

CS305-2022Spring Lab8 Report

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Lab Time: Thursday 10:20 a.m. to 12:10 p.m.

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Practice8-1: TCP stream

Open the Wireshark, and start capturing the packets, using filters:

```
ip.addr == 128.119.245.12 && tcp.stream
```

Open command line, and invoke a HTTP request:

```
curl http://gaia.cs.umass.edu/wiresharklabs/alice.txt
```

And we get multiple packets:

*WLAN

文件(F) 编辑(E) 视图(V) 跳转(G) 捕获(C) 分析(A) 统计(S) 电话(Y) 无线(W) 工具(I) 帮助(H)

ip.addr == 128.119.245.12 && tcp.stream

No.	Time	Source	Destination	Protocol	Length	Info
182	3.135330	10.26.128.169	128.119.245.12	TCP	66	14940 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
189	3.410704	128.119.245.12	10.26.128.169	TCP	66	80 → 14940 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM=1
190	3.410803	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0
191	3.421629	10.26.128.169	128.119.245.12	HTTP	158	GET /wiresharklabs/alice.txt HTTP/1.1
206	3.695747	128.119.245.12	10.26.128.169	TCP	56	80 → 14940 [ACK] Seq=1 Ack=105 Win=29312 Len=0
207	3.697159	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=1 Ack=105 Win=29312 Len=1460 [TCP segment of
208	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=1461 Ack=105 Win=29312 Len=1460 [TCP segment
209	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=2921 Ack=105 Win=29312 Len=1460 [TCP segment
210	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=4381 Ack=105 Win=29312 Len=1460 [TCP segment
211	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=5841 Ack=105 Win=29312 Len=1460 [TCP segment
212	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=7301 Ack=105 Win=29312 Len=1460 [TCP segment
213	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=8761 Ack=105 Win=29312 Len=1460 [TCP segment
214	3.699638	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=10221 Ack=105 Win=29312 Len=1460 [TCP segment
215	3.699746	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=105 Ack=11681 Win=131328 Len=0
216	3.705573	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=11681 Ack=105 Win=29312 Len=1460 [TCP segment
217	3.705573	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=13141 Ack=105 Win=29312 Len=1460 [TCP segment
218	3.705664	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=105 Ack=14601 Win=131328 Len=0
222	3.973922	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=14601 Ack=105 Win=29312 Len=1460 [TCP segment
223	3.973922	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=16061 Ack=105 Win=29312 Len=1460 [TCP segment
224	3.973922	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=17521 Ack=105 Win=29312 Len=1460 [TCP segment
225	3.974009	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=105 Ack=18981 Win=131328 Len=0
226	3.975116	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=18981 Ack=105 Win=29312 Len=1460 [TCP segment
227	3.975116	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=20441 Ack=105 Win=29312 Len=1460 [TCP segment
228	3.975116	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=21901 Ack=105 Win=29312 Len=1460 [TCP segment
229	3.975116	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=23361 Ack=105 Win=29312 Len=1460 [TCP segment
230	3.975116	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=24821 Ack=105 Win=29312 Len=1460 [TCP segment
231	3.975237	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=105 Ack=26281 Win=131328 Len=0
232	3.976578	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=26281 Ack=105 Win=29312 Len=1460 [TCP segment
233	3.976578	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=27741 Ack=105 Win=29312 Len=1460 [TCP segment
234	3.976578	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=29201 Ack=105 Win=29312 Len=1460 [TCP segment
235	3.976578	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=30661 Ack=105 Win=29312 Len=1460 [TCP segment
236	3.976578	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=32121 Ack=105 Win=29312 Len=1460 [TCP segment
237	3.976578	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=33581 Ack=105 Win=29312 Len=1460 [TCP segment
238	3.976680	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=105 Ack=35041 Win=131328 Len=0
239	3.978735	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=35041 Ack=105 Win=29312 Len=1460 [TCP segment
240	3.978735	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=36501 Ack=105 Win=29312 Len=1460 [TCP segment
241	3.978874	10.26.128.169	128.119.245.12	TCP	54	14940 → 80 [ACK] Seq=105 Ack=37961 Win=131328 Len=0
242	3.985198	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=37961 Ack=105 Win=29312 Len=1460 [TCP segment
243	3.985198	128.119.245.12	10.26.128.169	TCP	1514	80 → 14940 [ACK] Seq=39421 Ack=105 Win=29312 Len=1460 [TCP segment

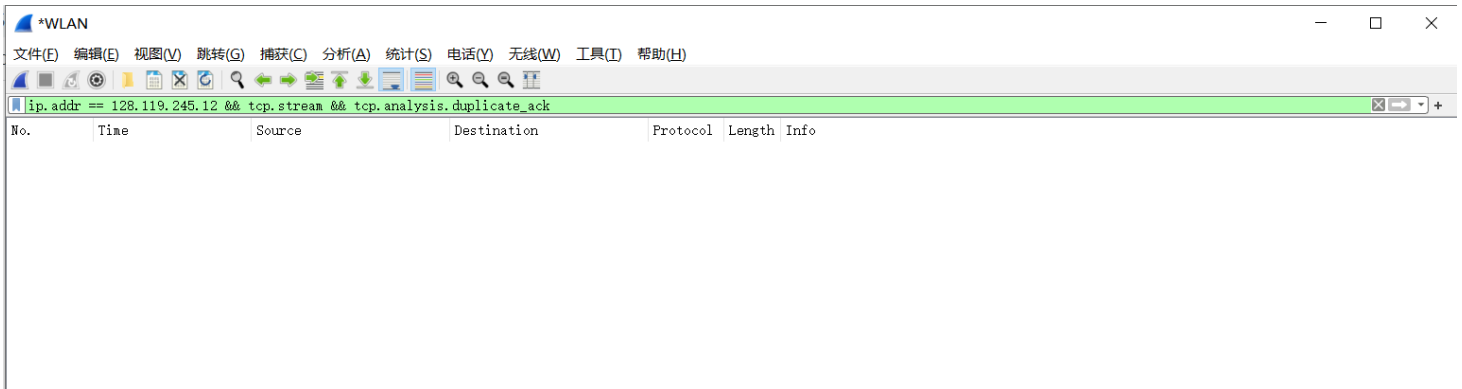
> Frame 182: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{89B88E7E-F07A-4F3E-969E-18F5F268FB76}, id 0

0000	3c 8c 93 d0 83 c1 04 33 c2 ed ef 59 08 00 45 00	<.....3...Y..E..
0010	00 34 27 3b 40 00 80 06 00 00 0a 1a 80 a9 80 77	..4';@... ..w
0020	f5 0c 3a 5c 00 50 f0 5c a1 a1 00 00 00 00 80 02	...\.P.\ ..
0030	fa f0 00 6e 00 00 02 04 05 b4 01 03 03 08 01 01	...n.... ..
0040	04 02	..

Duplicate ACKs

Change filters into this:

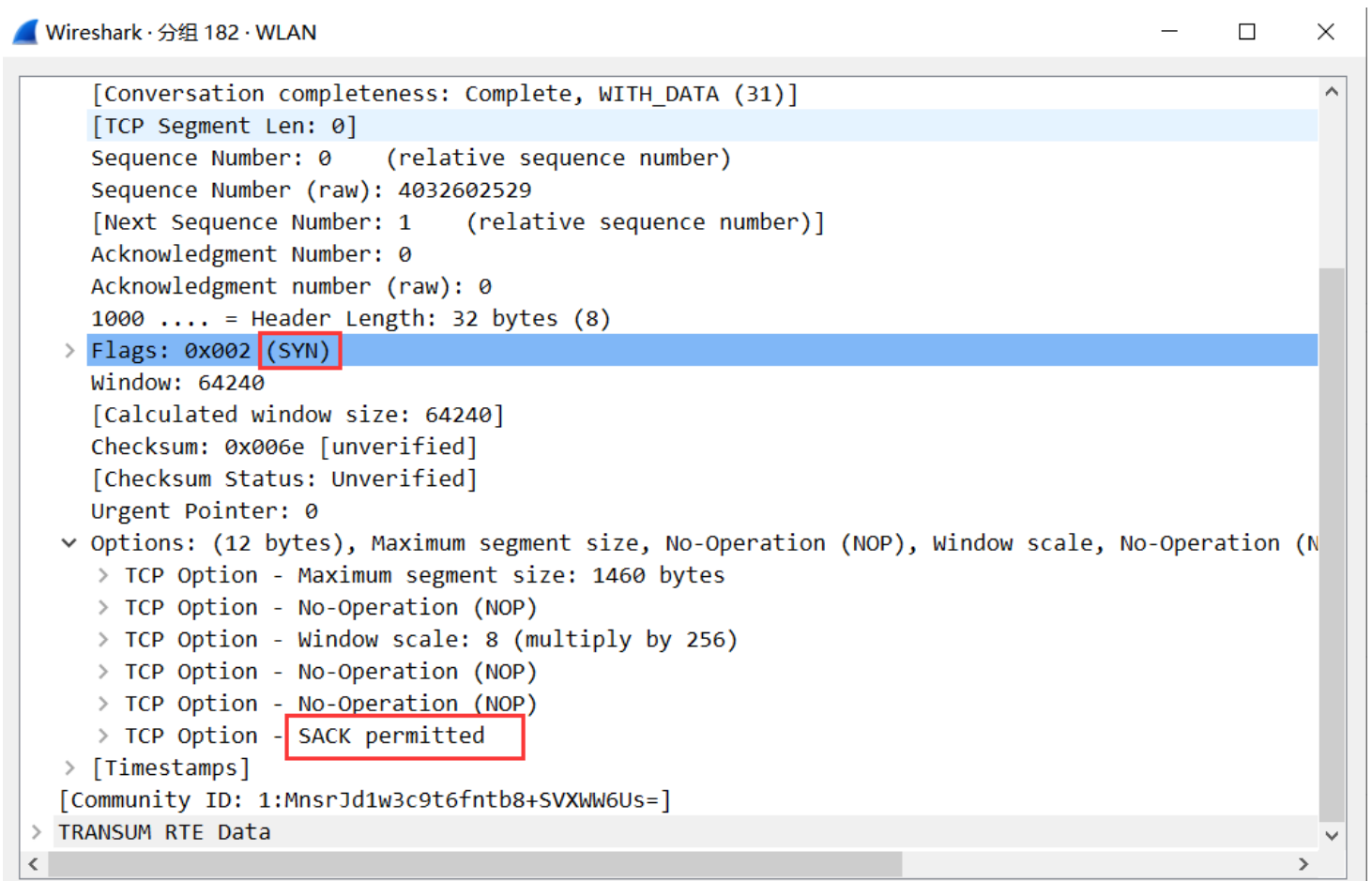
```
ip.addr == 128.119.245.12 && tcp.stream && tcp.analysis.duplicate_ack
```



There is no duplicate ACKs.

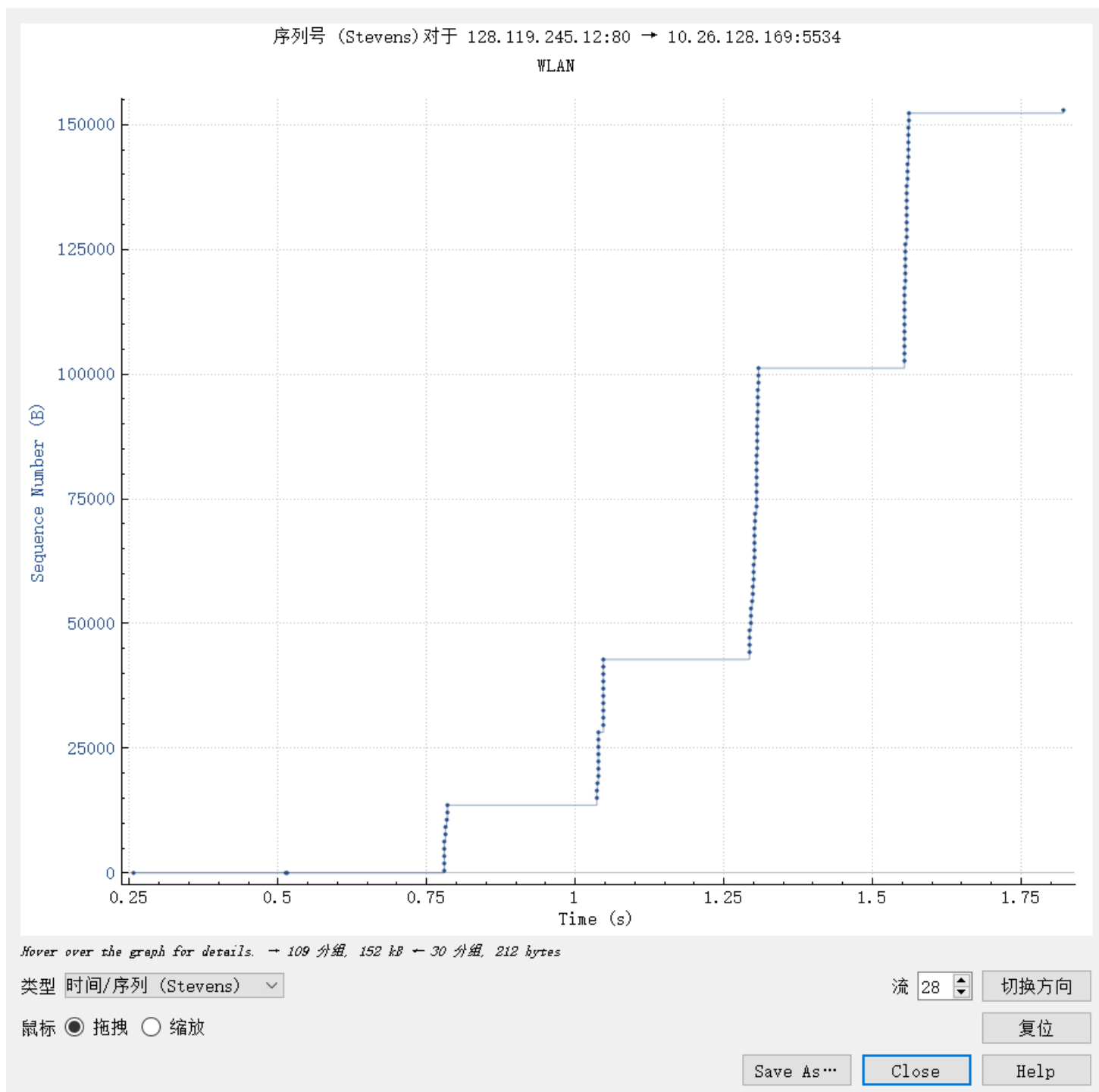
SACK

Select one TCP packets



Retransmission

Consider the sequence number-time graph:



We can see that the sequence number is non-decreasing, thus there is no retransmission.

Windows size

From all these packets, there is no one whose windows size is 0.

*WLAN

文件(E) 编辑(E) 视图(V) 跳转(G) 捕获(C) 分析(A) 统计(S) 电话(Y) 无线(W) 工具(T) 帮助(H)

ip.addr == 128.119.245.12 && tcp.stream

No.	Time	Source	Destination	Protocol	Length	Info
445	8.840292	10.26.128.169	128.119.245.12	TCP	66	5534 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
462	9.097121	128.119.245.12	10.26.128.169	TCP	66	80 → 5534 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM=1
463	9.097225	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0
464	9.097434	10.26.128.169	128.119.245.12	HTTP	162	GET /wiresharklabs/alice.txtcurl HTTP/1.1
486	9.353364	128.119.245.12	10.26.128.169	TCP	56	80 → 5534 [ACK] Seq=1 Ack=109 Win=29312 Len=0
487	9.355616	128.119.245.12	10.26.128.169	HTTP	499	HTTP/1.1 404 Not Found (text/html)
488	9.357377	10.26.128.169	128.119.245.12	HTTP	158	GET /wiresharklabs/alice.txt HTTP/1.1
506	9.619938	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=446 Ack=213 Win=29312 Len=1460 [TCP segment of a
507	9.619938	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=1906 Ack=213 Win=29312 Len=1460 [TCP segment of a
508	9.619938	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=3366 Ack=213 Win=29312 Len=1460 [TCP segment of a
509	9.619938	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=4826 Ack=213 Win=29312 Len=1460 [TCP segment of a
510	9.619938	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=6286 Ack=213 Win=29312 Len=1460 [TCP segment of a
511	9.620040	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=213 Ack=7746 Win=131328 Len=0
512	9.621960	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=7746 Ack=213 Win=29312 Len=1460 [TCP segment of a
513	9.621960	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=9206 Ack=213 Win=29312 Len=1460 [TCP segment of a
514	9.622065	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=213 Ack=10666 Win=131328 Len=0
515	9.624133	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=10666 Ack=213 Win=29312 Len=1460 [TCP segment of a
516	9.624185	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=213 Ack=12126 Win=131328 Len=0
517	9.625276	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=12126 Ack=213 Win=29312 Len=1460 [TCP segment of a
518	9.625276	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=13586 Ack=213 Win=29312 Len=1460 [TCP segment of a
519	9.625361	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=213 Ack=15046 Win=131328 Len=0
525	9.876670	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=15046 Ack=213 Win=29312 Len=1460 [TCP segment of a
526	9.876670	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=16506 Ack=213 Win=29312 Len=1460 [TCP segment of a
527	9.876769	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=213 Ack=17966 Win=131328 Len=0
528	9.877576	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=17966 Ack=213 Win=29312 Len=1460 [TCP segment of a
529	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=19426 Ack=213 Win=29312 Len=1460 [TCP segment of a
530	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=20886 Ack=213 Win=29312 Len=1460 [TCP segment of a
531	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=22346 Ack=213 Win=29312 Len=1460 [TCP segment of a
532	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=23806 Ack=213 Win=29312 Len=1460 [TCP segment of a
533	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=25266 Ack=213 Win=29312 Len=1460 [TCP segment of a
534	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=26726 Ack=213 Win=29312 Len=1460 [TCP segment of a
535	9.879292	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=28186 Ack=213 Win=29312 Len=1460 [TCP segment of a
536	9.879397	10.26.128.169	128.119.245.12	TCP	54	5534 → 80 [ACK] Seq=213 Ack=29646 Win=131328 Len=0
537	9.887503	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=29646 Ack=213 Win=29312 Len=1460 [TCP segment of a
538	9.887503	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=31106 Ack=213 Win=29312 Len=1460 [TCP segment of a
539	9.887503	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=32566 Ack=213 Win=29312 Len=1460 [TCP segment of a
540	9.887503	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=34026 Ack=213 Win=29312 Len=1460 [TCP segment of a
541	9.887503	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=35486 Ack=213 Win=29312 Len=1460 [TCP segment of a
542	9.887503	128.119.245.12	10.26.128.169	TCP	1514	80 → 5534 [ACK] Seq=36946 Ack=213 Win=29312 Len=1460 [TCP segment of a

Full Windows

From the screenshots in windows size, we can see that there is no full windows.