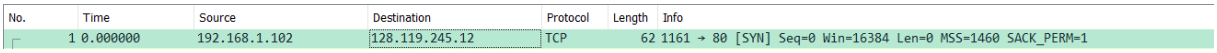
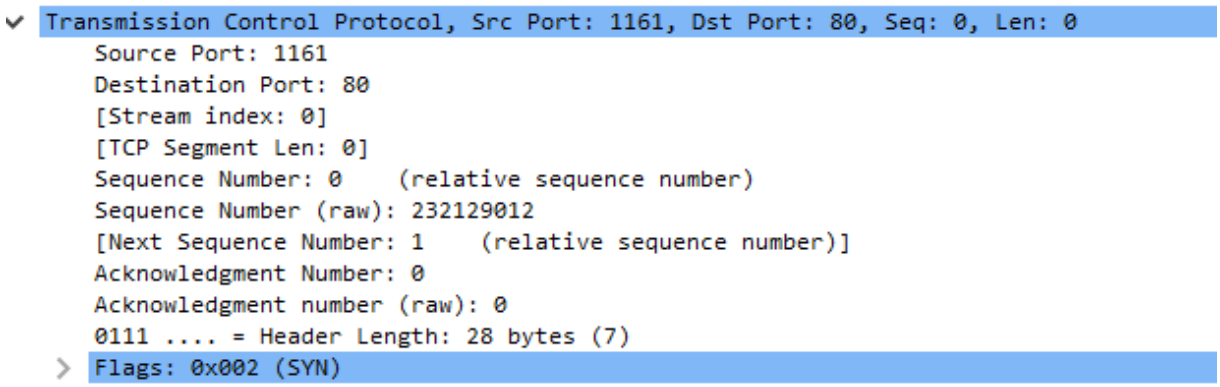
Cvičenie 9

1. IP adresa: 192.168.1.102 Port: 1161
2. IP adresa: 128.119.245.12 Port: 80



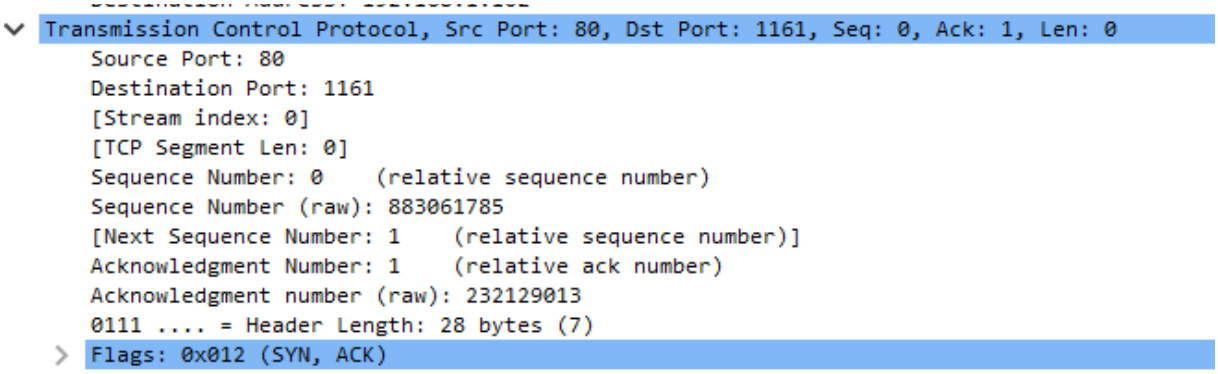
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.1.102	128.119.245.12	TCP	62	1161 → 80 [SYN] Seq=0 Win=16384 Len=0 MSS=1460 SACK_PERM=1

3. IP adresa 192.168.2.144 Port: 53416
4. Sequence number(relative) = 0 Syn Flag = 1



```
Transmission Control Protocol, Src Port: 1161, Dst Port: 80, Seq: 0, Len: 0
    Source Port: 1161
    Destination Port: 80
    [Stream index: 0]
    [TCP Segment Len: 0]
    Sequence Number: 0    (relative sequence number)
    Sequence Number (raw): 232129012
    [Next Sequence Number: 1    (relative sequence number)]
    Acknowledgment Number: 0
    Acknowledgment number (raw): 0
    0111 .... = Header Length: 28 bytes (7)
    Flags: 0x002 (SYN)
```

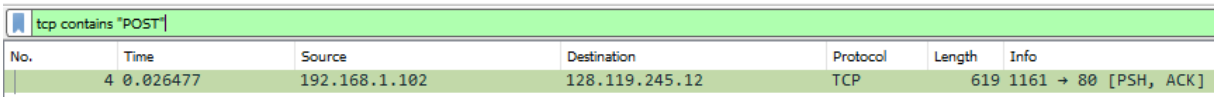
5. Sequence number(relative) = 0 Ack field (relative) = 1 Syn Flag = 1 a Ack Flag = 1
   Hodnotu server vypočítal pridaním 1 ku sekvenčnému číslu predchádzajúceho segmentu.



```
Transmission Control Protocol, Src Port: 80, Dst Port: 1161, Seq: 0, Ack: 1, Len: 0
    Source Port: 80
    Destination Port: 1161
    [Stream index: 0]
    [TCP Segment Len: 0]
    Sequence Number: 0    (relative sequence number)
    Sequence Number (raw): 883061785
    [Next Sequence Number: 1    (relative sequence number)]
    Acknowledgment Number: 1    (relative ack number)
    Acknowledgment number (raw): 232129013
    0111 .... = Header Length: 28 bytes (7)
    Flags: 0x012 (SYN, ACK)
```

6. Sequence number(relative) = 1

   tcp contains „POST“



tcp contains "POST"

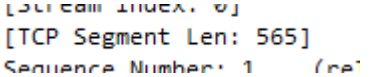
No.	Time	Source	Destination	Protocol	Length	Info
4	0.026477	192.168.1.102	128.119.245.12	TCP	619	1161 → 80 [PSH, ACK]

7. Six fragments (relative sequence a ack numbers)
   a. 1 0,026477s 0,053937s RTT: 0,02746
   b. 566 0,041737s 0,077294s RTT: 0,035557
   c. 2026 0,054026s 0,124085s RTT: 0,070059
   d. 3486 0,054690s 0,169118s RTT: 0,114428
   e. 4946 0,077405s 0,217299s RTT: 0,139894
   f. 6406 0,078157s 0,267802s RTT: 0,189645

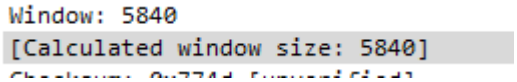
Priemerný RTT: 0,09617383

8. Six fragments – dlzka
    a. 565
    b. 1460
    c. 1460
    d. 1460
    e. 1460
    f. 1460

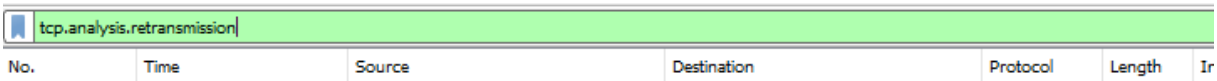
    Po identifikovaní príslušných fragmentov sa prečítala hodnota z wiresharku.



9. Buffer space – minimálna hodnota 5840 (fragment 2), hodnota neblokovala odosielateľa.



10. Filter tcp.analysis.retransmission alebo kontrola sequence čísel u odosielateľa, pomocou Sequence grafu. -> Nenachádza sa v zázname opakované odoslanie



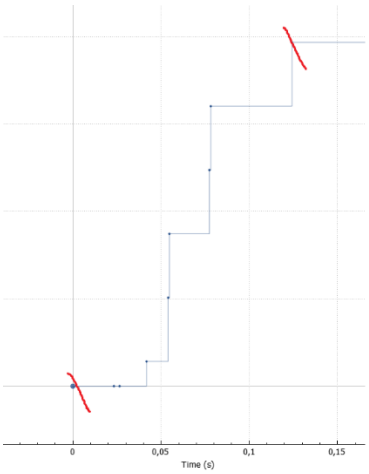
11. Väčšinou prijímateľ potvrdí 1460B dát. Potvrdenie dvoch fragmentov súčasne -> fragment 80.

	Time	Source	Destination	Protocol	Length
16	0.267802	128.119.245.12	192.168.1.102	TCP	60
17	0.304807	128.119.245.12	192.168.1.102	TCP	60
18	0.305040	192.168.1.102	128.119.245.12	TCP	1514
19	0.305813	192.168.1.102	128.119.245.12	TCP	1514
20	0.306692	192.168.1.102	128.119.245.12	TCP	1514
21	0.307571	192.168.1.102	128.119.245.12	TCP	1514
22	0.308699	192.168.1.102	128.119.245.12	TCP	1514
23	0.309553	192.168.1.102	128.119.245.12	TCP	946
24	0.356437	128.119.245.12	192.168.1.102	TCP	60
25	0.400164	128.119.245.12	192.168.1.102	TCP	60
26	0.448613	128.119.245.12	192.168.1.102	TCP	60
27	0.500029	128.119.245.12	192.168.1.102	TCP	60
28	0.545052	128.119.245.12	192.168.1.102	TCP	60
29	0.576417	128.119.245.12	192.168.1.102	TCP	60
30	0.576671	192.168.1.102	128.119.245.12	TCP	1514
31	0.577385	192.168.1.102	128.119.245.12	TCP	1514
32	0.578329	192.168.1.102	128.119.245.12	TCP	1514
33	0.579195	192.168.1.102	128.119.245.12	TCP	1514
34	0.580149	192.168.1.102	128.119.245.12	TCP	1514

12. Zo stevensovho grafu vieme vyčítať Sequence number v B a celkový čas odosielania od prvého odoslania.

    Celková veľkost odoslaných B je 164091 v čase 5.651s (posledný prenos dát, bajty znížime o 1 nakoľko na začiatku boli autoincrementované o 1 takze priepustnosť je 164091/5.651 = 29037B/s

13. Slow start



Congestion avoidance