Bil 452 – Ödev 5 – IP

Fatih Furkan Has
141101024

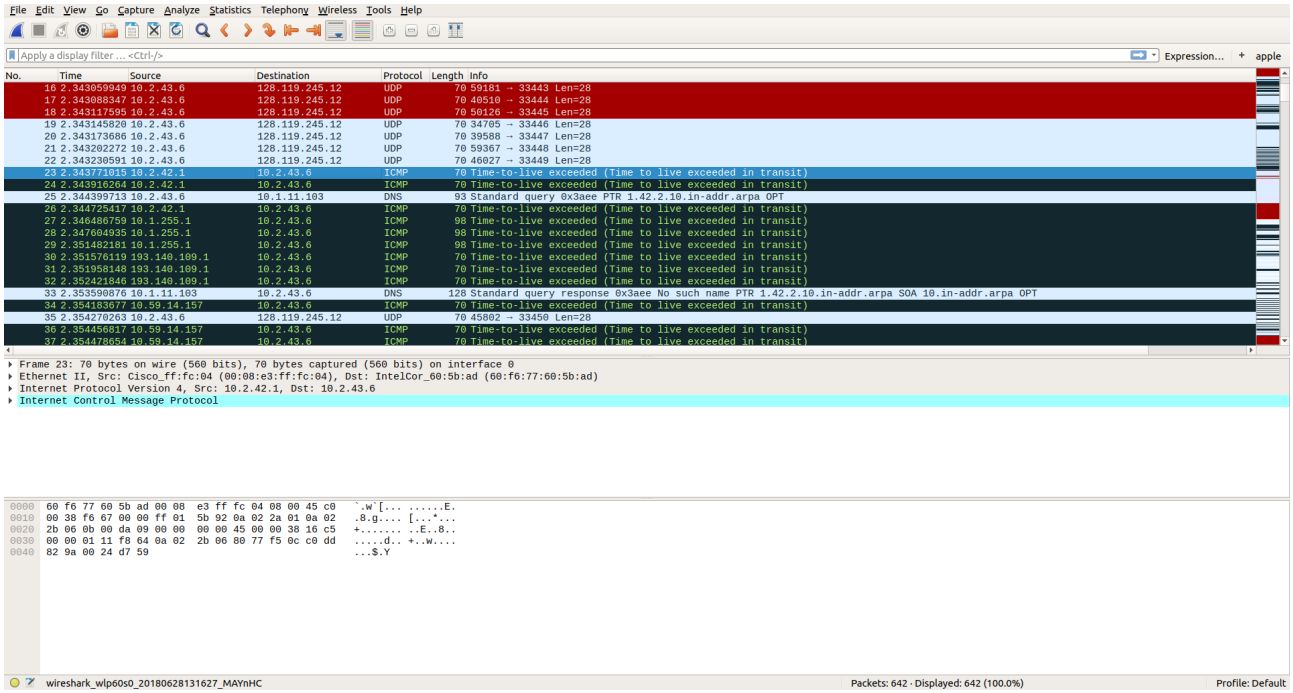
1-)

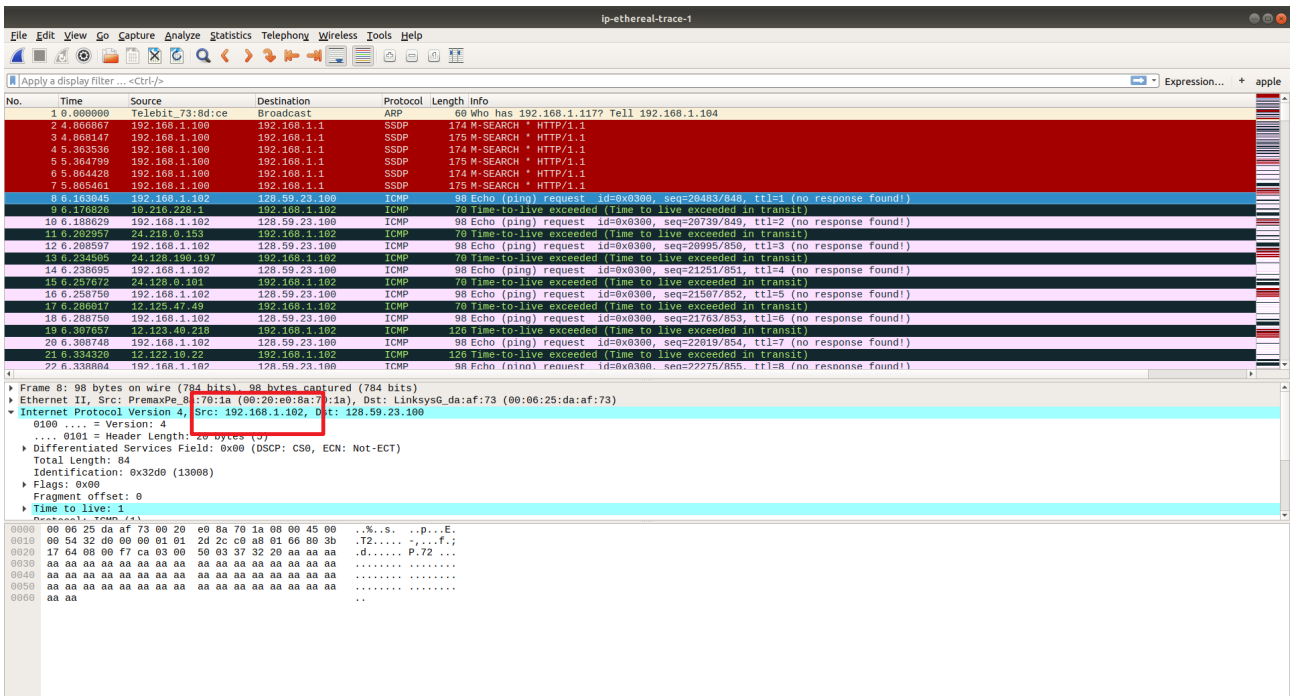
```
toor@001:~$ traceroute gaia.cs.umass.edu 56
traceroute to gaia.cs.umass.edu (128.119.245.12), 30 hops max, 56 byte packets
 1  _gateway (10.2.42.1)  1.019 ms  1.098 ms  1.875 ms
 2  10.1.255.1 (10.1.255.1)  3.606 ms  4.694 ms  8.542 ms
 3  193.140.109.1 (193.140.109.1)  8.608 ms  8.961 ms  9.395 ms
 4  10.59.14.157 (10.59.14.157)  11.128 ms  11.372 ms  11.366 ms
 5  10.40.133.5 (10.40.133.5)  13.935 ms 10.40.133.1 (10.40.133.1)  13.927 ms 10.38.210.145 (10.38.210.145)  13.906 ms
 6  10.38.207.134 (10.38.207.134)  18.771 ms  9.536 ms  9.482 ms
 7  10.38.211.150 (10.38.211.150)  7.335 ms  7.340 ms 10.40.130.106 (10.40.130.106)  7.316 ms
 8  10.38.211.161 (10.38.211.161)  11.870 ms 10.38.211.153 (10.38.211.153)  11.859 ms 10.38.211.149 (10.38.211.149)  11.841 ms
 9  10.36.6.142 (10.36.6.142)  11.824 ms  14.559 ms  9.772 ms
10  if-ae-8-2.tcore1.fnm-frankfurt.as6453.net (195.219.156.21)  97.230 ms  97.258 ms  97.240 ms
11  if-ae-9-2.tcore1.fr0-frankfurt.as6453.net (5.23.30.17)  97.239 ms if-ae-7-2.tcore1.fr0-frankfurt.as6453.net (195.219.50.1)  97.220 ms  96.392 ms^[[A
12  * * *
13  * * *
14  UNIVERSITY.ear3.NewYork1.Level3.net (4.71.230.234)  237.490 ms  235.840 ms  235.918 ms
15  core1-rt-et-8-3-0.gw.umass.edu (192.80.83.109)  233.687 ms core2-rt-et-8-3-0.gw.umass.edu (192.80.83.113)  239.095 ms  234.985 ms
16  n5-rt-1-1-et-7-0-0.gw.umass.edu (128.119.0.10)  238.757 ms n5-rt-1-1-et-5-0-0.gw.umass.edu (128.119.0.8)  242.148 ms n5-rt-1-1-et-7-0-0.gw.umass.edu (128.119.0.10)  240.732 ms
17  cics-rt-xe-0-0-0.gw.umass.edu (128.119.3.32)  239.623 ms  226.299 ms  228.402 ms
18  nscs1bbs1.cs.umass.edu (128.119.240.253)  234.239 ms  233.311 ms  228.678 ms
19  gaia.cs.umass.edu (128.119.245.12)  228.057 ms !X  229.543 ms !X  228.491 ms !X
toor@001:~$ traceroute gaia.cs.umass.edu 2000
traceroute to gaia.cs.umass.edu (128.119.245.12), 30 hops max, 2000 byte packets
 1  _gateway (10.2.42.1)  2.243 ms  2.206 ms  2.305 ms
 2  10.1.255.1 (10.1.255.1)  2.410 ms  2.440 ms  2.630 ms
 3  193.140.109.1 (193.140.109.1)  4.647 ms  4.805 ms  9.631 ms
 4  10.59.14.157 (10.59.14.157)  10.562 ms  11.224 ms  11.197 ms
 5  10.40.133.1 (10.40.133.1)  11.137 ms  12.029 ms  12.005 ms
 6  10.38.207.134 (10.38.207.134)  17.178 ms  9.837 ms  11.567 ms
 7  10.38.211.158 (10.38.211.158)  6.836 ms  6.761 ms  6.731 ms
 8  10.38.211.149 (10.38.211.149)  13.372 ms  13.361 ms  13.963 ms
 9  10.36.6.142 (10.36.6.142)  9.260 ms  10.118 ms  10.799 ms
10  if-ae-8-2.tcore1.fnm-frankfurt.as6453.net (195.219.156.21)  52.584 ms  52.590 ms  52.570 ms
11  if-ae-9-2.tcore1.fr0-frankfurt.as6453.net (5.23.30.17)  50.807 ms  50.918 ms  51.074 ms
12  * * *
13  ae-1-3501.ear3.NewYork1.Level3.net (4.69.150.202)  135.970 ms  135.108 ms  135.199 ms
14  UNIVERSITY.ear3.NewYork1.Level3.net (4.71.230.234)  226.477 ms  224.652 ms  224.849 ms
15  core1-rt-et-8-3-0.gw.umass.edu (192.80.83.109)  223.374 ms  224.334 ms  224.313 ms
16  * n5-rt-1-1-et-5-0-0.gw.umass.edu (128.119.0.8)  224.400 ms  224.464 ms
17  cics-rt-xe-0-0-0.gw.umass.edu (128.119.3.32)  222.935 ms  215.918 ms  216.337 ms
18  gaia.cs.umass.edu (128.119.245.12)  237.440 ms !X  237.209 ms !X  243.085 ms !X
toor@001:~$ traceroute gaia.cs.umass.edu 3500
traceroute to gaia.cs.umass.edu (128.119.245.12), 30 hops max, 3500 byte packets
 1  _gateway (10.2.42.1)  2.769 ms  2.746 ms  2.868 ms
 2  10.1.255.1 (10.1.255.1)  2.893 ms  3.837 ms  4.018 ms
 3  193.140.109.1 (193.140.109.1)  4.108 ms  4.279 ms  4.255 ms
 4  10.59.14.157 (10.59.14.157)  5.398 ms  16.440 ms  16.387 ms
 5  10.40.133.1 (10.40.133.1)  16.270 ms  16.268 ms  16.234 ms
 6  10.38.207.134 (10.38.207.134)  21.678 ms  18.778 ms  18.723 ms
 7  10.38.211.158 (10.38.211.158)  11.755 ms  11.659 ms  12.218 ms
 8  10.38.211.149 (10.38.211.149)  17.378 ms  17.362 ms  17.334 ms
 9  10.36.6.142 (10.36.6.142)  16.201 ms  15.467 ms  9.916 ms
10  if-ae-8-2.tcore1.fnm-frankfurt.as6453.net (195.219.156.21)  51.574 ms  51.562 ms  51.534 ms
11  if-ae-9-2.tcore1.fr0-frankfurt.as6453.net (5.23.30.17)  49.726 ms  49.701 ms  49.478 ms
12  * * *
13  * * *
14  UNIVERSITY.ear3.NewYork1.Level3.net (4.71.230.234)  244.994 ms  245.003 ms  245.258 ms
15  core1-rt-et-8-3-0.gw.umass.edu (192.80.83.109)  243.424 ms  235.588 ms  235.613 ms
16  n5-rt-1-1-et-5-0-0.gw.umass.edu (128.119.0.8)  235.563 ms  239.879 ms  239.898 ms
```

İlk soruda istenildiği gibi:

traceroute gaia.cs.umass.edu 56
traceroute gaia.cs.umass.edu 2000
traceroute gaia.cs.umass.edu 3500

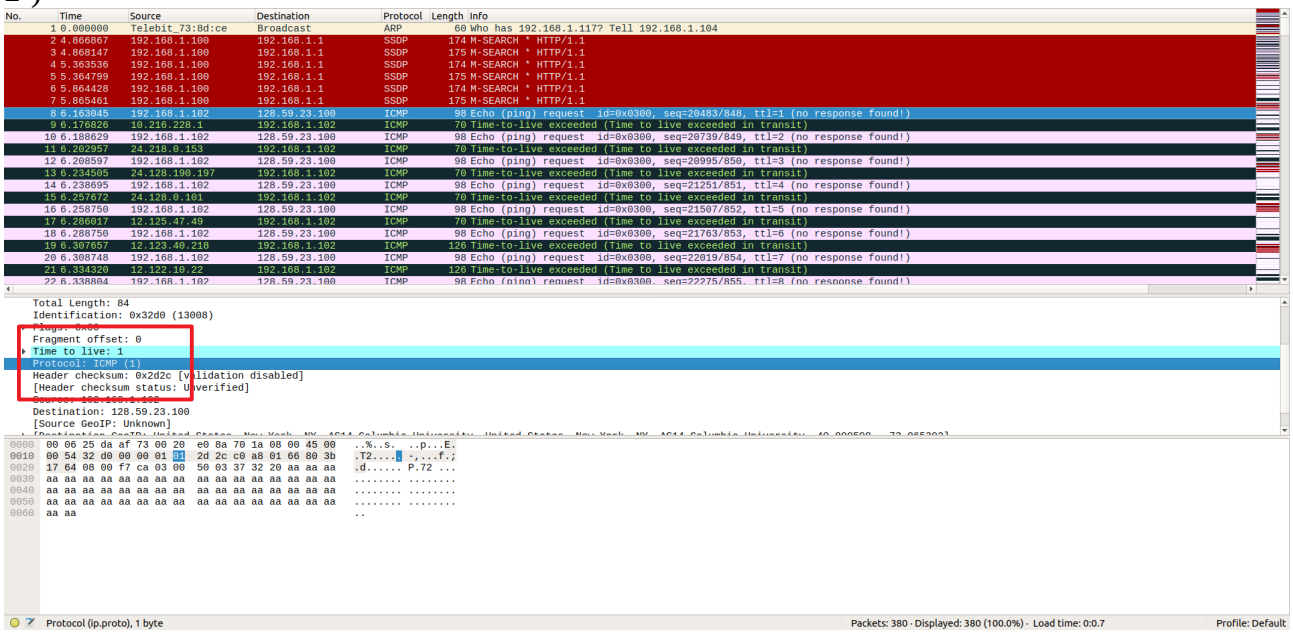
komutlarını çalıştırdım ancak Wireshark üzerinden Echo (request) isteklerini göremedim bu yüzden pdf'de verilen ip-ethernal-trace-1 dosyasını kullanarak inceleme yapmaya devam ediyorum. Echo isteklerini göremediğim Wireshark çıktısını da aşağıya ekliyorum.





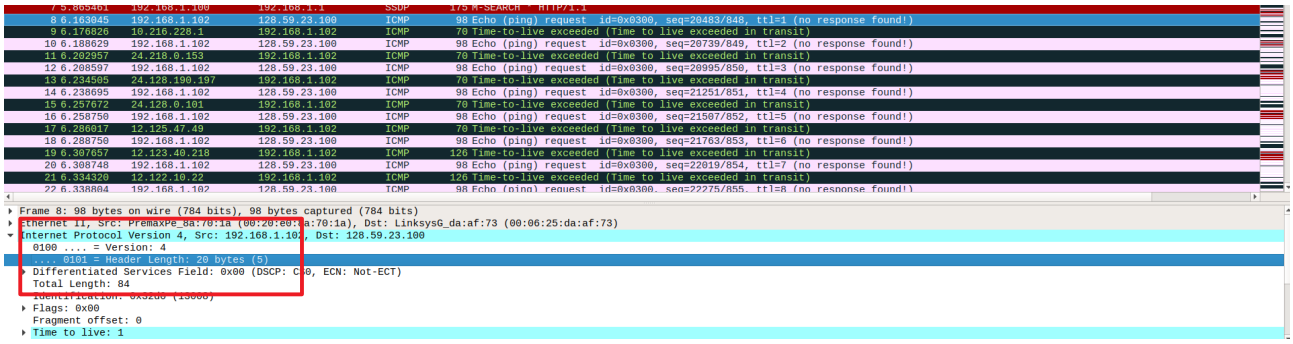
IP adresimiz: 192.168.1.102

2-)

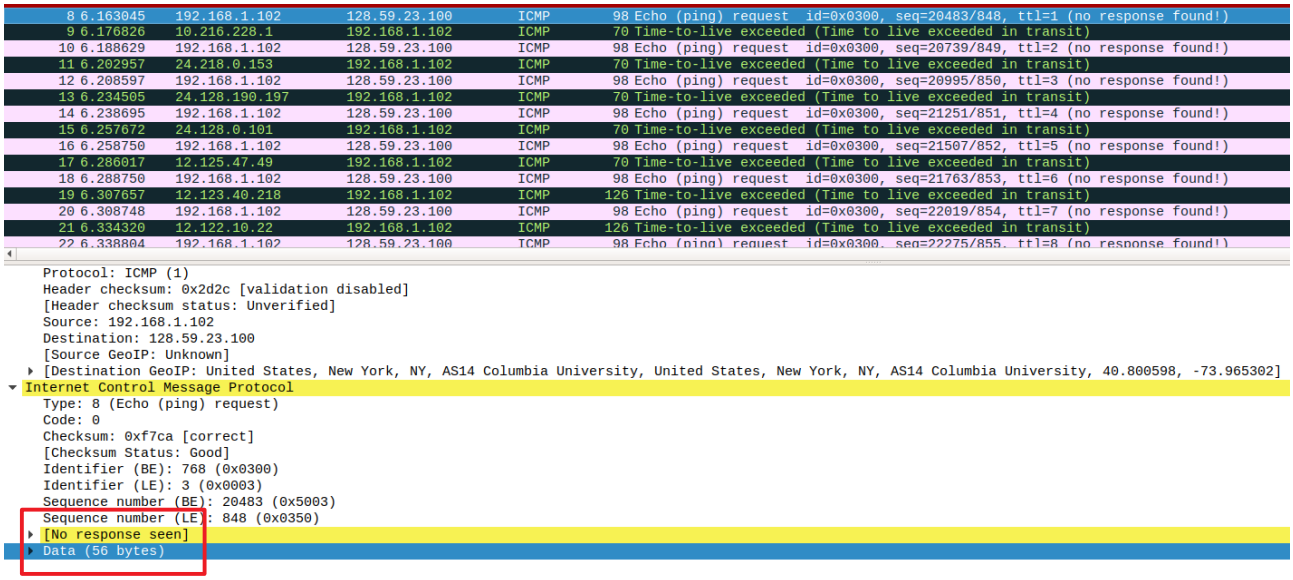


Protocol: ICMP (1)

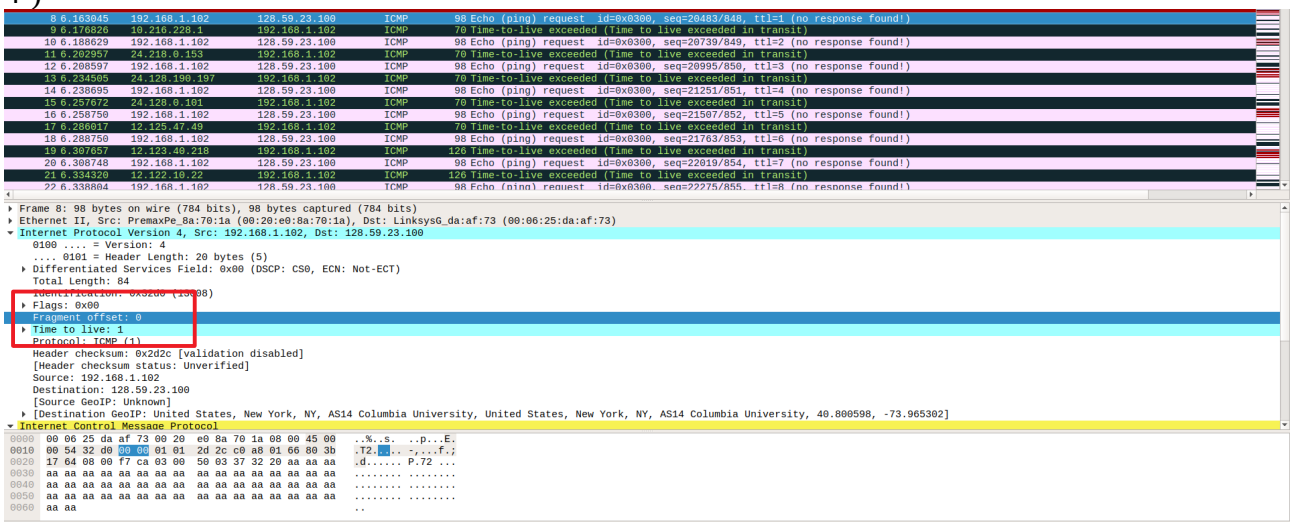
3-)



Length: 20
Payload: 56 – 20 = 36

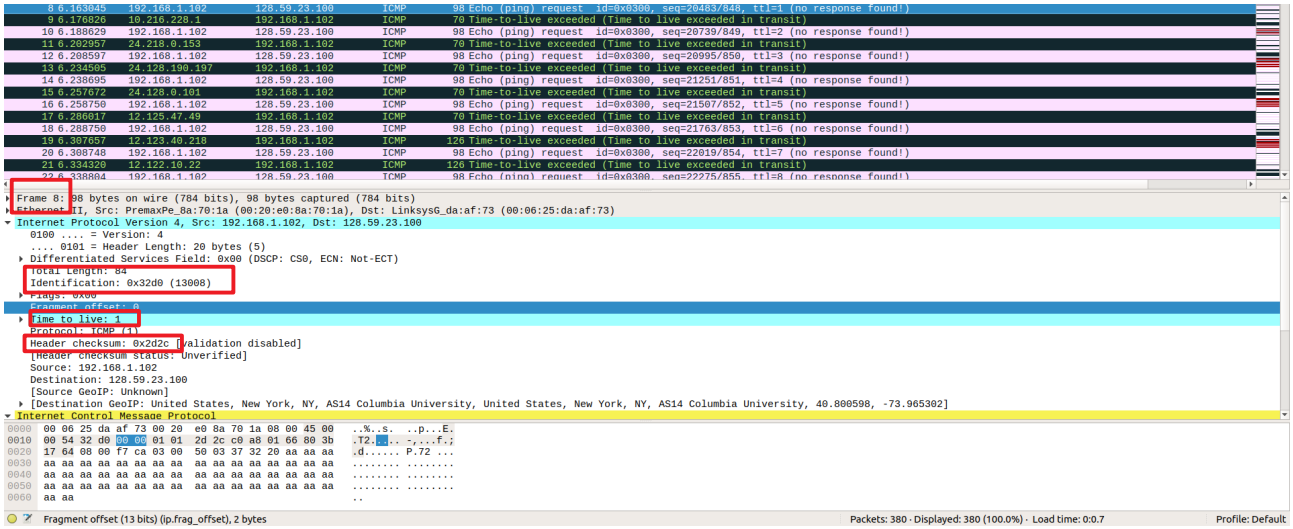


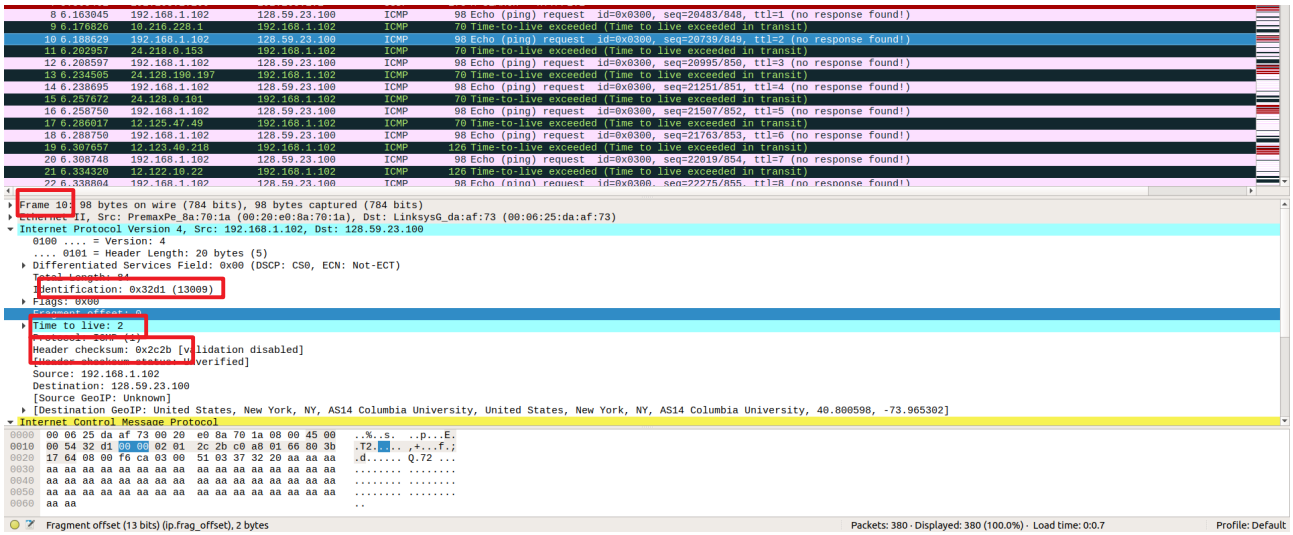
4-)



Fragment offset: 0 olarak görülebiliyor. Yani fragmented olmadığını anlayabiliriz.

5-)





Frame, Indetification, Header checksum ve Time to live değerlerimiz değişmiştir. Yukarıda art arda gönderilen iki farklı paketin çıktısından anlayabiliyoruz. Diğer paketler de incelendiğinde aynı sonucu görebiliriz.

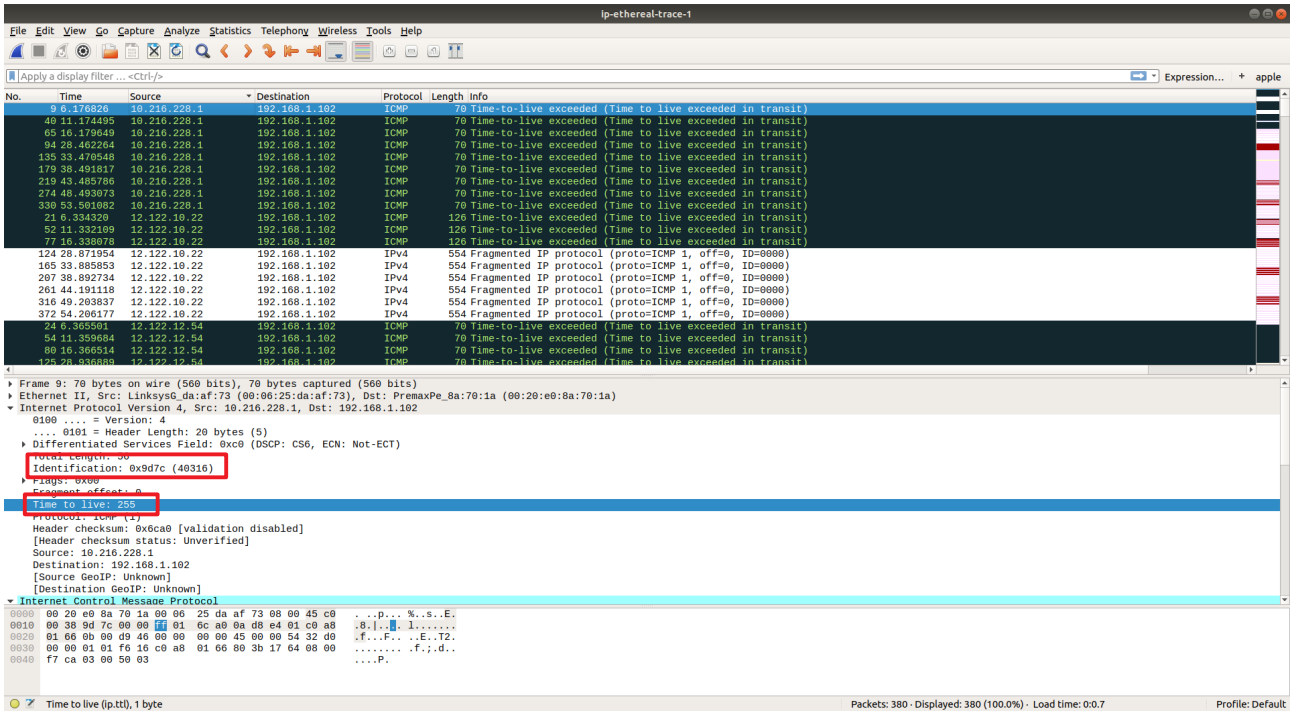
6-)

5. sorudaki ekran görüntülerini incelediğimizde Version, Header Lenght, Source, Destination, Service field, Protocol alanları değişmemiştir. 5. soruda belirtilen alanlar ise gönderilen paketler farklı olduğu için değişmiştir.

7-)

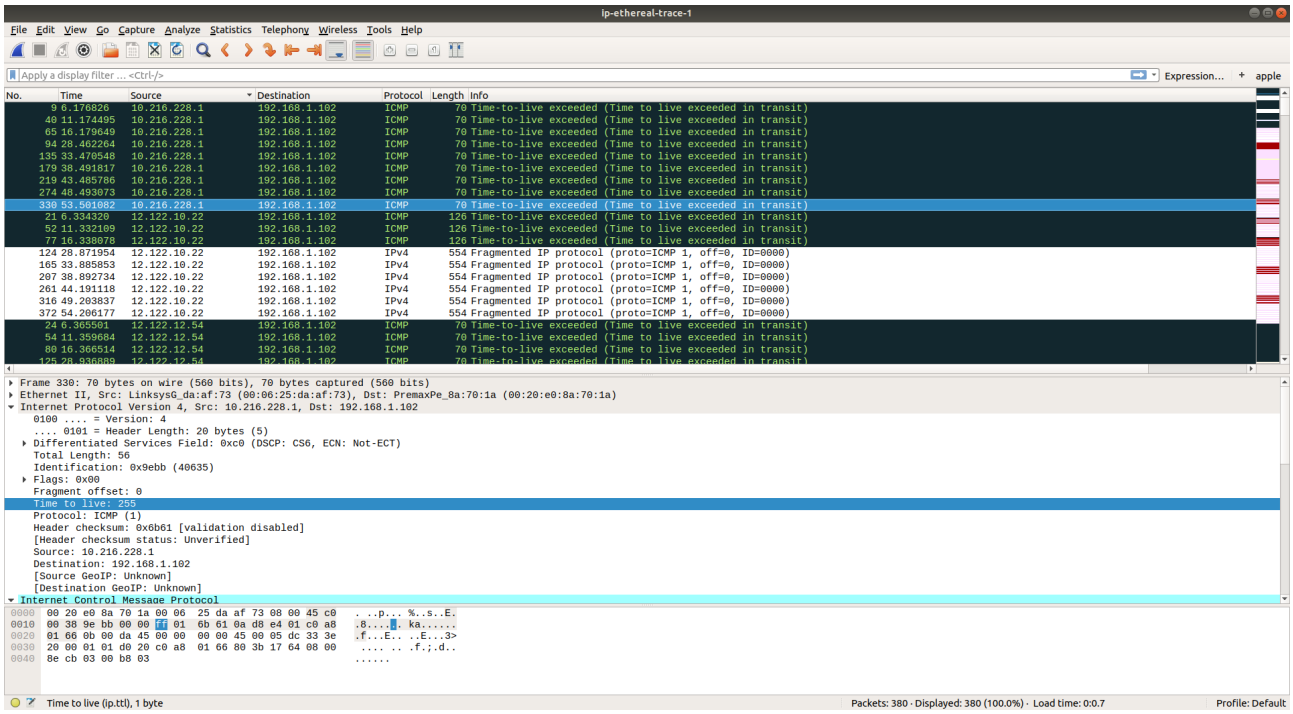
5. sorudaki ekran görüntülerine tekrar bakarsak Frame, Identification, Time to live değerlerinin +1 olacak şekilde ilerlediğini görebiliriz.

8-)



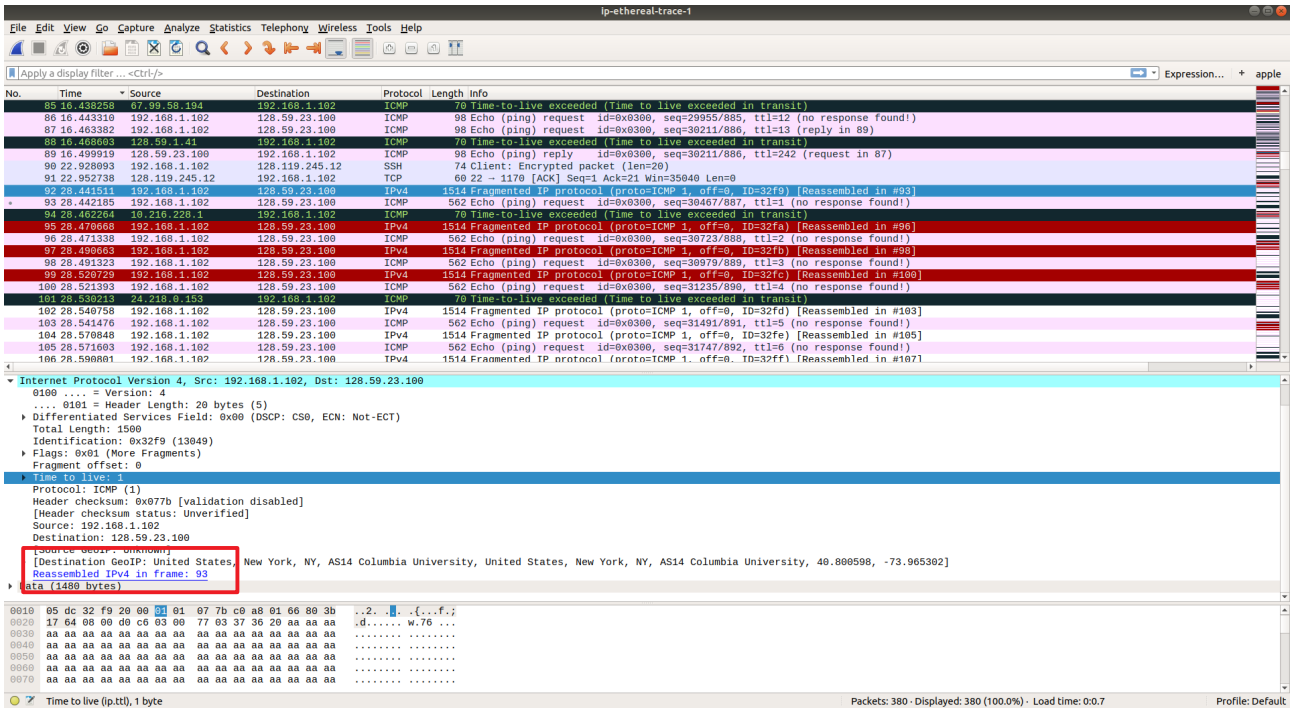
Identification: 0x9d7c (40316)
Time to live: 255

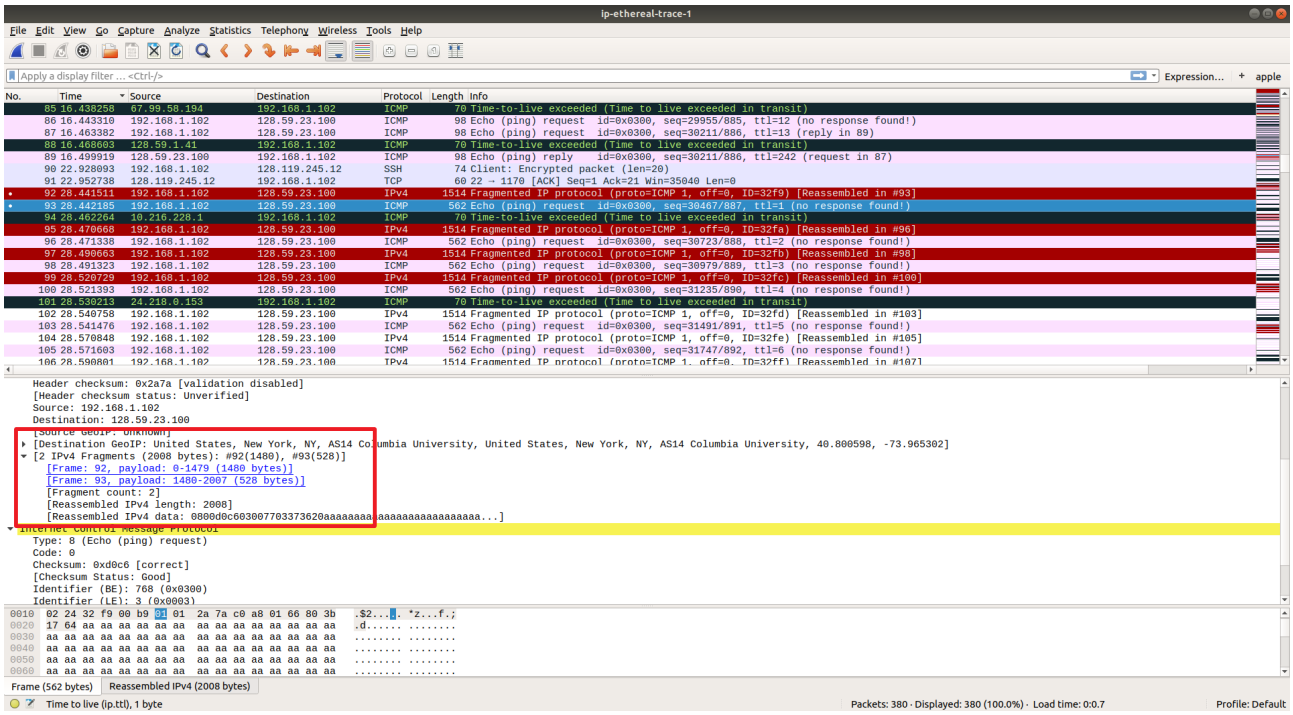
9-)



8. sorudaki ekran görüntüsü en yakın routerdan gelen ilk cevap üstteki ekran görüntüsü ise son cevaba aittir. Bu iki ekran görüntüsünü karşılaştırdığımızda TTL değerinin değişmediğini ancak Identification değerinin değiştiğini görüyoruz. Identification uniqe bir değer olduğu için değişmemiştir. TTL ise aynı routerdan geldiği için aynı kalmıştır.

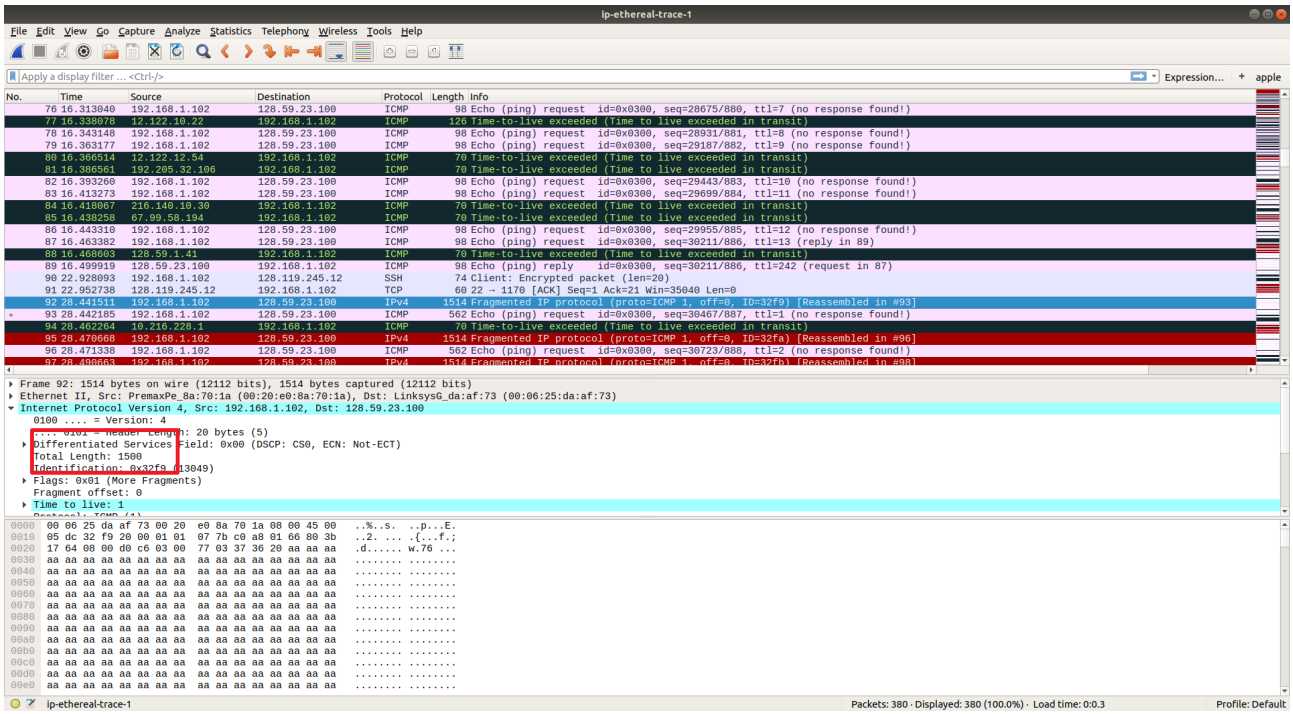
10-)



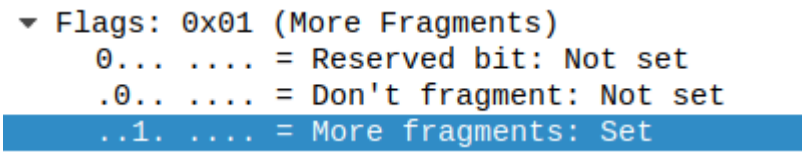


İki ekran görüntüsünde görüldüğü gibi fragmented olmuştur.

11-)

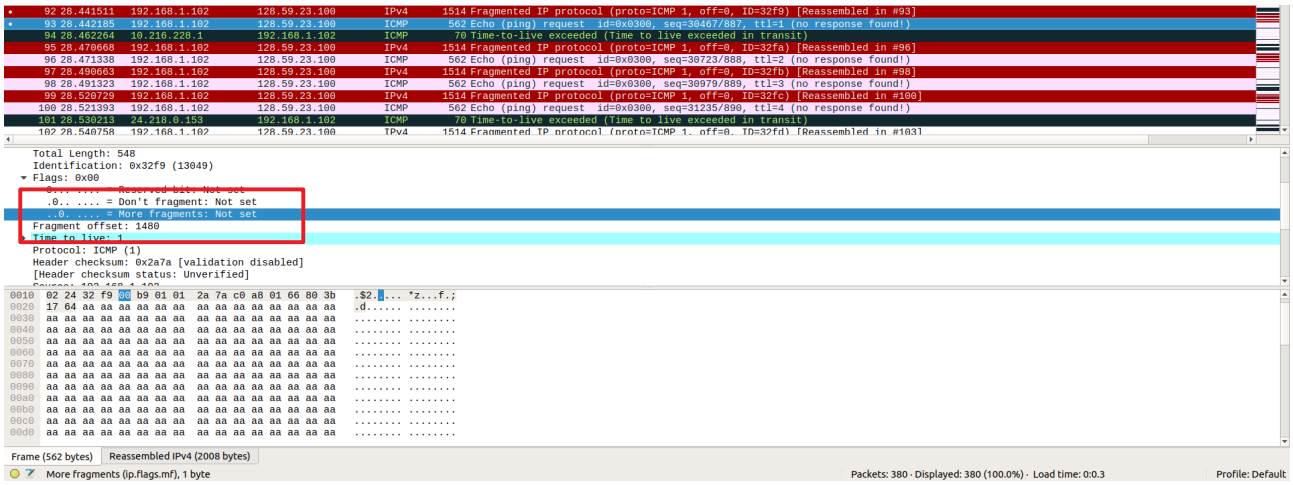


Fragment offset: 0'dır. Bu sebeple bunun ilk fragment olduğunu söyleyebiliriz. Length'imiz de 1500 olarak görülebilir.



More fragment 1 olarak set edildiği için de fragmented diyebiliriz.

12-)

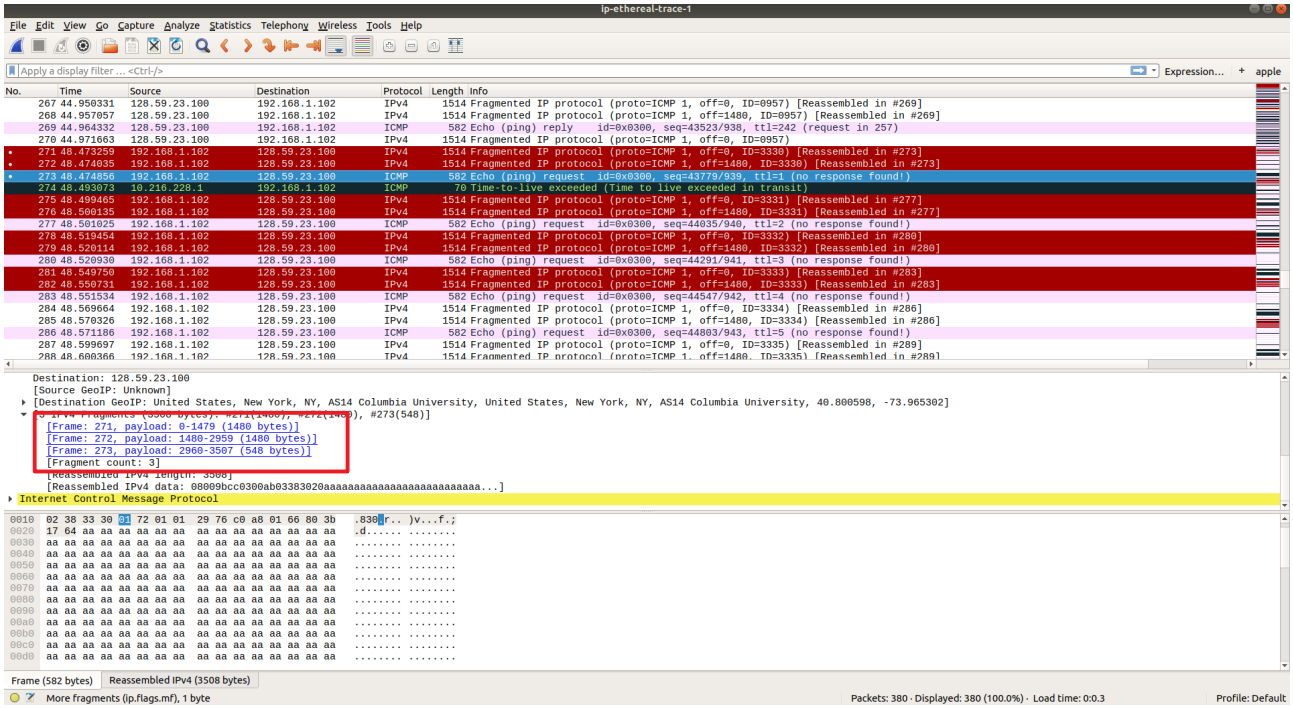


Fragment offset: 1480 olarak görülebilir. Bu sebeple bunun ilk fragment olmadığını söyleyebiliriz. Flagleri incelediğimizde ise More Fragments 0 olarak set edilmiş bundan dolayı da son fragment olduğunu söyleyebiliriz.

13-)

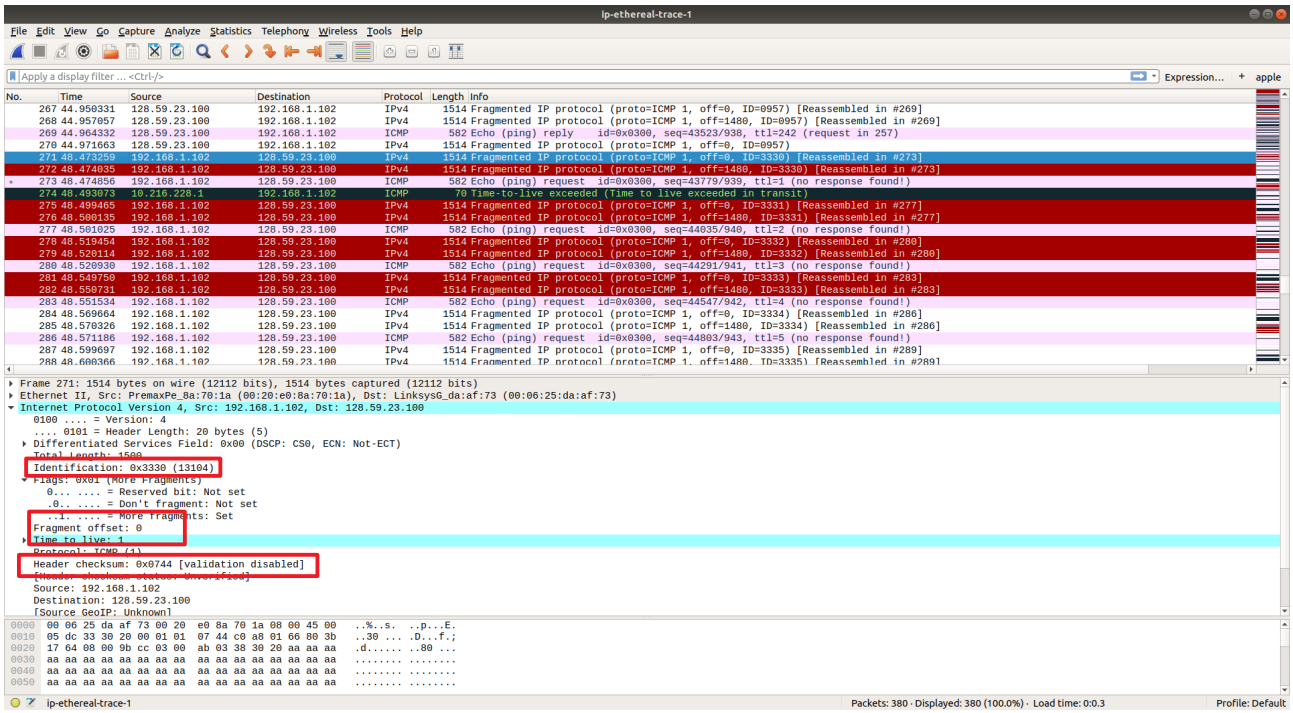
Total length, Flags, checksum ve fragment offset değerleri değişmiştir.

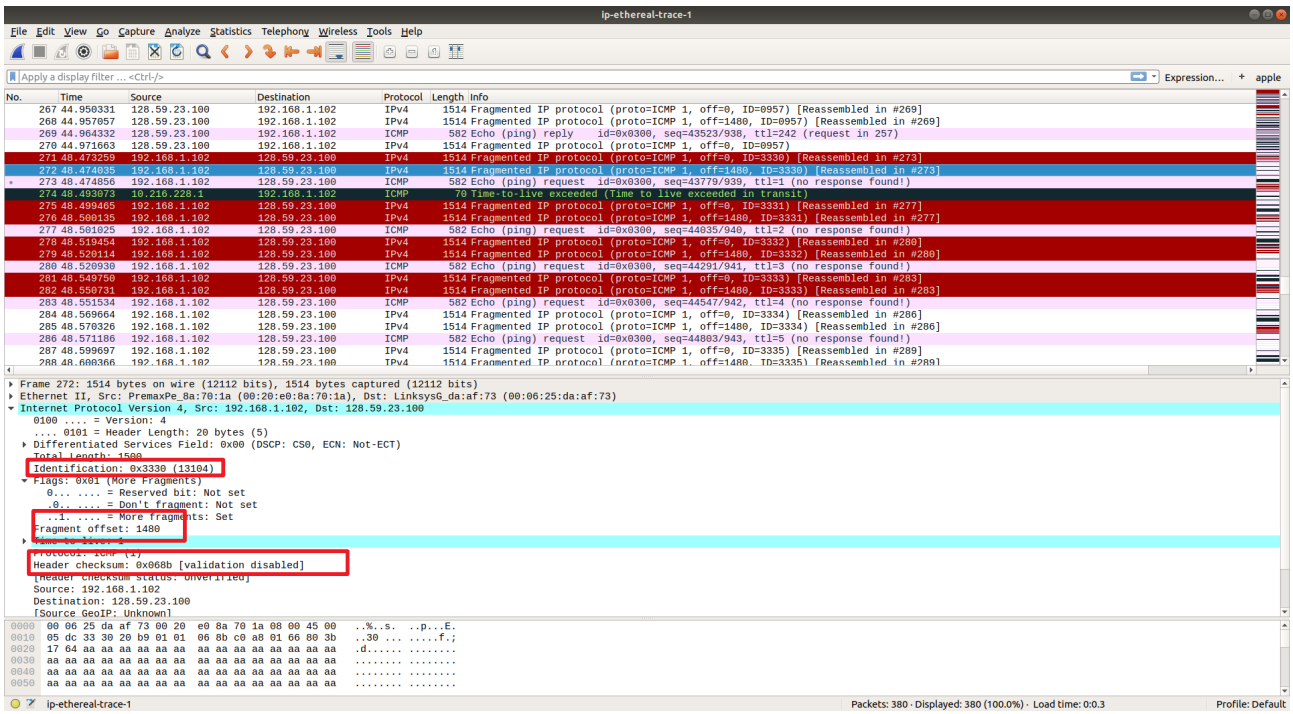
14-)

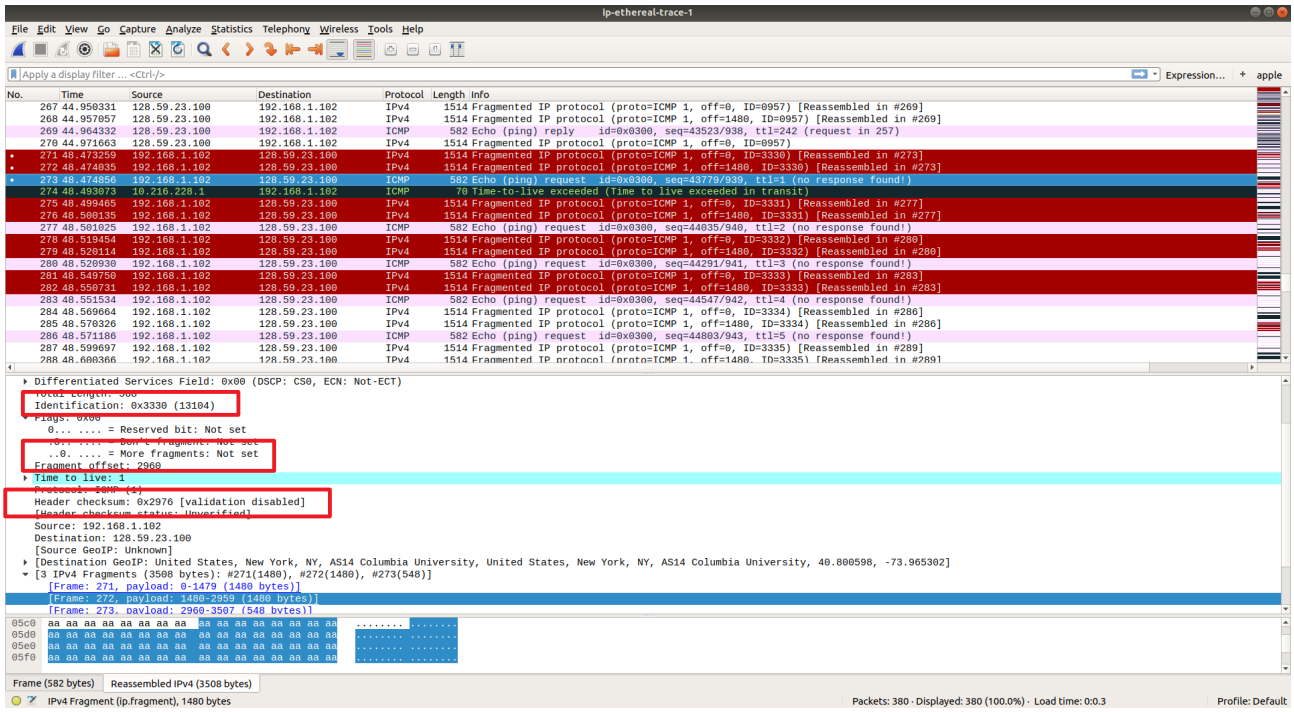


Fragment count'u 3 olarak görüyoruz.

15-)







Checksum, Identification, fragment offset ve Flags içerisindeki More fragments değişmiştir.