Protocol	Percent Packets	Packets	Percent Bytes	Bytes	Bits/s	End Packets	End Bytes	End Bits/s	PDUs
▼ Frame	100.0	1924	100.0	1250666	307 k	0	0	0	1924
▼ Ethernet	100.0	1924	2.2	27056	6654	0	0	0	1924
▼ Internet Protocol Version 6	32.0	616	2.0	24640	6060	0	0	0	616
▼ User Datagram Protocol	9.5	183	0.1	1464	360	0	0	0	183
Simple Service Discovery Protocol	0.4	8	0.1	1012	248	8	1012	248	8
QUIC IETF	2.4	47	1.9	23500	5780	47	16645	4093	59
Domain Name System	6.7	128	0.8	10410	2560	128	10410	2560	128
▼ Transmission Control Protocol	22.2	427	0.7	9092	2236	232	5192	1277	427
Transport Layer Security	8.6	165	10.9	136816	33 k	165	93383	22 k	197
▼ Hypertext Transfer Protocol	0.9	18	0.4	5467	1344	3	943	231	18
Online Certificate Status Protocol	0.6	12	0.3	3398	835	12	3398	835	12
Line-based text data	0.2	3	0.0	106	26	3	106	26	3
Data	0.6	12	0.0	12	2	12	12	2	12
Internet Control Message Protocol v6	0.3	6	0.0	176	43	6	176	43	6
▼ Internet Protocol Version 4	68.2	1312	2.1	26240	6453	0	0	0	1312
▼ User Datagram Protocol	1.8	34	0.0	272	66	0	0	0	34
Teredo IPv6 over UDP tunneling	0.2	4	0.0	340	83	0	0	0	4
Simple Service Discovery Protocol	0.2	4	0.0	530	130	4	530	130	4
QUIC IETF	0.9	18	0.5	6134	1508	18	4407	1083	22
Domain Name System	0.4	8	0.1	857	210	8	857	210	8
▼ Transmission Control Protocol	66.4	1278	2.2	27084	6661	974	21004	5166	1278
Transport Layer Security	15.5	298	77.5	968727	238 k	298	924954	227 k	309
▼ Hypertext Transfer Protocol	0.2	4	0.1	1056	259	2	640	157	4
Line-based text data	0.1	2	0.0	16	3	2	16	3	2
Data	0.1	2	0.0	2	0	2	2	0	2

1.

Cel mai mult este folosit protocolul **TCP** din cadrul IPv4 cu un procent de **66.4%**.

2. a.

Wireshark I/O Graphs: Wi-Fi

Click to select packet 1642 (17.3s = 404).
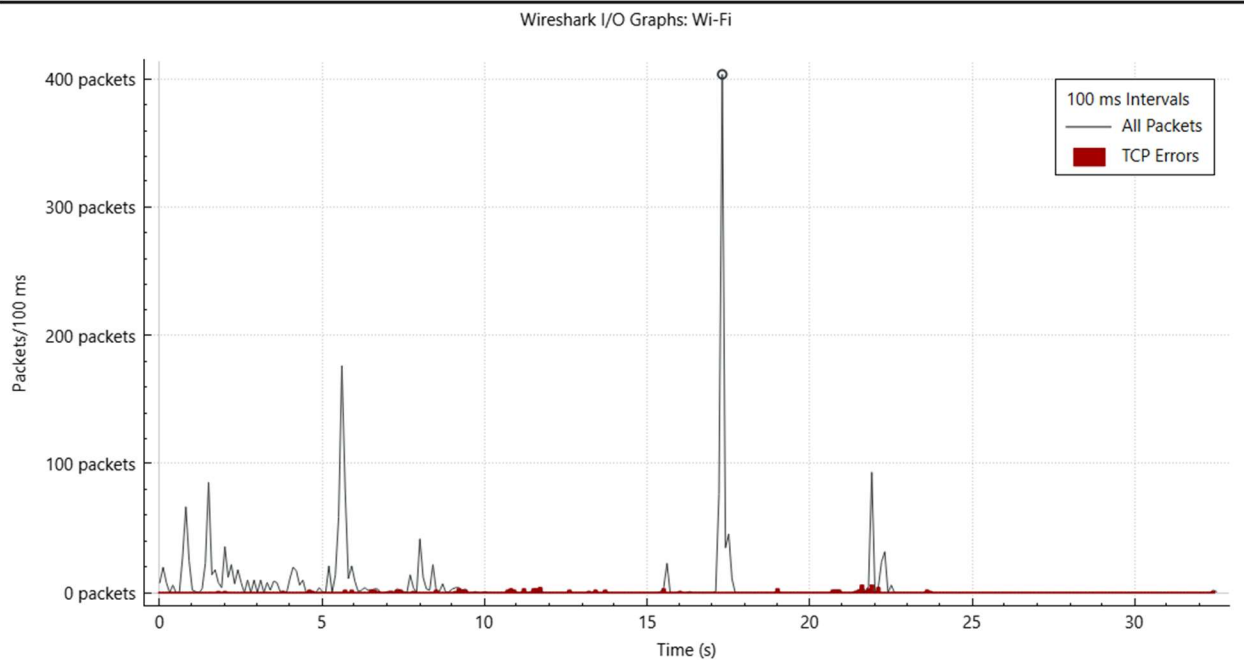
Volumul maxim de pachete este de **404**, gasit la momentul **t = 17.3s**.

b. secunda = nr (Butnaru) + nr (Victor) = 7 + 6 = 13
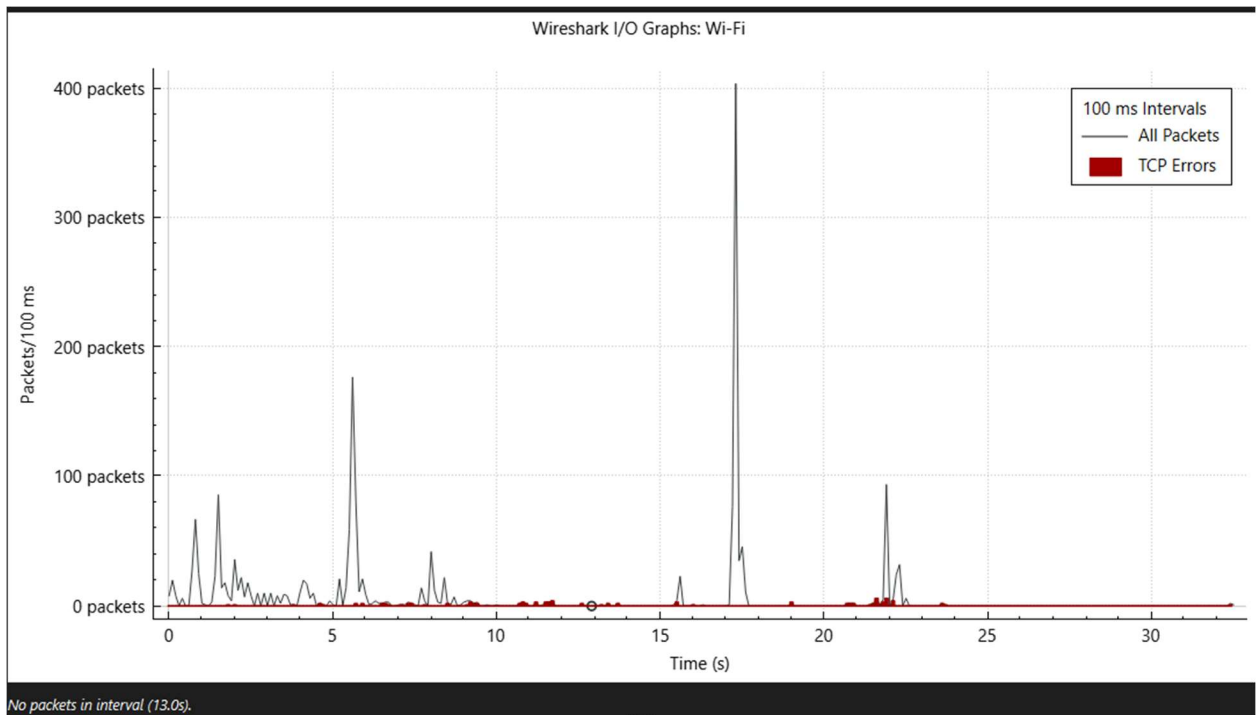
La momentul **t = 13.0s** nu a fost transmis / receptionat **niciun** pachet.

3.

Conform acestor pachete, dimensiunea antetului UDP poate fi calculata prin scaderea dimensiunii payload-ului (1232 bytes respectiv 664 bytes) din dimensiunea totala (1240 bytes respectiv 672 bytes). In ambele cazuri, dimensiunea antetului UDP este **8 bytes**.

4.

```
▼ User Datagram Protocol, Src Port: 443, Dst Port: 62622
      Source Port: 443
      Destination Port: 62622
      Length: 36
      Checksum: 0xf869 [unverified]
      [Checksum Status: Unverified]
      [Stream index: 0]
      [Stream Packet Number: 4]
    ▶ [Timestamps]
      UDP payload (28 bytes)
```

Portul **sursa** din cadrul 4 este **443**, iar portul **destinatie** este **62622**.

5. Avem de luat in calcul mai multe antete :
   - antetul ethernet : 6 octeti pt adresa MAC a destinatiei + 6 octeti pentru adresa MAC a sursei + 2 octeti pt Type = 14 octeti
   - antetul IPv6 : 40 octeti (numarati in dreapta)
   - antetul UDP : length – payload = 56 – 48 = 8 octeti
   - antetul DNS : Transaction ID 2 octeti + Flags 2 octeti + Questions 2 octeti + Answer RRs 2 octeti + Authority RRs 2 octeti + Additional RRs 2 octeti = 12 octeti
     Total: 14 + 40 + 8 + 12 = **74 octeti**

6.

```
▶ Frame 10: 1466 bytes on wire (11728 bits), 1466 bytes captured (11728 bits) on interface \Device\NPF_{373CAA60-D5AB-4413-8DC0-0A5830F7BC91}
▶ Ethernet II, Src: HuaweiTechno_f1:4d:77 (24:44:27:f1:4d:77), Dst: Intel_5c:0c:47 (f8:34:41:5c:0c:47)
▶ Internet Protocol Version 4, Src: 116.202.179.166, Dst: 192.168.100.10
▶ Transmission Control Protocol, Src Port: 443, Dst Port: 57729, Seq: 9885, Ack: 598, Len: 1412
```

Socket-ul sursei este format din **adresa IP** si **portul sursei**, in cazul acesta raspunsul este **116.202.179.166:443**.

7.

```
  33 1.813339      192.168.100.10      116.202.179.166    TCP    66 57757 → 443 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
  34 1.837935      116.202.179.166     192.168.100.10     TCP    66 443 → 57757 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1412 SACK_PERM WS=128
```

In acest cadru, diferenta de timp dintre SYN si SYN-ACK, care fac parte din acelasi transfer, este de 1.837935 s – 1.813339 s = **0.024596 s** = **24.596 ms**.

8. Antet ethernet 14 octeti + antet IPv4 de data asta 20 octeti + antet TCP 20 octeti (numarati tot in dreapta) = **54 octeti**