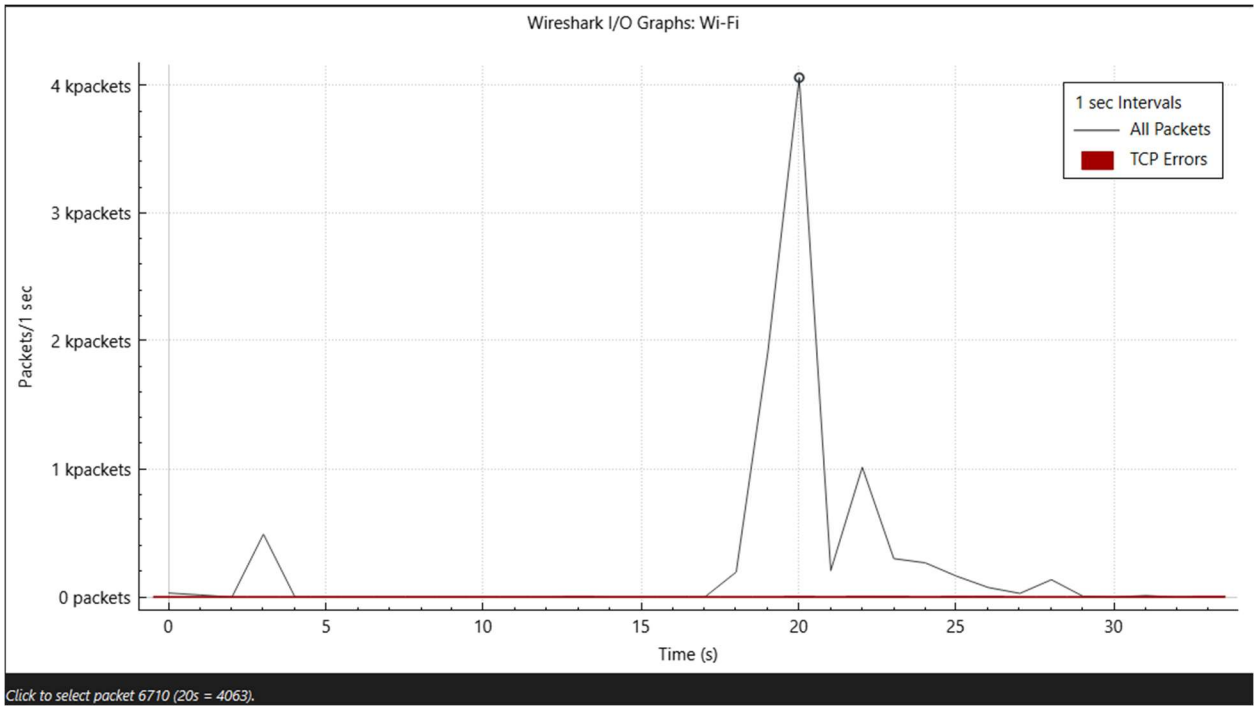
1.

Protocol	Percent Packets	Packets	Percent Bytes	Bytes	Bits/s	End Packets	End Bytes	End Bits/s	PDUs
Frame	100.0	8931	100.0	9867011	2339 k	0	0	0	8931
Ethernet	100.0	8931	1.3	125070	29 k	0	0	0	8931
Internet Protocol Version 6	93.1	8318	3.4	332720	78 k	0	0	0	8318
User Datagram Protocol	89.2	7967	0.6	63736	15 k	0	0	0	7967
Simple Service Discovery Protocol	0.1	8	0.0	1012	239	8	1012	239	8
QUIC IETF	87.8	7841	86.0	8483792	2011 k	7841	8461527	2006 k	7893
Domain Name System	1.3	118	0.1	7775	1843	118	7775	1843	118
Transmission Control Protocol	3.9	351	0.1	7476	1772	217	4796	1137	351
Transport Layer Security	1.3	114	1.2	123283	29 k	114	123283	29 k	114
Hypertext Transfer Protocol	0.2	18	0.1	5256	1246	0	0	0	18
Online Certificate Status Protocol	0.2	18	0.1	4996	1184	18	4996	1184	18
Data	0.0	2	0.0	2	0	2	2	0	2
Internet Protocol Version 4	6.9	613	0.1	12260	2907	0	0	0	613
User Datagram Protocol	0.0	3	0.0	24	5	0	0	0	3
Simple Service Discovery Protocol	0.0	3	0.0	397	94	3	397	94	3
Transmission Control Protocol	6.8	610	0.1	12332	2924	527	10672	2530	610
Transport Layer Security	0.9	80	7.1	697397	165 k	80	697397	165 k	80
Data	0.0	3	0.0	3	0	3	3	0	3

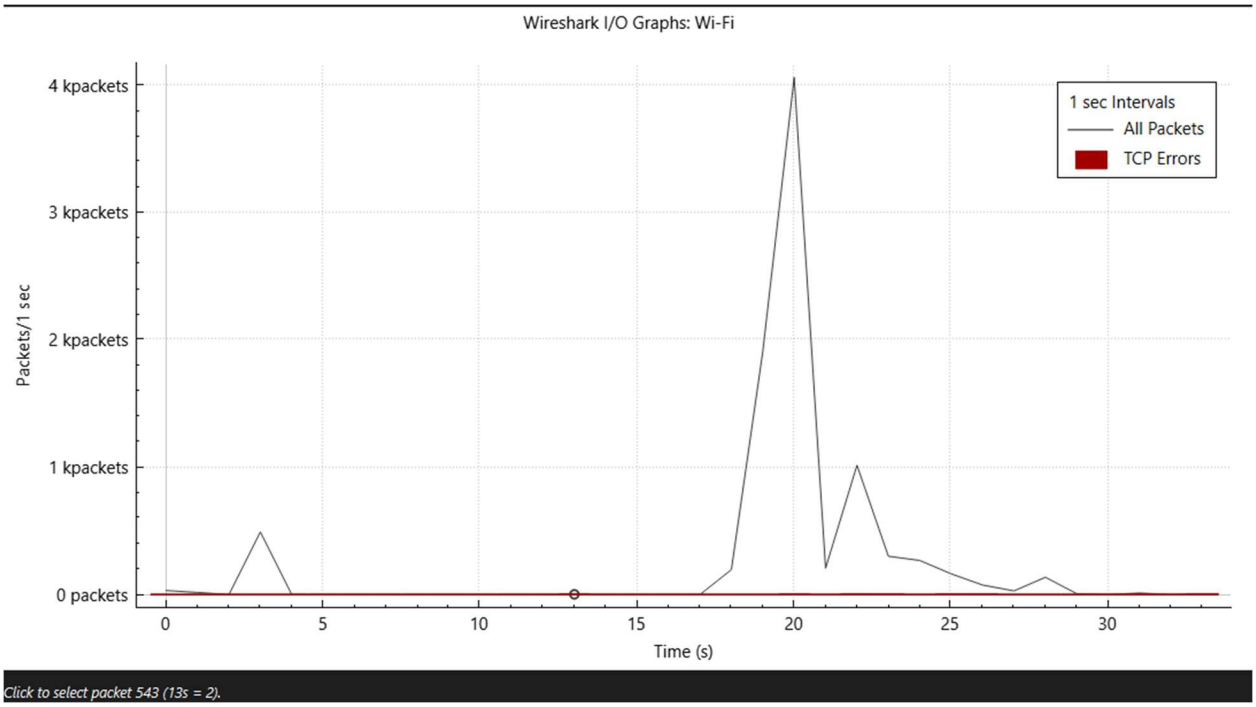
Cel mai mult este folosit protocolul **UDP** din cadrul IPv6 cu un procent de **89.2%**. (am deschis YouTube)

2. a.



Volumul maxim de pachete este de **4063**, gasit la momentul **t = 20s**.

b. secunda = nr (Butnaru) + nr (Victor) = 7 + 6 = 13



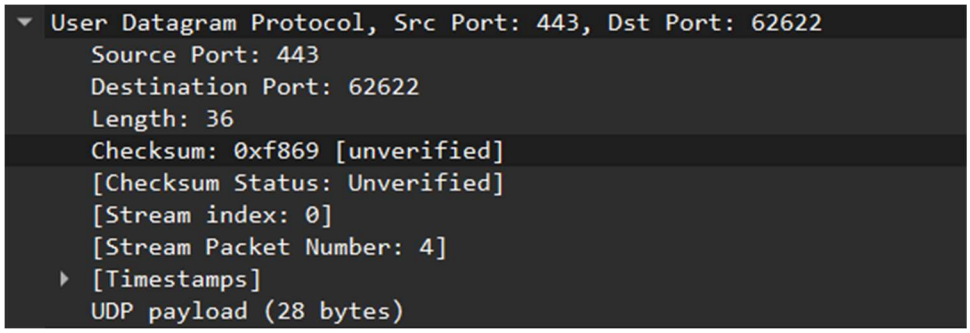
La momentul **t = 13s** au fost transmise / receptionate **2 pachete**.

3.

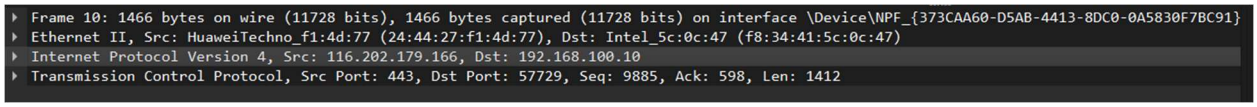
```
User Datagram Protocol, Src Port: 62622, Dst Port: 443
    Source Port: 62622
    Destination Port: 443
    Length: 1240
    Checksum: 0xefbe [unverified]
    [Checksum Status: Unverified]
    [Stream index: 0]
    [Stream Packet Number: 1]
  ▸ [Timestamps]
    UDP payload (1232 bytes)
```

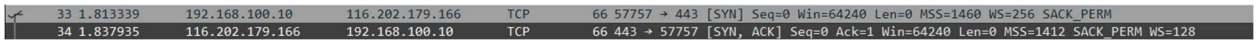
```
User Datagram Protocol, Src Port: 443, Dst Port: 53094
    Source Port: 443
    Destination Port: 53094
    Length: 672
    Checksum: 0x5360 [unverified]
    [Checksum Status: Unverified]
    [Stream index: 9]
    [Stream Packet Number: 10]
  ▸ [Timestamps]
    UDP payload (664 bytes)
```

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**