Name : Shuvo Biswas

ID : IT-16014

Lab Report No : 07

Lab Report Name : Install Wireshark in Linux

Introduction:

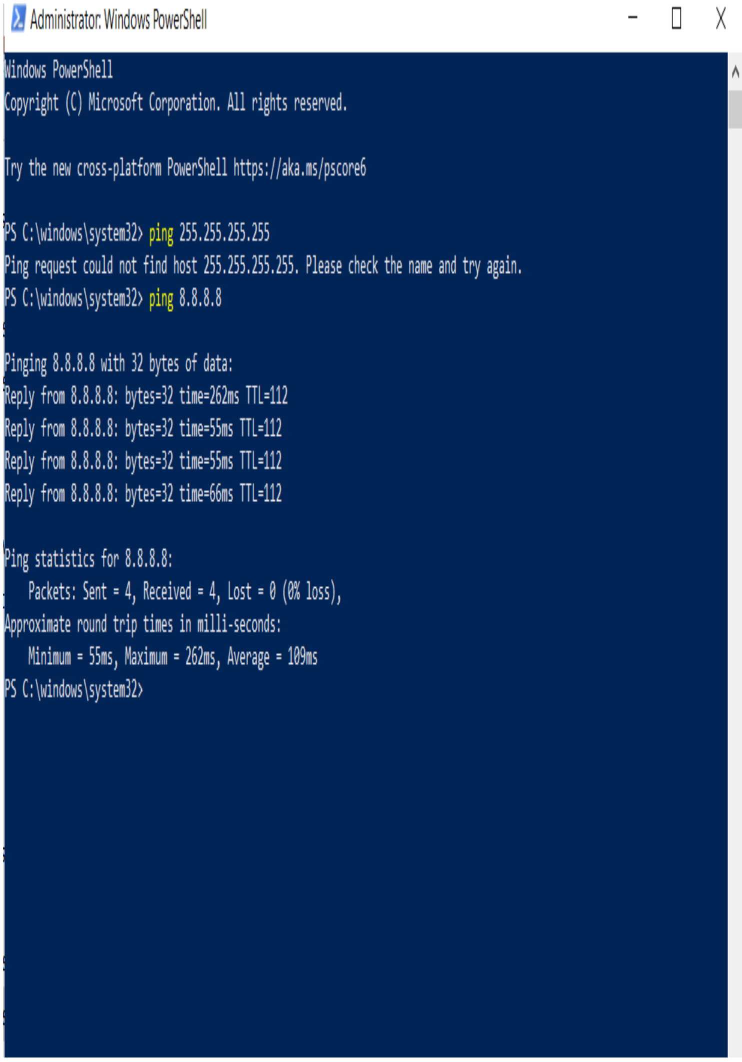
Wireshark is a network packet analyzer. It captures every packet getting in or out of a network interface and shows them in a nicely formatted text. It is used by Network Engineers all over the world.

Wireshark is cross platform and it is available for Linux, Windows and Mac OS. You get the same user experience in any operating system you use.

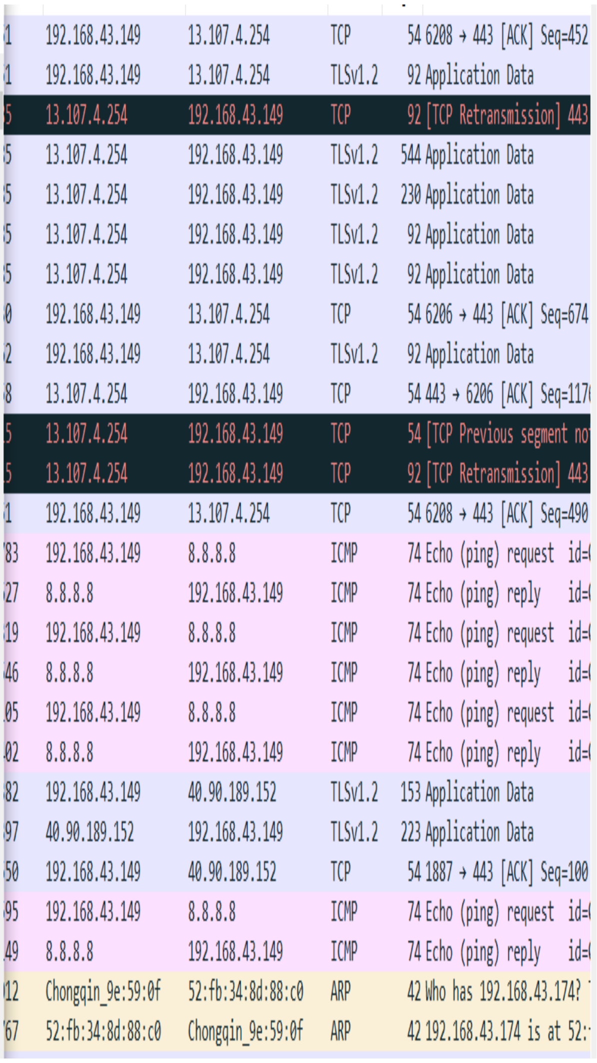
Installing Wireshark:

Wireshark is available in the official package repository of Ubuntu 14.04 LTS and later. So it is really easy to install.

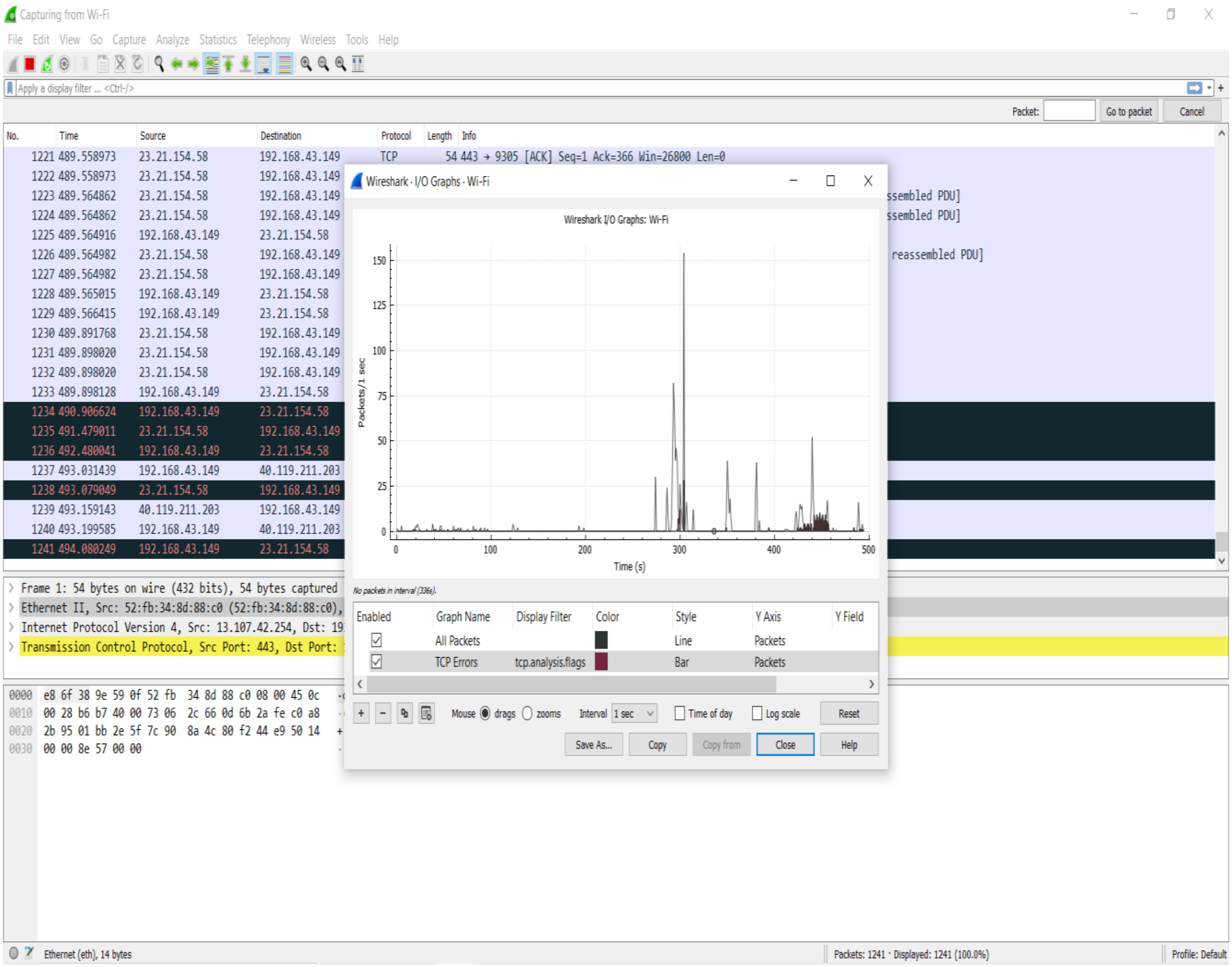
Ping information & captured packet: ping 8.8.8.8 in powershell



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\windows\system32> ping 255.255.255.255
Ping request could not find host 255.255.255.255. Please check the name and try again.
PS C:\windows\system32> ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=262ms TTL=112
Reply from 8.8.8.8: bytes=32 time=55ms TTL=112
Reply from 8.8.8.8: bytes=32 time=55ms TTL=112
Reply from 8.8.8.8: bytes=32 time=66ms TTL=112

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 55ms, Maximum = 262ms, Average = 109ms
PS C:\windows\system32>
```



```
1    192.168.43.149     13.107.4.254       TCP       54 6208 → 443 [ACK] Seq=452
1    192.168.43.149     13.107.4.254       TLSv1.2   92 Application Data
5    13.107.4.254       192.168.43.149     TCP       92 [TCP Retransmission] 443
5    13.107.4.254       192.168.43.149     TLSv1.2  544 Application Data
5    13.107.4.254       192.168.43.149     TLSv1.2  230 Application Data
5    13.107.4.254       192.168.43.149     TLSv1.2   92 Application Data
5    13.107.4.254       192.168.43.149     TLSv1.2   92 Application Data
0    192.168.43.149     13.107.4.254       TCP       54 6206 → 443 [ACK] Seq=674
2    192.168.43.149     13.107.4.254       TLSv1.2   92 Application Data
8    13.107.4.254       192.168.43.149     TCP       54 443 → 6206 [ACK] Seq=117
5    13.107.4.254       192.168.43.149     TCP       54 [TCP Previous segment no
5    13.107.4.254       192.168.43.149     TCP       92 [TCP Retransmission] 443
1    192.168.43.149     13.107.4.254       TCP       54 6208 → 443 [ACK] Seq=490
83   192.168.43.149     8.8.8.8            ICMP      74 Echo (ping) request  id=
27   8.8.8.8            192.168.43.149     ICMP      74 Echo (ping) reply    id=
19   192.168.43.149     8.8.8.8            ICMP      74 Echo (ping) request  id=
46   8.8.8.8            192.168.43.149     ICMP      74 Echo (ping) reply    id=
05   192.168.43.149     8.8.8.8            ICMP      74 Echo (ping) request  id=
02   8.8.8.8            192.168.43.149     ICMP      74 Echo (ping) reply    id=
82   192.168.43.149     40.90.189.152      TLSv1.2  153 Application Data
97   40.90.189.152      192.168.43.149     TLSv1.2  223 Application Data
50   192.168.43.149     40.90.189.152      TCP       54 1887 → 443 [ACK] Seq=100
95   192.168.43.149     8.8.8.8            ICMP      74 Echo (ping) request  id=
49   8.8.8.8            192.168.43.149     ICMP      74 Echo (ping) reply    id=
12   Chongqin_9e:59:0f  52:fb:34:8d:88:c0  ARP       42 Who has 192.168.43.174?
67   52:fb:34:8d:88:c0  Chongqin_9e:59:0f  ARP       42 192.168.43.174 is at 52:
```



Capturing from Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
Packet:
Go to packet
Cancel

```
No.  Time        Source          Destination     Protocol Length Info
1221 489.558973  23.21.154.58    192.168.43.149  TCP      54 443 → 9305 [ACK] Seq=1 Ack=366 Win=26800 Len=0
1222 489.558973  23.21.154.58    192.168.43.149
1223 489.564862  23.21.154.58    192.168.43.149                             ssembled PDU]
1224 489.564862  23.21.154.58    192.168.43.149                             ssembled PDU]
1225 489.564916  192.168.43.149  23.21.154.58
1226 489.564982  23.21.154.58    192.168.43.149                              reassembled PDU]
1227 489.564982  23.21.154.58    192.168.43.149
1228 489.565015  192.168.43.149  23.21.154.58
1229 489.566415  192.168.43.149  23.21.154.58
1230 489.891768  23.21.154.58    192.168.43.149
1231 489.898020  23.21.154.58    192.168.43.149
1232 489.898020  23.21.154.58    192.168.43.149
1233 489.898128  192.168.43.149  23.21.154.58
1234 490.906624  192.168.43.149  23.21.154.58
1235 491.479011  23.21.154.58    192.168.43.149
1236 492.480041  192.168.43.149  23.21.154.58
1237 493.031439  192.168.43.149  40.119.211.203
1238 493.079049  23.21.154.58    192.168.43.149
1239 493.159143  40.119.211.203  192.168.43.149
1240 493.199585  192.168.43.149  40.119.211.203
1241 494.080249  192.168.43.149  23.21.154.58
```

```
> Frame 1: 54 bytes on wire (432 bits), 54 bytes captured
> Ethernet II, Src: 52:fb:34:8d:88:c0 (52:fb:34:8d:88:c0),
> Internet Protocol Version 4, Src: 13.107.42.254, Dst: 19
> Transmission Control Protocol, Src Port: 443, Dst Port:
```

```
0000  e8 6f 38 9e 59 0f 52 fb  34 8d 88 c0 08 00 45 0c
0010  00 28 b6 b7 40 00 73 06  2c 66 0d 6b 2a fe c0 a8
0020  2b 95 01 bb 2e 5f 7c 90  8a 4c 80 f2 44 e9 50 14
0030  00 00 8e 57 00 00
```

No packets in interval (336s).

Enabled	Graph Name	Display Filter	Color	Style	Y Axis	Y Field
☑	All Packets		■	Line	Packets	
☑	TCP Errors	tcp.analysis.flags	■	Bar	Packets	

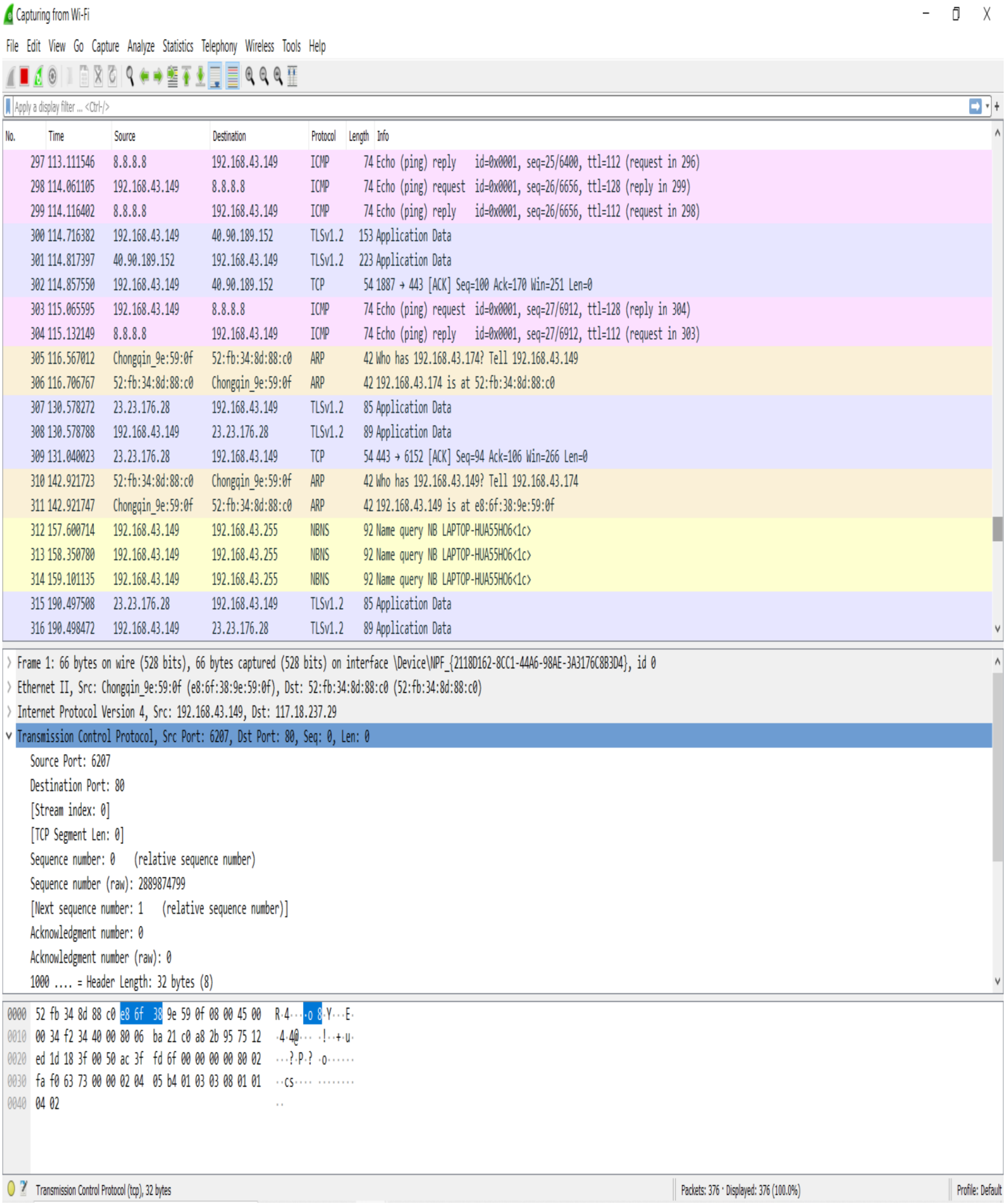
Mouse ● drags ○ zooms Interval 1 sec □ Time of day □ Log scale

Ethernet (eth), 14 bytes

Packets: 1241 · Displayed: 1241 (100.0%)

Profile: Default

The protocol information :



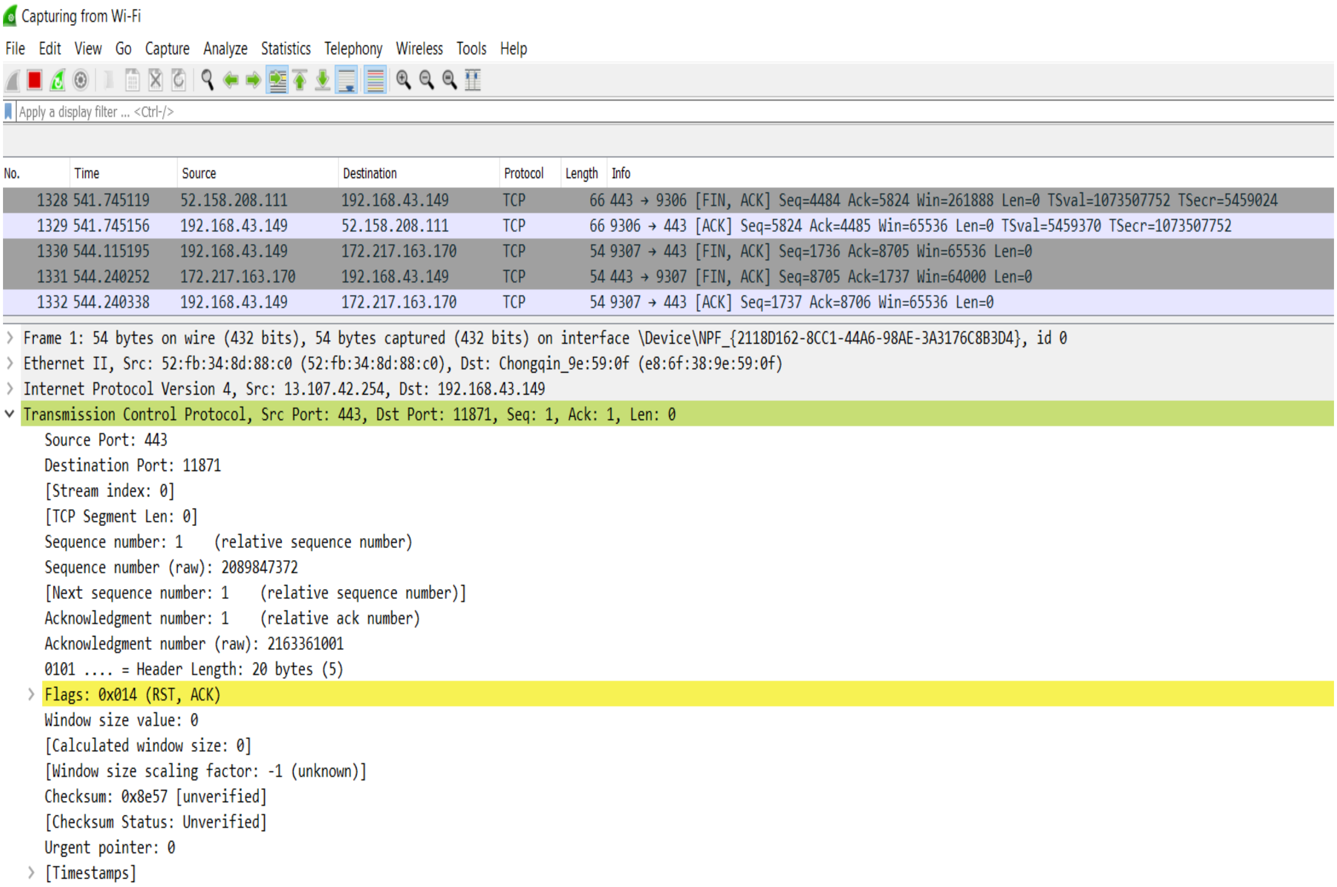
Capturing from Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
297	113.111546	8.8.8.8	192.168.43.149	ICMP	74	Echo (ping) reply id=0x0001, seq=25/6400, ttl=112 (request in 296)
298	114.061105	192.168.43.149	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=26/6656, ttl=128 (reply in 299)
299	114.116402	8.8.8.8	192.168.43.149	ICMP	74	Echo (ping) reply id=0x0001, seq=26/6656, ttl=112 (request in 298)
300	114.716382	192.168.43.149	40.90.189.152	TLSv1.2	153	Application Data
301	114.817397	40.90.189.152	192.168.43.149	TLSv1.2	223	Application Data
302	114.857550	192.168.43.149	40.90.189.152	TCP	54	1887 → 443 [ACK] Seq=100 Ack=170 Win=251 Len=0
303	115.065595	192.168.43.149	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=27/6912, ttl=128 (reply in 304)
304	115.132149	8.8.8.8	192.168.43.149	ICMP	74	Echo (ping) reply id=0x0001, seq=27/6912, ttl=112 (request in 303)
305	116.567012	Chongqin_9e:59:0f	52:fb:34:8d:88:c0	ARP	42	Who has 192.168.43.174? Tell 192.168.43.149
306	116.706767	52:fb:34:8d:88:c0	Chongqin_9e:59:0f	ARP	42	192.168.43.174 is at 52:fb:34:8d:88:c0
307	130.578272	23.23.176.28	192.168.43.149	TLSv1.2	85	Application Data
308	130.578788	192.168.43.149	23.23.176.28	TLSv1.2	89	Application Data
309	131.040023	23.23.176.28	192.168.43.149	TCP	54	443 → 6152 [ACK] Seq=94 Ack=106 Win=266 Len=0
310	142.921723	52:fb:34:8d:88:c0	Chongqin_9e:59:0f	ARP	42	Who has 192.168.43.149? Tell 192.168.43.174
311	142.921747	Chongqin_9e:59:0f	52:fb:34:8d:88:c0	ARP	42	192.168.43.149 is at e8:6f:38:9e:59:0f
312	157.600714	192.168.43.149	192.168.43.255	NBNS	92	Name query NB LAPTOP-HUA55H06<1c>
313	158.350780	192.168.43.149	192.168.43.255	NBNS	92	Name query NB LAPTOP-HUA55H06<1c>
314	159.101135	192.168.43.149	192.168.43.255	NBNS	92	Name query NB LAPTOP-HUA55H06<1c>
315	190.497508	23.23.176.28	192.168.43.149	TLSv1.2	85	Application Data
316	190.498472	192.168.43.149	23.23.176.28	TLSv1.2	89	Application Data

```
> Frame 1: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{2118D162-8CC1-44A6-98AE-3A3176C8B3D4}, id 0
> Ethernet II, Src: Chongqin_9e:59:0f (e8:6f:38:9e:59:0f), Dst: 52:fb:34:8d:88:c0 (52:fb:34:8d:88:c0)
> Internet Protocol Version 4, Src: 192.168.43.149, Dst: 117.18.237.29
v Transmission Control Protocol, Src Port: 6207, Dst Port: 80, Seq: 0, Len: 0
    Source Port: 6207
    Destination Port: 80
    [Stream index: 0]
    [TCP Segment Len: 0]
    Sequence number: 0    (relative sequence number)
    Sequence number (raw): 2889874799
    [Next sequence number: 1    (relative sequence number)]
    Acknowledgment number: 0
    Acknowledgment number (raw): 0
    1000 .... = Header Length: 32 bytes (8)
```

```
0000  52 fb 34 8d 88 c0 e8 6f  38 9e 59 0f 08 00 45 00   R·4···o 8·Y···E·
0010  00 34 f2 34 40 00 80 06  ba 21 c0 a8 2b 95 75 12   ·4·4@··· ·!··+·u·
0020  ed 1d 18 3f 00 50 ac 3f  fd 6f 00 00 00 00 80 02   ···?·P·? ·o······
0030  fa f0 63 73 00 00 02 04  05 b4 01 03 03 08 01 01   ··cs···· ········
0040  04 02                                              ··
```

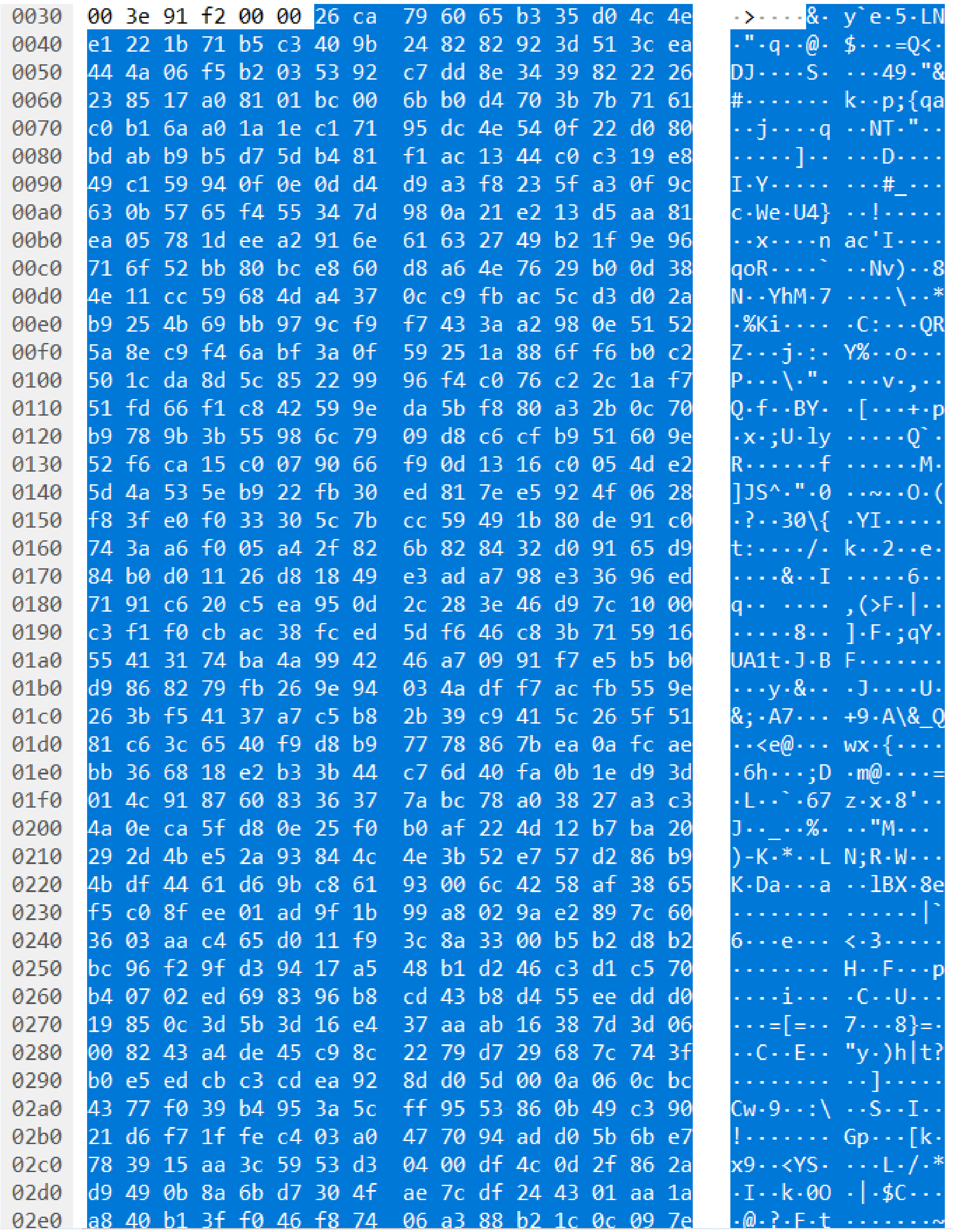
Transmission Control Protocol (tcp), 32 bytes | Packets: 376 · Displayed: 376 (100.0%) | Profile: Default


Capturing from Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>

```
No.   Time        Source          Destination     Protocol Length Info
 1328 541.745119  52.158.208.111  192.168.43.149  TCP      66 443 → 9306 [FIN, ACK] Seq=4484 Ack=5824 Win=261888 Len=0 TSval=1073507752 TSecr=5459024
 1329 541.745156  192.168.43.149  52.158.208.111  TCP      66 9306 → 443 [ACK] Seq=5824 Ack=4485 Win=65536 Len=0 TSval=5459370 TSecr=1073507752
 1330 544.115195  192.168.43.149  172.217.163.170 TCP      54 9307 → 443 [FIN, ACK] Seq=1736 Ack=8705 Win=65536 Len=0
 1331 544.240252  172.217.163.170 192.168.43.149  TCP      54 443 → 9307 [FIN, ACK] Seq=8705 Ack=1737 Win=64000 Len=0
 1332 544.240338  192.168.43.149  172.217.163.170 TCP      54 9307 → 443 [ACK] Seq=1737 Ack=8706 Win=65536 Len=0
```

```
> Frame 1: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface \Device\NPF_{2118D162-8CC1-44A6-98AE-3A3176C8B3D4}, id 0
> Ethernet II, Src: 52:fb:34:8d:88:c0 (52:fb:34:8d:88:c0), Dst: Chongqin_9e:59:0f (e8:6f:38:9e:59:0f)
> Internet Protocol Version 4, Src: 13.107.42.254, Dst: 192.168.43.149
v Transmission Control Protocol, Src Port: 443, Dst Port: 11871, Seq: 1, Ack: 1, Len: 0
    Source Port: 443
    Destination Port: 11871
    [Stream index: 0]
    [TCP Segment Len: 0]
    Sequence number: 1    (relative sequence number)
    Sequence number (raw): 2089847372
    [Next sequence number: 1    (relative sequence number)]
    Acknowledgment number: 1    (relative ack number)
    Acknowledgment number (raw): 2163361001
    0101 .... = Header Length: 20 bytes (5)
  > Flags: 0x014 (RST, ACK)
    Window size value: 0
    [Calculated window size: 0]
    [Window size scaling factor: -1 (unknown)]
    Checksum: 0x8e57 [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
  > [Timestamps]
```

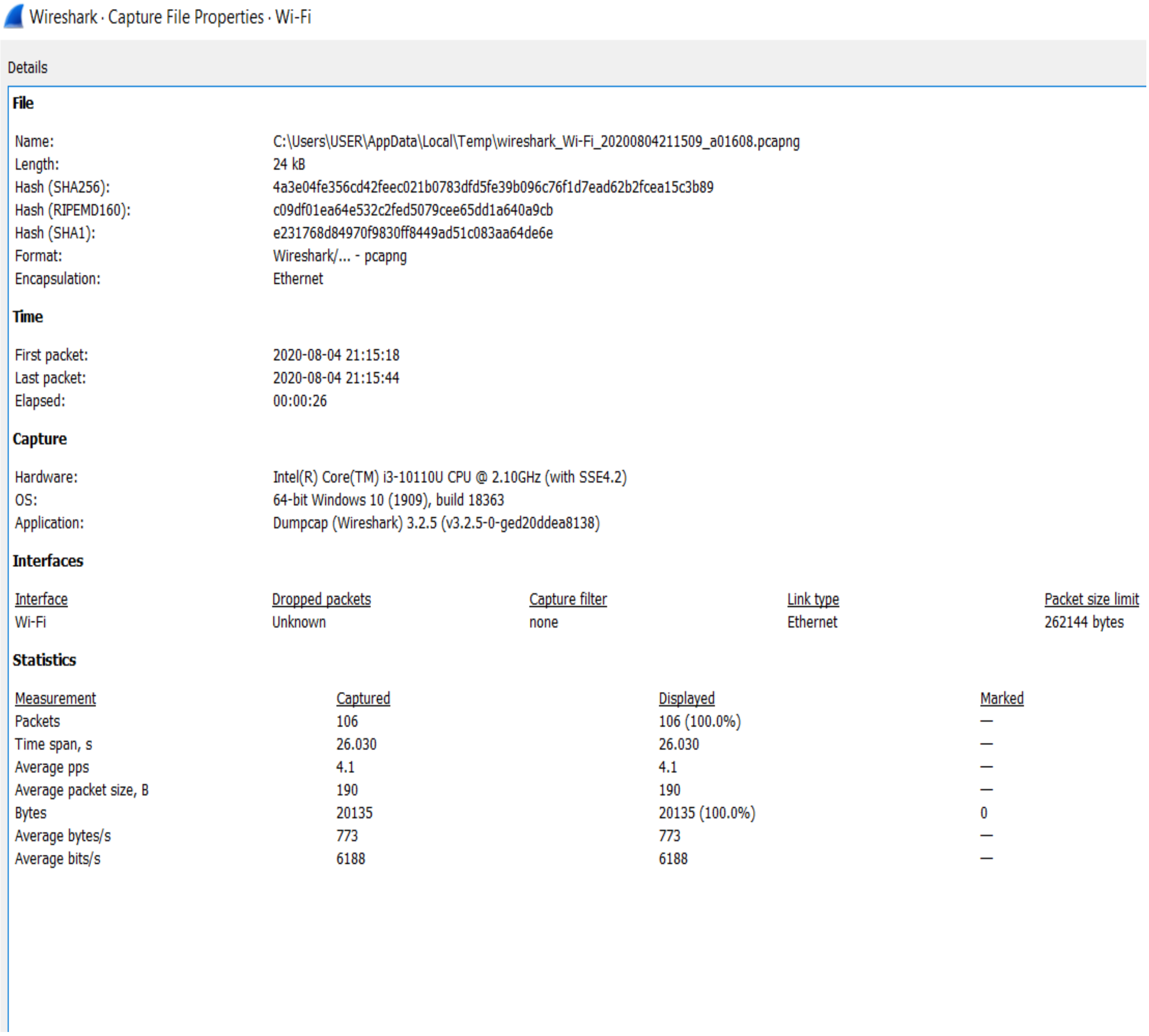
Port Security Hashing Algorithm:



```
0030  00 3e 91 f2 00 00 26 ca  79 60 65 b3 35 d0 4c 4e   ·>····&· y`e·5·LN
0040  e1 22 1b 71 b5 c3 40 9b  24 82 82 92 3d 51 3c ea   ·"·q··@· $···=Q<·
0050  44 4a 06 f5 b2 03 53 92  c7 dd 8e 34 39 82 22 26   DJ····S· ···49·"&
0060  23 85 17 a0 81 01 bc 00  6b b0 d4 70 3b 7b 71 61   #······· k··p;{qa
0070  c0 b1 6a a0 1a 1e c1 71  95 dc 4e 54 0f 22 d0 80   ··j····q ··NT·"··
0080  bd ab b9 b5 d7 5d b4 81  f1 ac 13 44 c0 c3 19 e8   ·····]·· ···D····
0090  49 c1 59 94 0f 0e 0d d4  d9 a3 f8 23 5f a3 0f 9c   I·Y····· ···#_···
00a0  63 0b 57 65 f4 55 34 7d  98 0a 21 e2 13 d5 aa 81   c·We·U4} ··!·····
00b0  ea 05 78 1d ee a2 91 6e  61 63 27 49 b2 1f 9e 96   ··x····n ac'I····
00c0  71 6f 52 bb 80 bc e8 60  d8 a6 4e 76 29 b0 0d 38   qoR····` ··Nv)··8
00d0  4e 11 cc 59 68 4d a4 37  0c c9 fb ac 5c d3 d0 2a   N··YhM·7 ····\··*
00e0  b9 25 4b 69 bb 97 9c f9  f7 43 3a a2 98 0e 51 52   ·%Ki···· ·C:···QR
00f0  5a 8e c9 f4 6a bf 3a 0f  59 25 1a 88 6f f6 b0 c2   Z···j·:· Y%··o···
0100  50 1c da 8d 5c 85 22 99  96 f4 c0 76 c2 2c 1a f7   P···\·"· ···v·,··
0110  51 fd 66 f1 c8 42 59 9e  da 5b f8 80 a3 2b 0c 70   Q·f··BY· ·[···+·p
0120  b9 78 9b 3b 55 98 6c 79  09 d8 c6 cf b9 51 60 9e   ·x·;U·ly ·····Q`·
0130  52 f6 ca 15 c0 07 90 66  f9 0d 13 16 c0 05 4d e2   R······f ······M·
0140  5d 4a 53 5e b9 22 fb 30  ed 81 7e e5 92 4f 06 28   ]JS^·"·0 ··~··O·(
0150  f8 3f e0 f0 33 30 5c 7b  cc 59 49 1b 80 de 91 c0   ·?··30\{ ·YI·····
0160  74 3a a6 f0 05 a4 2f 82  6b 82 84 32 d0 91 65 d9   t:····/· k··2··e·
0170  84 b0 d0 11 26 d8 18 49  e3 ad a7 98 e3 36 96 ed   ····&··I ·····6··
0180  71 91 c6 20 c5 ea 95 0d  2c 28 3e 46 d9 7c 10 00   q·· ···· ,(>F·|··
0190  c3 f1 f0 cb ac 38 fc ed  5d f6 46 c8 3b 71 59 16   ·····8·· ]·F·;qY·
01a0  55 41 31 74 ba 4a 99 42  46 a7 09 91 f7 e5 b5 b0   UA1t·J·B F·······
01b0  d9 86 82 79 fb 26 9e 94  03 4a df f7 ac fb 55 9e   ···y·&·· ·J····U·
01c0  26 3b f5 41 37 a7 c5 b8  2b 39 c9 41 5c 26 5f 51   &;·A7··· +9·A\&_Q
01d0  81 c6 3c 65 40 f9 d8 b9  77 78 86 7b ea 0a fc ae   ··<e@··· wx·{····
01e0  bb 36 68 18 e2 b3 3b 44  c7 6d 40 fa 0b 1e d9 3d   ·6h···;D ·m@····=
01f0  01 4c 91 87 60 83 36 37  7a bc 78 a0 38 27 a3 c3   ·L··`·67 z·x·8'··
0200  4a 0e ca 5f d8 0e 25 f0  b0 af 22 4d 12 b7 ba 20   J··_··%· ··"M··· 
0210  29 2d 4b e5 2a 93 84 4c  4e 3b 52 e7 57 d2 86 b9   )-K·*··L N;R·W···
0220  4b df 44 61 d6 9b c8 61  93 00 6c 42 58 af 38 65   K·Da···a ··lBX·8e
0230  f5 c0 8f ee 01 ad 9f 1b  99 a8 02 9a e2 89 7c 60   ········ ······|`
0240  36 03 aa c4 65 d0 11 f9  3c 8a 33 00 b5 b2 d8 b2   6···e··· <·3·····
0250  bc 96 f2 9f d3 94 17 a5  48 b1 d2 46 c3 d1 c5 70   ········ H··F···p
0260  b4 07 02 ed 69 83 96 b8  cd 43 b8 d4 55 ee dd d0   ····i··· ·C··U···
0270  19 85 0c 3d 5b 3d 16 e4  37 aa ab 16 38 7d 3d 06   ···=[=·· 7···8}=·
0280  00 82 43 a4 de 45 c9 8c  22 79 d7 29 68 7c 74 3f   ··C··E·· "y·)h|t?
0290  b0 e5 ed cb c3 cd ea 92  8d d0 5d 00 0a 06 0c bc   ········ ··]·····
02a0  43 77 f0 39 b4 95 3a 5c  ff 95 53 86 0b 49 c3 90   Cw·9··:\ ··S··I··
02b0  21 d6 f7 1f fe c4 03 a0  47 70 94 ad d0 5b 6b e7   !······· Gp···[k·
02c0  78 39 15 aa 3c 59 53 d3  04 00 df 4c 0d 2f 86 2a   x9··<YS· ···L·/·*
02d0  d9 49 0b 8a 6b d7 30 4f  ae 7c df 24 43 01 aa 1a   ·I··k·0O ·|·$C···
02e0  a8 40 b1 3f f0 46 f8 74  06 a3 88 b2 1c 0c 09 7e   ·@·?·F·t ·······~
```

Different Statistics:

Wi_Fi file capture



Wireshark · Capture File Properties · Wi-Fi

Details

File

Name:	C:\Users\USER\AppData\Local\Temp\wireshark_Wi-Fi_20200804211509_a01608.pcapng
Length:	24 kB
Hash (SHA256):	4a3e04fe356cd42feec021b0783dfd5fe39b096c76f1d7ead62b2fcea15c3b89
Hash (RIPEMD160):	c09df01ea64e532c2fed5079cee65dd1a640a9cb
Hash (SHA1):	e231768d84970f9830ff8449ad51c083aa64de6e
Format:	Wireshark/... - pcapng
Encapsulation:	Ethernet

Time

First packet:	2020-08-04 21:15:18
Last packet:	2020-08-04 21:15:44
Elapsed:	00:00:26

Capture

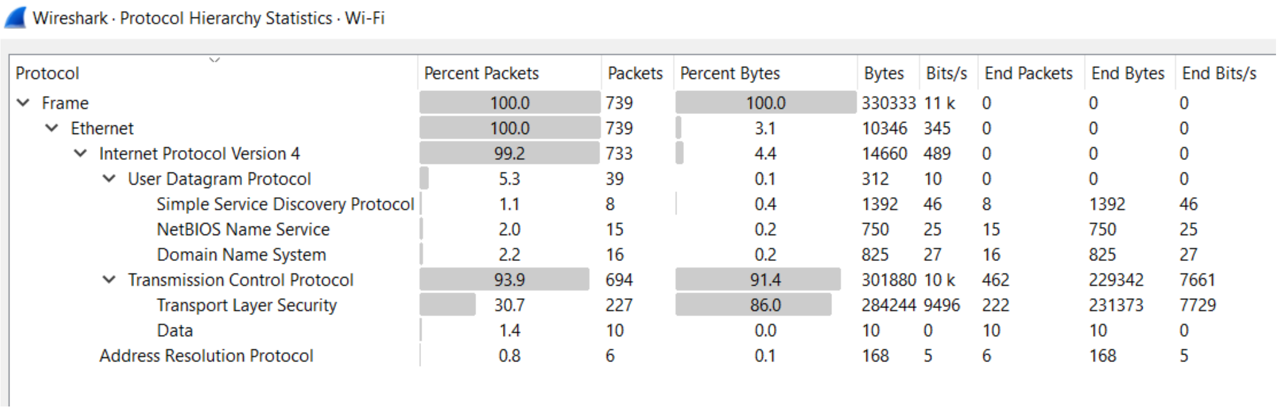
Hardware:	Intel(R) Core(TM) i3-10110U CPU @ 2.10GHz (with SSE4.2)
OS:	64-bit Windows 10 (1909), build 18363
Application:	Dumpcap (Wireshark) 3.2.5 (v3.2.5-0-ged20ddea8138)

Interfaces

Interface	Dropped packets	Capture filter	Link type	Packet size limit
Wi-Fi	Unknown	none	Ethernet	262144 bytes

Statistics

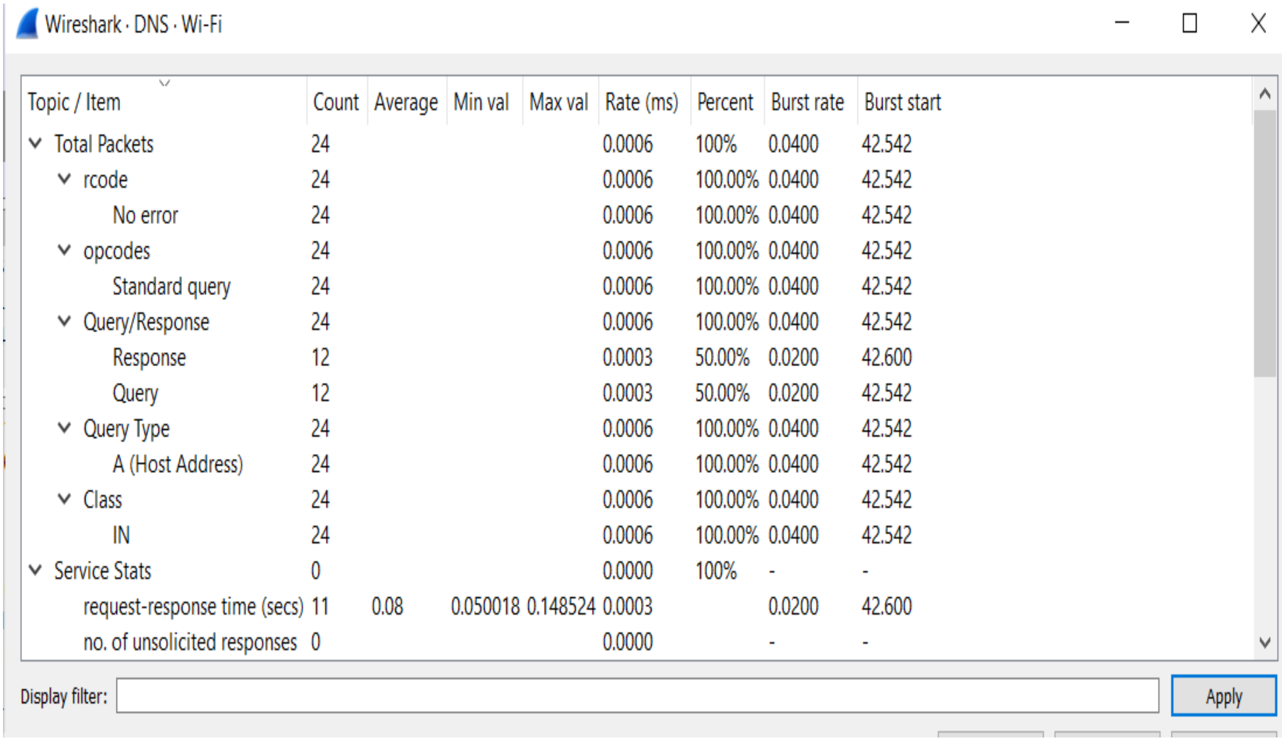
Measurement	Captured	Displayed	Marked
Packets	106	106 (100.0%)	—
Time span, s	26.030	26.030	—
Average pps	4.1	4.1	—
Average packet size, B	190	190	—
Bytes	20135	20135 (100.0%)	0
Average bytes/s	773	773	—
Average bits/s	6188	6188	—



Wireshark · Protocol Hierarchy Statistics · Wi-Fi

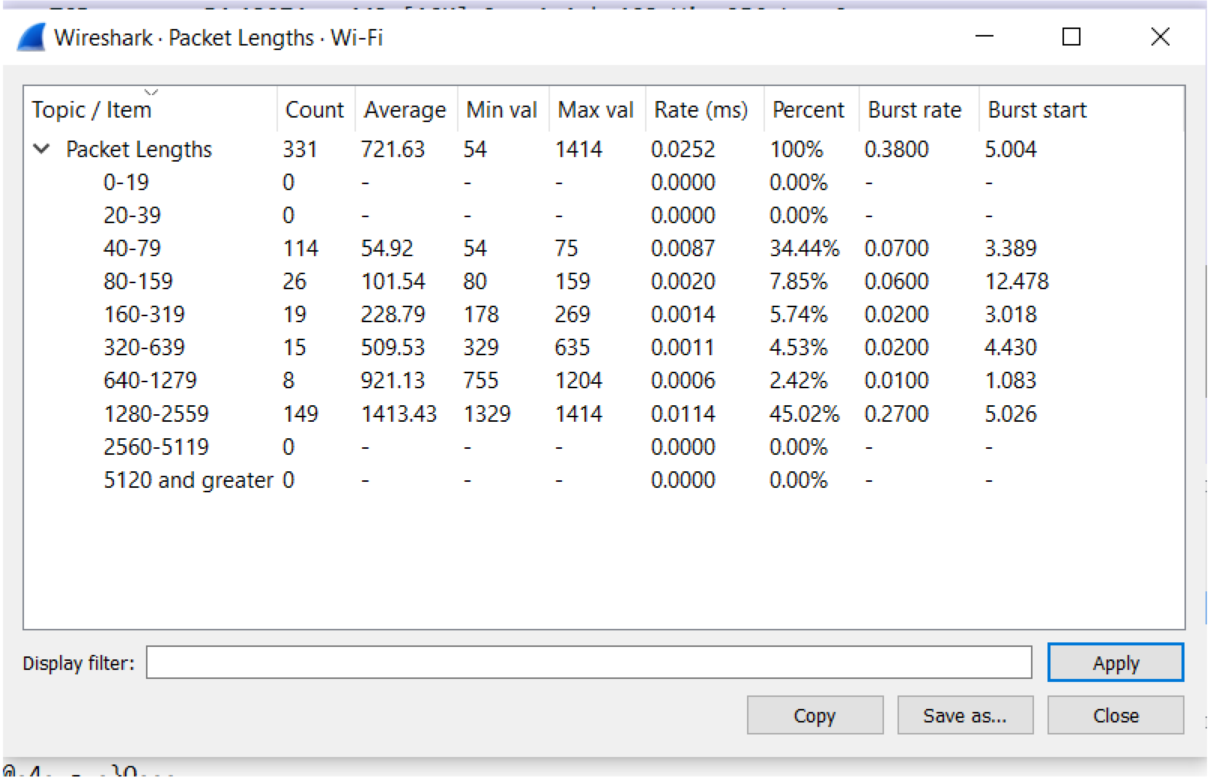
Protocol	Percent Packets	Packets	Percent Bytes	Bytes	Bits/s	End Packets	End Bytes	End Bits/s
Frame	100.0	739	100.0	330333	11 k	0	0	0
Ethernet	100.0	739	3.1	10346	345	0	0	0
Internet Protocol Version 4	99.2	733	4.4	14660	489	0	0	0
User Datagram Protocol	5.3	39	0.1	312	10	0	0	0
Simple Service Discovery Protocol	1.1	8	0.4	1392	46	8	1392	46
NetBIOS Name Service	2.0	15	0.2	750	25	15	750	25
Domain Name System	2.2	16	0.2	825	27	16	825	27
Transmission Control Protocol	93.9	694	91.4	301880	10 k	462	229342	7661
Transport Layer Security	30.7	227	86.0	284244	9496	222	231373	7729
Data	1.4	10	0.0	10	0	10	10	0
Address Resolution Protocol	0.8	6	0.1	168	5	6	168	5

DNS



Wireshark · DNS · Wi-Fi

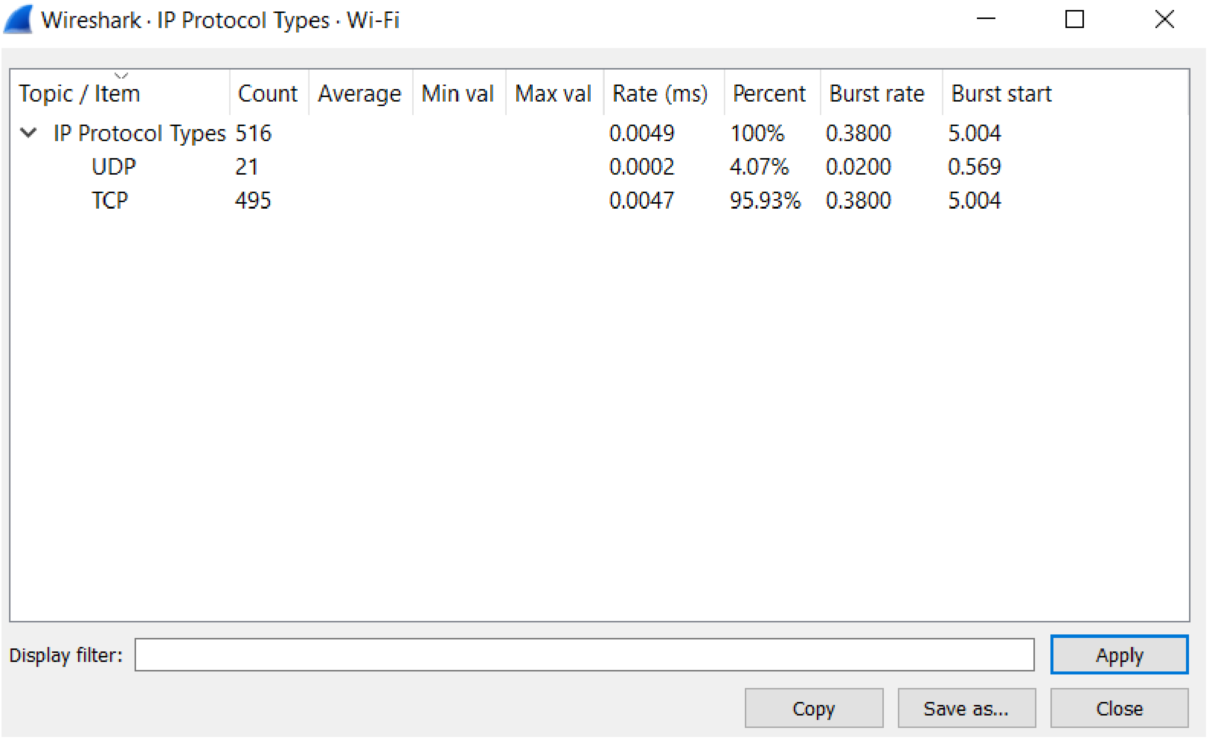
Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
Total Packets	24				0.0006	100%	0.0400	42.542
rcode	24				0.0006	100.00%	0.0400	42.542
No error	24				0.0006	100.00%	0.0400	42.542
opcodes	24				0.0006	100.00%	0.0400	42.542
Standard query	24				0.0006	100.00%	0.0400	42.542
Query/Response	24				0.0006	100.00%	0.0400	42.542
Response	12				0.0003	50.00%	0.0200	42.600
Query	12				0.0003	50.00%	0.0200	42.542
Query Type	24				0.0006	100.00%	0.0400	42.542
A (Host Address)	24				0.0006	100.00%	0.0400	42.542
Class	24				0.0006	100.00%	0.0400	42.542
IN	24				0.0006	100.00%	0.0400	42.542
Service Stats	0				0.0000	100%	-	-
request-response time (secs)	11	0.08	0.050018	0.148524	0.0003		0.0200	42.600
no. of unsolicited responses	0				0.0000		-	-



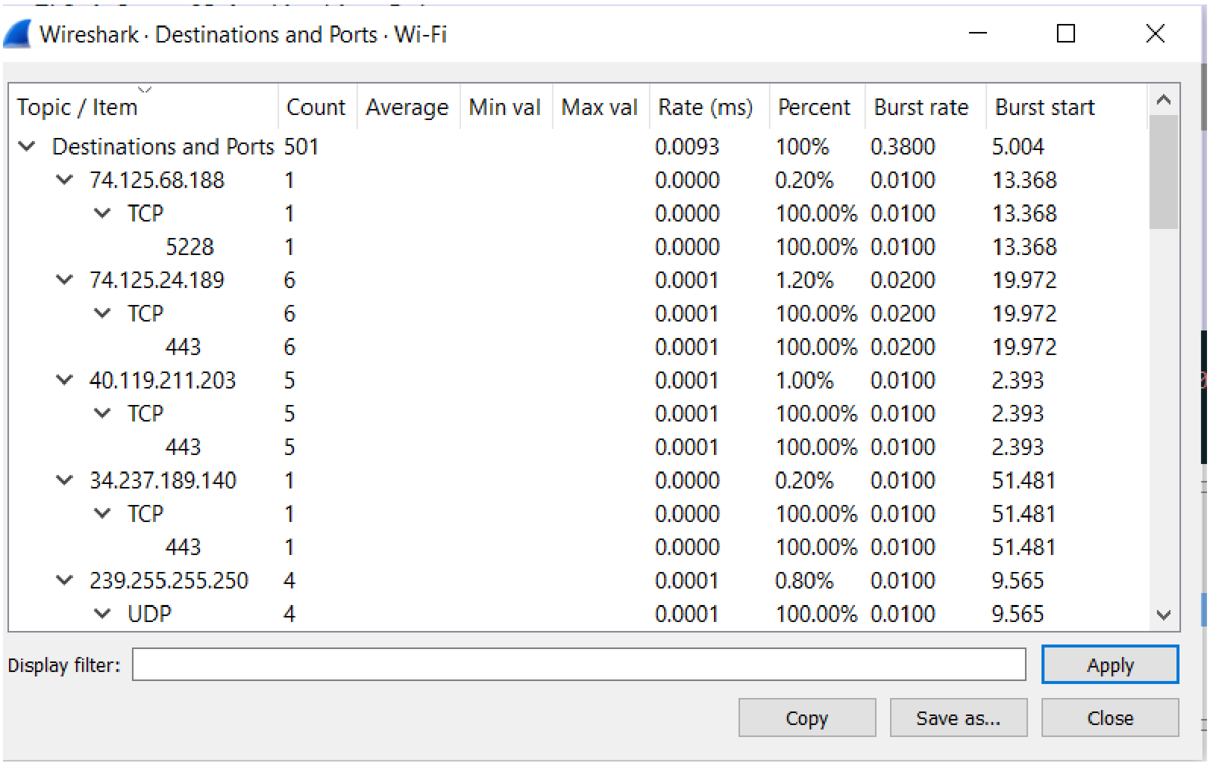
Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
Packet Lengths	331	721.63	54	1414	0.0252	100%	0.3800	5.004
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	114	54.92	54	75	0.0087	34.44%	0.0700	3.389
80-159	26	101.54	80	159	0.0020	7.85%	0.0600	12.478
160-319	19	228.79	178	269	0.0014	5.74%	0.0200	3.018
320-639	15	509.53	329	635	0.0011	4.53%	0.0200	4.430
640-1279	8	921.13	755	1204	0.0006	2.42%	0.0100	1.083
1280-2559	149	1413.43	1329	1414	0.0114	45.02%	0.2700	5.026
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter:

Protocl have been used:

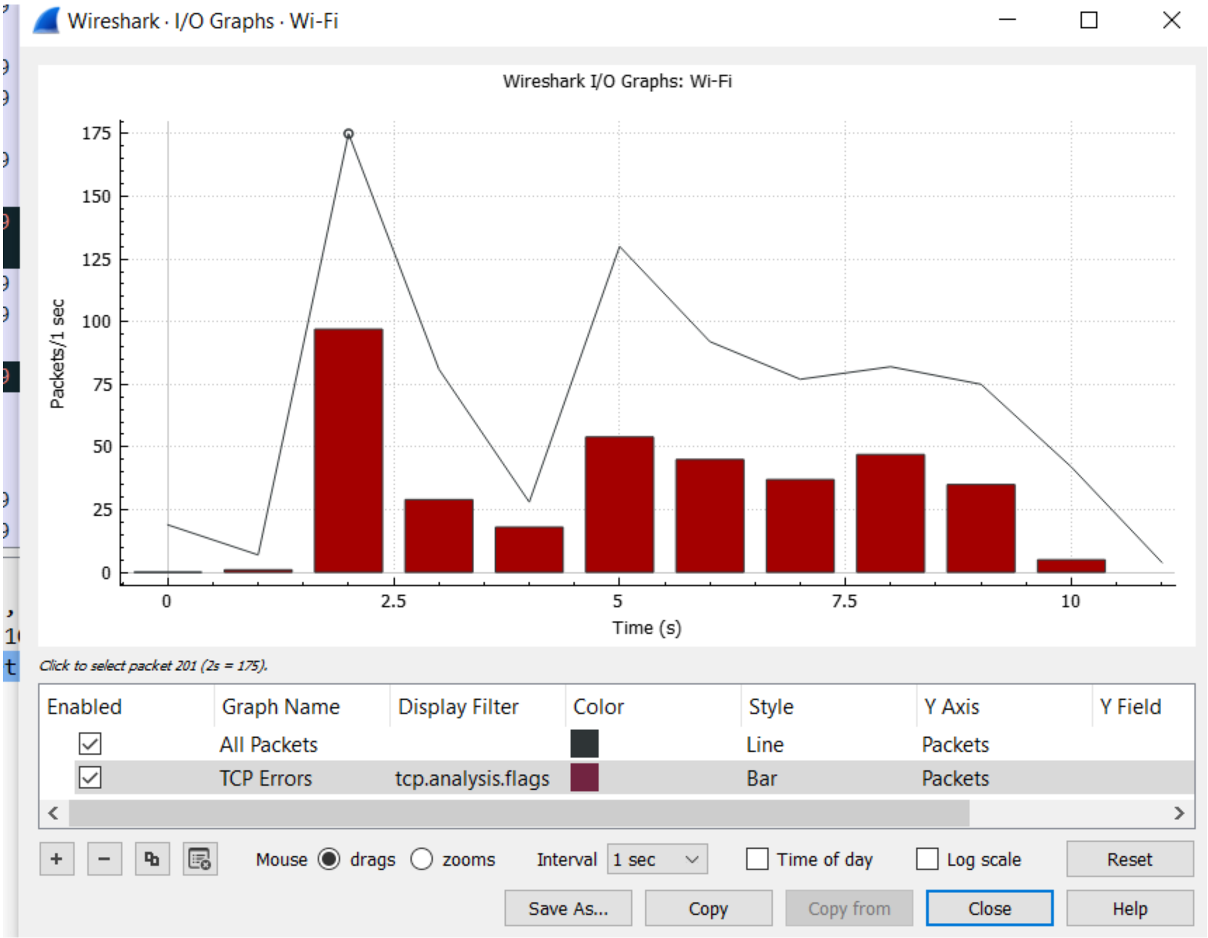


Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
IP Protocol Types	516				0.0049	100%	0.3800	5.004
UDP	21				0.0002	4.07%	0.0200	0.569
TCP	495				0.0047	95.93%	0.3800	5.004



Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
Destinations and Ports	501				0.0093	100%	0.3800	5.004
74.125.68.188	1				0.0000	0.20%	0.0100	13.368
TCP	1				0.0000	100.00%	0.0100	13.368
5228	1				0.0000	100.00%	0.0100	13.368
74.125.24.189	6				0.0001	1.20%	0.0200	19.972
TCP	6				0.0001	100.00%	0.0200	19.972
443	6				0.0001	100.00%	0.0200	19.972
40.119.211.203	5				0.0001	1.00%	0.0100	2.393
TCP	5				0.0001	100.00%	0.0100	2.393
443	5				0.0001	100.00%	0.0100	2.393
34.237.189.140	1				0.0000	0.20%	0.0100	51.481
TCP	1				0.0000	100.00%	0.0100	51.481
443	1				0.0000	100.00%	0.0100	51.481
239.255.255.250	4				0.0001	0.80%	0.0100	9.565
UDP	4				0.0001	100.00%	0.0100	9.565

Error & Success Rates:

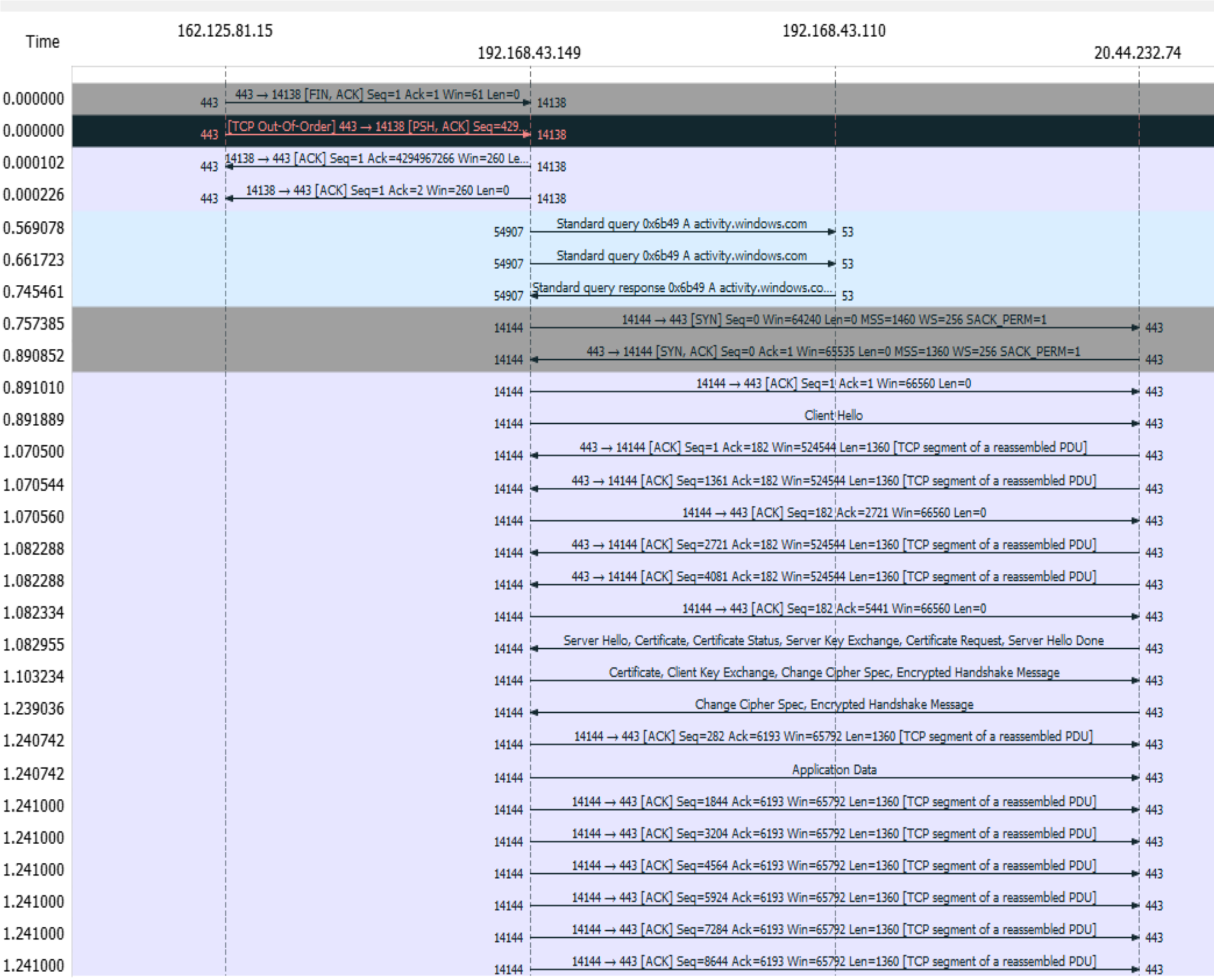


Click to select packet 201 (2s = 175).

Enabled	Graph Name	Display Filter	Color	Style	Y Axis	Y Field
☑	All Packets		■	Line	Packets	
☑	TCP Errors	tcp.analysis.flags	■	Bar	Packets	

Mouse ● drags ○ zooms Interval 1 sec □ Time of day □ Log scale

Real time Response:



```
Time        162.125.81.15         192.168.43.149        192.168.43.110        20.44.232.74
0.000000    443   443 → 14138 [FIN, ACK] Seq=1 Ack=1 Win=61 Len=0   14138
0.000000    443   [TCP Out-Of-Order] 443 → 14138 [PSH, ACK] Seq=429...   14138
0.000102    443   14138 → 443 [ACK] Seq=1 Ack=4294967266 Win=260 Le...   14138
0.000226    443   14138 → 443 [ACK] Seq=1 Ack=2 Win=260 Len=0   14138
0.569078    54907   Standard query 0x6b49 A activity.windows.com   53
0.661723    54907   Standard query 0x6b49 A activity.windows.com   53
0.745461    54907   Standard query response 0x6b49 A activity.windows.co...   53
0.757385    14144   14144 → 443 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1   443
0.890852    14144   443 → 14144 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1360 WS=256 SACK_PERM=1   443
0.891010    14144   14144 → 443 [ACK] Seq=1 Ack=1 Win=66560 Len=0   443
0.891889    14144   Client Hello   443
1.070500    14144   443 → 14144 [ACK] Seq=1 Ack=182 Win=524544 Len=1360 [TCP segment of a reassembled PDU]   443
1.070544    14144   443 → 14144 [ACK] Seq=1361 Ack=182 Win=524544 Len=1360 [TCP segment of a reassembled PDU]   443
1.070560    14144   14144 → 443 [ACK] Seq=182 Ack=2721 Win=66560 Len=0   443
1.082288    14144   443 → 14144 [ACK] Seq=2721 Ack=182 Win=524544 Len=1360 [TCP segment of a reassembled PDU]   443
1.082288    14144   443 → 14144 [ACK] Seq=4081 Ack=182 Win=524544 Len=1360 [TCP segment of a reassembled PDU]   443
1.082334    14144   14144 → 443 [ACK] Seq=182 Ack=5441 Win=66560 Len=0   443
1.082955    14144   Server Hello, Certificate, Certificate Status, Server Key Exchange, Certificate Request, Server Hello Done   443
1.103234    14144   Certificate, Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message   443
1.239036    14144   Change Cipher Spec, Encrypted Handshake Message   443
1.240742    14144   14144 → 443 [ACK] Seq=282 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
1.240742    14144   Application Data   443
1.241000    14144   14144 → 443 [ACK] Seq=1844 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
1.241000    14144   14144 → 443 [ACK] Seq=3204 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
1.241000    14144   14144 → 443 [ACK] Seq=4564 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
1.241000    14144   14144 → 443 [ACK] Seq=5924 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
1.241000    14144   14144 → 443 [ACK] Seq=7284 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
1.241000    14144   14144 → 443 [ACK] Seq=8644 Ack=6193 Win=65792 Len=1360 [TCP segment of a reassembled PDU]   443
```

Conclution:

The Wireshark package contains a network protocol analyzer. Wireshark is a open source and free software. It is a Graphical alternative to TCP dump and display packet in details. Open files contains packet data captures. Filtering is essential when dealing with a lot of packets. This is useful for analyzing data captured “off the wire” from a live network connection, or data read from a capture file.

Wireshark provides both a graphical and a TTY-mode front-end for examining captured network packets from over 500 protocols, as well as the capability to read capture files from many other popular network analyzers.