599 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

Ethernet II, Src: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c), Dst: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba)

Internet Protocol Version 4, Src: 130.113.68.10, Dst: 172.17.54.168

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 1, Ack: 3960, Len: 0

Source Port: 80

Destination Port: 50283

[Stream index: 3]

[TCP Segment Len: 0]

Sequence number: 1 (relative sequence number)

Acknowledgment number: 3960 (relative ack number)

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 ^6.....E.

0010 00 28 26 5f 40 00 3d 06 6e 3c 82 71 44 0a ac 11 ..(&@.=. n<.qD...

0020 36 a8 00 50 c4 6b d8 12 93 07 37 1f 1a 17 50 10 6..P.k...7...P.

0030 00 6c 85 27 00 00 .1.'..

Sequence number (tcp)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 12:16 AM 2018-03-08

The third segment received at 1.942258 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=17100 Ack=1 Win=65536 Len=684 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
33	1.943165	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=20704 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
34	1.943171	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=22164 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
35	1.943178	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=23624 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

Ethernet II, Src: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c), Dst: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba)

Internet Protocol Version 4, Src: 130.113.68.10, Dst: 172.17.54.168

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 1, Ack: 5420, Len: 0

Source Port: 80

Destination Port: 50283

[Stream index: 3]

[TCP Segment Len: 0]

Sequence number: 1 (relative sequence number)

Acknowledgment number: 5420 (relative ack number)

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 ^6.....E.

0010 00 28 26 60 40 00 3d 06 6e 3b 82 71 44 0a ac 11 ..(&@.=. n;.qD...

0020 36 a8 00 50 c4 6b d8 12 93 07 37 1f 1f cb 50 10 6..P.k...7...P.

0030 00 83 7f 5c 00 00 ...

Sequence number (tcp)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 12:17 AM 2018-03-08

The fourth segment received at 1.943053 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=17100 Ack=1 Win=65536 Len=684 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
33	1.943165	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=20704 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
34	1.943171	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=22164 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
35	1.943178	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=23624 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

Ethernet II, Src: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c), Dst: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba)

Internet Protocol Version 4, Src: 130.113.68.10, Dst: 172.17.54.168

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 1, Ack: 6880, Len: 0

Source Port: 80

Destination Port: 50283

[Stream index: 3]

[TCP Segment Len: 0]

Sequence number: 1 (relative sequence number)

Acknowledgment number: 6880 (relative ack number)

```

0000  60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00  ^6.....E.
0010  00 28 26 61 40 00 3d 06 6e 3a 82 71 44 0a ac 11  ..(&a@.=. n.:qD...
0020  36 a8 00 50 c4 6b d8 12 93 07 37 1f 25 7f 50 10  6..P.k...7%.P.
0030  00 9a 79 91 00 00                                ..Y...

```

Sequence number (tcp) | Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) | Profile: Default

Type here to search

12:17 AM 2018-03-08

The fifth segment received at 1.943054 s.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=17100 Ack=1 Win=65536 Len=684 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
33	1.943165	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=20704 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
34	1.943171	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=22164 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
35	1.943178	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=23624 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

Ethernet II, Src: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c), Dst: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba)

Internet Protocol Version 4, Src: 130.113.68.10, Dst: 172.17.54.168

Transmission Control Protocol, Src Port: 80, Dst Port: 50283, Seq: 1, Ack: 8340, Len: 0

Source Port: 80

Destination Port: 50283

[Stream index: 3]

[TCP Segment Len: 0]

Sequence number: 1 (relative sequence number)

Acknowledgment number: 8340 (relative ack number)

```

0000  60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00  ^6.....E.
0010  00 28 26 62 40 00 3d 06 6e 39 82 71 44 0a ac 11  ..(&b@.=. n9.qD...
0020  36 a8 00 50 c4 6b d8 12 93 07 37 1f 2b 33 50 10  6..P.k...7.+3P.
0030  00 b0 73 c7 00 00                                ..S...

```

Sequence number (tcp) | Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) | Profile: Default

Type here to search

12:17 AM 2018-03-08

The sixth segment received at 1.943055 s.

Segment	Packet Number	Sequence Number	Time Sent(s)	Time ACK Received	Sample RTT (s) (Time received – Time Sent)
1	12	1	1.937357	1.939408	0.002051
2	13	1040	1.937839	1.940599	0.00276
3	14	2500	1.937859	1.942258	0.004399
4	15	3960	1.937873	1.943053	0.00518
5	17	5420	1.939489	1.943054	0.003565
6	18	6880	1.939507	1.943055	0.003548

Segment	Estimated RTT Estimated RTT = (1-alpha) * Estimated RTT + alpha * Sample RTT
1	Estimated RTT = (1-0.125) * 0.002051 + 0.125 * 0.002051 = 0.002051
2	Estimated RTT = (1-0.125) * 0.002051 + 0.125 * 0.00276 = 0.002139525
3	Estimated RTT = (0.875) * 0.002139525 + 0.125 * 0.004399 = 0.002421718
4	Estimated RTT = (0.875) * 0.002139525 + 0.125 * 0.00518 = 0.00251958
5	Estimated RTT = (0.875) * 0.00251958 + 0.125 * 0.003565 = 0.00265025
6	Estimated RTT = (0.875) * 0.00265025 + 0.125 * 0.003548 = 0.002762468

7.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

.... ..0.. = Reset: Not set
.... ..0.. = Syn: Not set
.... ..0.. = Fin: Not set
[TCP Flags:AP...]
Window size value: 256
[Calculated window size: 65536]
[Window size scaling factor: 256]
Checksum: 0xf8fb [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
[SEQ/ACK analysis]
[IRTT: 0.006141000 seconds]
[Bytes in flight: 1039]
[Bytes sent since last PSH flag: 1039]
TCP payload (1039 bytes)
[Reassembled PDU in frame: 152]
TCP segment data (1039 bytes)

0030 01 00 f8 fb 00 00 50 4f 53 54 20 2f 7e 72 7a 68PO ST /~rzh
0040 65 6e 67 2f 63 6f 75 72 73 65 2f 43 41 53 34 43 eng/cour se/CAS4C

A data segment used in power-level protocol (tcp.segment_data), 1039 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

.... ..0.. = Reset: Not set
.... ..0.. = Syn: Not set
.... ..0.. = Fin: Not set
[TCP Flags:A...]
Window size value: 256
[Calculated window size: 65536]
[Window size scaling factor: 256]
Checksum: 0xa984 [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
[SEQ/ACK analysis]
[IRTT: 0.006141000 seconds]
[Bytes in flight: 2499]
[Bytes sent since last PSH flag: 1460]
TCP payload (1460 bytes)
[Reassembled PDU in frame: 152]
TCP segment data (1460 bytes)

0030 01 00 a9 84 00 00 2d 2d 2d 2d 2d 2d 57 65 62 4b--WebK
0040 69 74 46 6f 72 6d 42 6f 75 6e 64 61 72 79 63 6c itFormBo undarycl

A data segment used in power-level protocol (tcp.segment_data), 1460 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

.... ..0.. = Reset: Not set
.... ..0. = Syn: Not set
.... ..0 = Fin: Not set
[TCP Flags:A....]
Window size value: 256
[Calculated window size: 65536]
[Window size scaling factor: 256]
Checksum: 0x644c [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
[SEQ/ACK analysis]
[RTT: 0.006141000 seconds]
[Bytes in flight: 3959]
[Bytes sent since last PSH flag: 2920]
TCP payload (1460 bytes)
[Reassembled PDU in frame: 152]
TCP segment data (1460 bytes)

0030 01 00 64 4c 00 00 20 61 63 72 6f 73 73 20 74 68 ..dL.. a cross th
0040 65 20 68 69 65 6c 64 20 61 68 74 65 72 20 69 74 e field after it

A data segment used in power-level protocol (tcp.segment_data), 1460 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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US 2018-03-08

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Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
4	1.928055	172.17.54.168	130.113.68.10	TCP	54	50273 → 80 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
5	1.929183	130.113.68.10	172.17.54.168	TCP	54	80 → 50273 [ACK] Seq=1 Ack=2 Win=60 Len=0
6	1.929379	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [ACK] Seq=1 Ack=2 Win=46 Len=0
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

.... ..0.. = Reset: Not set
.... ..0. = Syn: Not set
.... ..0 = Fin: Not set
[TCP Flags:A....]
Window size value: 256
[Calculated window size: 65536]
[Window size scaling factor: 256]
Checksum: 0x9e87 [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
[SEQ/ACK analysis]
[RTT: 0.006141000 seconds]
[Bytes in flight: 5419]
[Bytes sent since last PSH flag: 4380]
TCP payload (1460 bytes)
[Reassembled PDU in frame: 152]
TCP segment data (1460 bytes)

0030 01 00 9e 87 00 00 6e 20 65 6e 64 21 20 60 49 20n end! "I
0040 77 6f 6e 64 65 72 20 68 6f 77 20 6d 61 6e 79 20 wonder h ow many

A data segment used in power-level protocol (tcp.segment_data), 1460 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

[Window size scaling factor: 256]
Checksum: 0x0beb [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
[SEQ/ACK analysis]
[RTT: 0.006141000 seconds]
[Bytes in flight: 5840]
[Bytes sent since last PSH flag: 5840]
TCP payload (1460 bytes)
[Reassembled PDU in frame: 152]
TCP segment data (1460 bytes)

0030 01 00 0b eb 00 00 20 49 20 73 68 6f 75 6c 64 20 I should
0040 74 68 69 6e 69 21 27 20 28 44 69 6e 61 68 20 77 think! (Dinah w
0050 61 73 20 74 68 65 20 63 61 74 2e 29 20 69 49 20 as the c at.) "I
0060 68 6f 70 65 20 74 68 65 79 27 6c 6e 20 72 65 6d hope the y'll rem
0070 65 6d 62 65 72 20 68 65 72 20 73 61 75 63 65 72 ember he r saucer
0080 20 6f 66 20 6d 69 6c 6b 20 61 74 20 74 65 61 20 of milk at tea
0090 74 69 6d 65 2e 20 44 69 6e 61 68 20 6d 79 20 64 time, Dinah my d
00a0 65 61 72 21 20 49 20 77 69 73 68 20 79 6f 75 20 ear! I wish you
00b0 77 65 72 65 20 64 6f 77 6e 20 68 65 72 65 20 77 were dow n here w

A data segment used in power-level protocol (tcp.segment_data), 1460 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
7	1.929948	130.113.68.10	172.17.54.168	TCP	54	80 → 50274 [FIN, ACK] Seq=1 Ack=2 Win=46 Len=0
8	1.930018	172.17.54.168	130.113.68.10	TCP	54	50274 → 80 [ACK] Seq=2 Ack=2 Win=256 Len=0
9	1.930288	172.17.54.168	130.113.68.10	TCP	66	50283 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

[Window size scaling factor: 256]
Checksum: 0x1d72 [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
[SEQ/ACK analysis]
[RTT: 0.006141000 seconds]
[Bytes in flight: 7300]
[Bytes sent since last PSH flag: 7300]
TCP payload (1460 bytes)
[Reassembled PDU in frame: 152]
TCP segment data (1460 bytes)

0030 01 00 1d 72 00 00 20 72 6f 75 6e 64 20 74 68 65 ...F... r ound the
0040 20 68 61 6c 6c 2c 20 62 75 74 20 74 68 65 79 20 hall, b ut they
0050 77 65 72 65 20 61 6c 6c 20 6c 6f 63 6b 65 64 3b were all locked;
0060 20 61 6e 64 20 77 68 65 6e 20 41 6c 69 63 65 20 and whe n Alice
0070 68 61 64 20 62 65 65 6e 20 61 6c 6c 20 74 68 65 had been all the
0080 20 77 61 79 20 64 6f 77 6e 20 6f 6e 65 20 73 69 way dow n one si
0090 64 65 20 61 6e 64 20 75 70 20 74 68 65 20 6f 74 de and u p the ot
00a0 68 65 72 2c 20 74 72 79 69 6e 67 20 65 76 65 72 her, try ing ever
00b0 79 20 64 6f 6f 72 2c 20 73 68 65 20 77 61 6c 6b y door, she walk

A data segment used in power-level protocol (tcp.segment_data), 1460 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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US 2018-03-08

8.

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File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression ... +

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0

....0. = Urgent: Not set
1. = Acknowledgment: Set
0. = Push: Not set
0. = Reset: Not set
0. = Syn: Not set
0. = Fin: Not set
 [TCP Flags:A....]
 Window size value: 62
 [Calculated window size: 7936]
 [Window size scaling factor: 128]
 Checksum: 0x90bd [unverified]
 [Checksum Status: Unverified]

```

0000  60 36 dd 8d ee ba 00 00 e3 ff fd 9c 08 00 45 00  `6.....E.
0010  00 28 26 5d 40 00 3d 06 6e 3e 82 71 44 0a ac 11  ..(&]@.=. n>.qD...
0020  36 a8 00 50 c4 6b d8 12 93 07 37 1f 0e af 50 10  6..P.k...7...P.
0030  00 3e 90 bd 00 00                                3e....
  
```

The scaled window size: 7936 (used) (tcp.window_size), 2 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 1:18 AM 2018-03-08

Buffer space : 7936

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression ... +

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0

....0. = Urgent: Not set
1. = Acknowledgment: Set
0. = Push: Not set
0. = Reset: Not set
0. = Syn: Not set
0. = Fin: Not set
 [TCP Flags:A....]
 Window size value: 85
 [Calculated window size: 10880]
 [Window size scaling factor: 128]
 Checksum: 0x8af2 [unverified]
 [Checksum Status: Unverified]

```

0000  60 36 dd 8d ee ba 00 00 e3 ff fd 9c 08 00 45 00  `6.....E.
0010  00 28 26 5e 40 00 3d 06 6e 3d 82 71 44 0a ac 11  ..(&]@.=. n=.qD...
0020  36 a8 00 50 c4 6b d8 12 93 07 37 1f 14 63 50 10  6..P.k...7...cP.
0030  00 55 8a f2 00 00                                55....
  
```

The scaled window size: 10880 (used) (tcp.window_size), 2 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 1:18 AM 2018-03-08

Buffer space: 10880

The screenshot shows a Wireshark packet capture of a TCP connection. The packet list pane displays several segments, with packet 23 (1942258) highlighted. The packet details pane shows the TCP header for this segment, where the 'Window' field is set to 10880. The packet bytes pane shows the raw data of the segment. The status bar at the bottom indicates that the scaled window size is 10880 bytes.

No.	Time	Source	Destination	Protocol	Length	Info
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=10880 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

... ..0. = Urgent: Not set
... ..1 = Acknowledgment: Set
... ..0. = Push: Not set
... ..0. = Reset: Not set
... ..0. = Syn: Not set
... ..0. = Fin: Not set
[TCP Flags:A....]
Window size value: 108
[Calculated window size: 13824]
[Window size scaling factor: 128]
Checksum: 0x8527 [unverified]
[Checksum Status: Unverified]

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 6.....E.
0010 00 28 26 5f 40 00 3d 06 6e 3c 82 71 44 0a ac 11 .(8_@.=. n<.qD...
0020 36 a8 00 50 c4 6b d8 12 93 07 37 1f 1a 17 50 10 6..P.k...7...P.
0030 00 00 85 27 00 00

The scaled window size is 10880 bytes (tcp.window_size, 2 bytes)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Buffer Space: 13824

The screenshot shows a Wireshark packet capture of a TCP connection. The packet list pane displays several segments, with packet 27 (1942439) highlighted. The packet details pane shows the TCP header for this segment, where the 'Window' field is set to 13824. The packet bytes pane shows the raw data of the segment. The status bar at the bottom indicates that the scaled window size is 13824 bytes.

No.	Time	Source	Destination	Protocol	Length	Info
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=17100 Ack=1 Win=65536 Len=684 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

... ..0. = Urgent: Not set
... ..1 = Acknowledgment: Set
... ..0. = Push: Not set
... ..0. = Reset: Not set
... ..0. = Syn: Not set
... ..0. = Fin: Not set
[TCP Flags:A....]
Window size value: 131
[Calculated window size: 16768]
[Window size scaling factor: 128]
Checksum: 0x7f5c [unverified]
[Checksum Status: Unverified]

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 6.....E.
0010 00 28 26 60 40 00 3d 06 6e 3b 82 71 44 0a ac 11 .(8_@.=. n;.qD...
0020 36 a8 00 50 c4 6b d8 12 93 07 37 1f 1f cb 50 10 6..P.k...7...P.
0030 00 00 7f 5c 00 00

The scaled window size is 13824 bytes (tcp.window_size, 2 bytes)

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Buffer Space: 16768

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=17100 Ack=1 Win=65536 Len=684 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

... .0. = Urgent: Not set
... ..1 = Acknowledgment: Set
... ..0. = Push: Not set
... ..0. = Reset: Not set
... ..0. = Syn: Not set
... ..0. = Fin: Not set
[TCP Flags:A....]
Window size value: 154
[Calculated window size: 19712]
[Window size scaling factor: 128]
Checksum: 0x7991 [unverified]
[Checksum Status: Unverified]

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 `6.....E.
0010 00 28 26 61 40 00 3d 06 6e 3a 82 71 44 0a ac 11 .(&a@.=. n:.qD...
0020 36 a8 00 50 c4 6b d8 12 93 07 37 1f 25 7f 50 10 6..P.k...7.%P.
0030 00 00 79 91 00 00 .y...

The scaled window size (tcp.window_size) in used (tcp.window_size), 2 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 1:18 AM
US 2018-03-08

Buffer space: 19712

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=17100 Ack=1 Win=65536 Len=684 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]

... .0. = Urgent: Not set
... ..1 = Acknowledgment: Set
... ..0. = Push: Not set
... ..0. = Reset: Not set
... ..0. = Syn: Not set
... ..0. = Fin: Not set
[TCP Flags:A....]
Window size value: 176
[Calculated window size: 22528]
[Window size scaling factor: 128]
Checksum: 0x73c7 [unverified]
[Checksum Status: Unverified]

0000 60 36 dd 8d ee ba 00 08 e3 ff fd 9c 08 00 45 00 `6.....E.
0010 00 28 26 62 40 00 3d 06 6e 39 82 71 44 0a ac 11 .(&b@.=. n9.qD...
0020 36 a8 00 50 c4 6b d8 12 93 07 37 1f 2b 33 50 10 6..P.k...7.+3P.
0030 00 00 73 c7 00 00 .s...

The scaled window size (tcp.window_size) in used (tcp.window_size), 2 bytes

Packets: 185 · Displayed: 185 (100.0%) · Dropped: 0 (0.0%) Profile: Default

ENG 1:18 AM
US 2018-03-08

Buffer space: 22528

Therefore the minimum buffer space is 7936.

9.

There is no retransmitted segments. I check the ACK value, if there is a retransmitted segment, the ACK value of the received segment should decrease. This can also be checked by the sequence number of the segments being sent, If there is no packets with the same sequence number at different time, then there is no retransmitted segments. In this example, we can not find packets with the same sequence number at different time.

10.

The image shows a Wireshark packet capture of a TCP connection. The packet list pane displays several TCP segments and their corresponding ACKs. Red boxes highlight the 'Ack' field in several ACK packets, and blue callout boxes indicate the '1460 bytes difference' between the sequence numbers of the segments being acknowledged and the ACK value. The segments are as follows:

No.	Time	Source	Destination	Protocol	Length	Info
10	1.936293	130.113.68.10	172.17.54.168	TCP	66	80 → 50283 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0
24	1.942385	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=12720 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
25	1.942406	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=14180 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
26	1.942419	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
27	1.942439	172.17.54.168	130.113.68.10	TCP	738	[TCP Window Full] 50283 → 80 [PSH, ACK] Seq=15640 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
28	1.943053	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=5420 Win=16768 Len=0
29	1.943054	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=6880 Win=19712 Len=0
30	1.943055	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=8340 Win=22528 Len=0
31	1.943138	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=17784 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
32	1.943152	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=19244 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
33	1.943165	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=20704 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
34	1.943171	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=22164 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
35	1.943178	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=23624 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
36	1.943183	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=25084 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
37	1.943601	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=9800 Win=25472 Len=0

The packet details pane shows the following flags: .0.. = ECN-Echo: Not set, .0.. = Urgent: Not set, ...1 = Acknowledgment: Set, ...1 = Push: Set.

The packet bytes pane shows the raw data for the selected packet (No. 27):

```
0030 01 00 f8 fb 00 00 50 4f 53 54 20 2f 7e 72 7a 68 ....PO ST /~rzh
0040 65 6e 67 2f 63 6f 75 72 73 65 2f 43 41 53 34 43 eng/cour se/CAS4C
```

The receiver typically acknowledges 1460 bytes in an ACK.

11.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp && ip.addr == 130.113.68.10

No.	Time	Source	Destination	Protocol	Length	Info
138	1.956677	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=74724 Win=64128 Len=0
139	1.956677	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=77644 Win=64128 Len=0
140	1.956678	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=80564 Win=64128 Len=0
141	1.956679	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=83484 Win=64128 Len=0
142	1.956947	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=128868 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
143	1.956958	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=130328 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
144	1.956964	172.17.54.168	130.113.68.10	TCP	378	50283 → 80 [PSH, ACK] Seq=131788 Ack=1 Win=65536 Len=324 [TCP segment of a reassembled PDU]
145	1.957440	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=132112 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
146	1.957453	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=133572 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
147	1.957459	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=135032 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
148	1.957473	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=136492 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
149	1.957483	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=137952 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
150	1.957492	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=139412 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
151	1.957500	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=140872 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
152	1.957508	172.17.54.168	130.113.68.10	HTTP	1436	POST /wchena/course/CAS4C03W17/labs/TCP/lab3-1-cenlv.html HTTP/1.1 (text/plain)

> Frame 152: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0

> Ethernet II, Src: IntelCor_8d:ee:ba (60:36:dd:8d:ee:ba), Dst: Cisco_ff:fd:9c (00:08:e3:ff:fd:9c)

> Internet Protocol Version 4, Src: 172.17.54.168, Dst: 130.113.68.10

▼ Transmission Control Protocol, Src Port: 50283, Dst Port: 80, Seq: 142332, Ack: 1, Len: 1382

Source Port: 50283

Destination Port: 80

[Stream index: 3]

[TCP Segment Len: 1382]

0000 00 08 e3 ff fd 9c 60 36 dd 8d ee ba 08 00 45 006.....E.

0010 05 8e 5c 52 40 00 00 06 ef e2 ac 11 36 a8 82 71 ...R@...6...g

0020 44 0a c4 6b 00 50 37 21 36 9b d8 12 93 07 50 18 D..k.P? 6....P.

0030 01 00 66 12 00 00 61 74 65 2d 70 65 6e 63 69 6c ...f...at e-pencil

0040 2c 20 61 6e 64 20 74 68 65 20 63 68 6f 6b 69 6e , and the choking

0050 67 20 6f 66 20 74 68 65 20 73 75 70 70 72 65 73 g of the suppress

0060 73 65 64 20 67 75 69 6e 65 61 2d 70 69 67 73 2d sed guinea-pigs,

0070 20 66 69 6c 6c 65 64 20 74 68 65 20 61 69 72 2c filled the air,

0080 20 6d 69 78 65 64 20 75 70 20 77 69 74 68 20 74 mixed up with t

0090 68 65 20 64 69 73 74 61 6e 74 20 73 6f 62 73 20 he distant sobs

Frame (1436 bytes) Reassembled TCP (143713 bytes)

Frame (frame), 1436 b

Packets: 185 · Displayed: 179 (96.8%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

ENG 1:15 PM 2018-03-09

Wi-Fi

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tcp && ip.addr == 130.113.68.10

No.	Time	Source	Destination	Protocol	Length	Info
144	1.956964	172.17.54.168	130.113.68.10	TCP	378	50283 → 80 [PSH, ACK] Seq=131788 Ack=1 Win=65536 Len=324 [TCP segment of a reassembled PDU]
145	1.957440	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=132112 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
146	1.957453	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=133572 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
147	1.957459	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=135032 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
148	1.957473	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=136492 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
149	1.957483	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=137952 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
150	1.957492	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=139412 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
151	1.957500	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=140872 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
152	1.957508	172.17.54.168	130.113.68.10	HTTP	1436	POST /~rzheng/course/CAS4C03W17/Labs/TCP/lab3-1-reply.html HTTP/1.1 (text/plain)

[Frame: 149, payload: 137951-139410 (1460 bytes)]
[Frame: 150, payload: 139411-140870 (1460 bytes)]
[Frame: 151, payload: 140871-142330 (1460 bytes)]
[Frame: 152, payload: 142331-143712 (1382 bytes)]
[Segment count: 101]
[Reassembled TCP length: 143713]
[Reassembled TCP Data: 504f5354202f7e727a68656e672f636f757273652f434153...]
Hypertext Transfer Protocol
MIME multipart Media Encapsulation, Type: multipart/form-data, Boundary: "----WebKitFormBoundaryI863jU2Eg5S9GnL"
[Type: multipart/form-data]
First boundary: ----WebKitFormBoundaryI863jU2Eg5S9GnL\r\n
Encapsulated multipart part: (text/plain)
Last boundary: \r\n----WebKitFormBoundaryI863jU2Eg5S9GnL--\r\n

00022bf0 4c 69 7a 61 72 64 27 73 20 73 6c 61 74 65 2d 70 Lizard's slate-p
00022c00 65 6e 63 69 6c 2c 20 61 6e 64 20 74 68 65 20 63 encil, and the c
00022c10 68 6f 6b 69 6e 67 20 6f 6e 20 74 68 65 20 73 75 hoking o f the s
00022c20 70 70 72 65 73 73 65 64 20 67 75 69 6e 65 61 2d ppressed guinea-
00022c30 70 69 67 73 2c 20 66 69 6c 6c 65 64 20 74 68 65 pigs, fi lled the
00022c40 20 61 69 72 2c 20 6d 69 78 65 64 20 75 70 20 77 air, mi xed up w
00022c50 69 74 68 20 74 68 65 20 64 69 73 74 61 6e 74 20 ith the distant
00022c60 73 6f 62 73 20 6f 66 20 74 68 65 20 6d 69 73 65 sobs of the mise
00022c70 72 61 62 6c 65 20 4d 6f 63 6b 20 54 75 72 74 6c rable Mo ck Turtl
00022c80 65 2e 20 53 6f 20 73 68 65 20 73 61 74 20 6f 6e e. So sh e sat on

Frame (1436 bytes) Reassembled TCP (143713 bytes)

TCP Segment (tcp.seg)

Packets: 185 · Displayed: 179 (96.8%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

Wi-Fi

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tcp && ip.addr == 130.113.68.10

No.	Time	Source	Destination	Protocol	Length	Info
11	1.936429	172.17.54.168	130.113.68.10	TCP	54	50283 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
12	1.937357	172.17.54.168	130.113.68.10	TCP	1093	50283 → 80 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1039 [TCP segment of a reassembled PDU]
13	1.937839	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=1040 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
14	1.937859	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=2500 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
15	1.937873	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=3960 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
16	1.939408	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=1040 Win=7936 Len=0
17	1.939489	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=5420 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
18	1.939507	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=6880 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
19	1.940599	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=2500 Win=10880 Len=0
20	1.940686	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=8340 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
21	1.940707	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=9800 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
22	1.940718	172.17.54.168	130.113.68.10	TCP	1514	50283 → 80 [ACK] Seq=11260 Ack=1 Win=65536 Len=1460 [TCP segment of a reassembled PDU]
23	1.942258	130.113.68.10	172.17.54.168	TCP	54	80 → 50283 [ACK] Seq=1 Ack=3960 Win=13824 Len=0

[Frame: 12, payload: 0-1038 (1039 bytes)]
[Frame: 13, payload: 1039-2498 (1460 bytes)]
[Frame: 14, payload: 2499-3958 (1460 bytes)]
[Frame: 15, payload: 3959-5418 (1460 bytes)]
[Frame: 17, payload: 5419-6878 (1460 bytes)]
[Frame: 18, payload: 6879-8338 (1460 bytes)]
[Frame: 20, payload: 8339-9798 (1460 bytes)]
[Frame: 21, payload: 9799-11258 (1460 bytes)]
[Frame: 22, payload: 11259-12718 (1460 bytes)]
[Frame: 24, payload: 12719-14178 (1460 bytes)]
[Frame: 25, payload: 14179-15638 (1460 bytes)]
[Frame: 26, payload: 15639-17098 (1460 bytes)]

00000000 50 4f 53 54 20 2f 7e 72 7a 68 65 6e 67 2f 63 6f POST /~r zheng/co
00000010 75 72 73 65 2f 43 41 53 34 43 30 33 57 31 37 2f urse/CAS 4C03W17/
00000020 4c 61 62 73 2f 54 43 50 2f 6c 61 62 33 2d 31 2d Labs/TCP /lab3-1-
00000030 72 65 70 6c 79 2e 68 74 6d 6c 20 48 54 54 50 2f reply.ht mI HTTP/
00000040 31 2e 31 0d 0a 48 6f 73 74 3a 20 77 77 77 2e 63 i..Host: ww.c
00000050 61 73 2e 6d 63 6d 61 73 74 65 72 2e 63 61 0d 0e as.mcmas ter.ca.
00000060 43 6f 6e 6e 65 63 74 69 6f 6e 3a 20 6b 65 65 70 Connecti on: keep

Frame (1436 bytes) Reassembled TCP (143713 bytes)

TCP Segment (tcp.seg)

Packets: 185 · Displayed: 179 (96.8%) · Dropped: 0 (0.0%) Profile: Default

Type here to search

Amount of data transmitted = 142332 bytes

Time incurred = $1.957508 - 1.937357 = 0.020151$ s

Throughput = (Amount of data transmitted)/ (time incurred)

= $142332 / 0.020151$

= 7063272.294 bytes/sec

4(1)



The TCP slowstart phase starts at 0.006s and ends at 0.02 s. After 0.02s, we do not see the expected linear increase behaviour anymore and TCP session is always in the congestion avoidance state.

The congestion avoidance takes over at 0.013s, 0.02 s, 0.024s, 0.028s. This happens because there are too many cocurrent segements sending at the same time, therefore the rate result in a suddenly drop.

