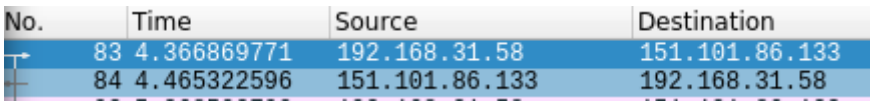
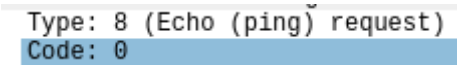
1.1.1)



Я всё так же я – 192.168.31.58
А stanford – 151.101.86.133

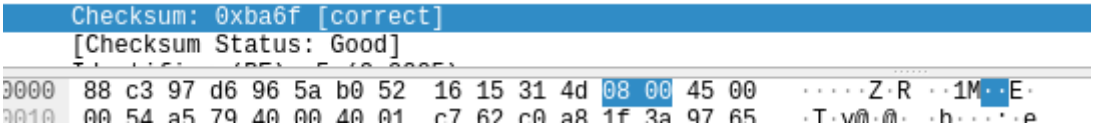
1.1.2)
Для них не создаётся определённого соединения. Они просто прилетают на свободный порт. Нам не важно какой из них конкретно. Так же это делает их широковещательным.

1.1.3)

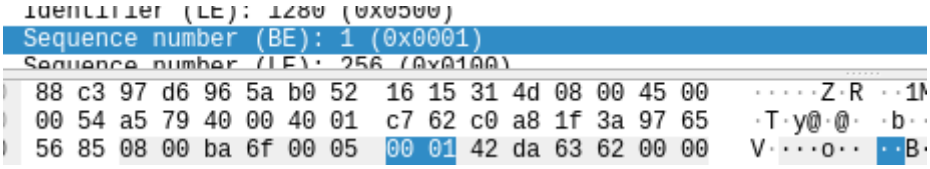


Тип 8, Код 0.

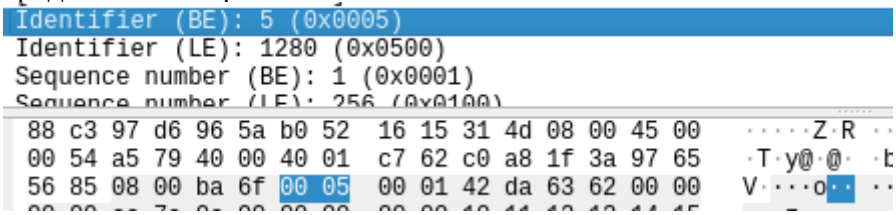
Ещё есть чексумма, идентификатор и порядковый номер.



На чексумму приходится 2 байт.



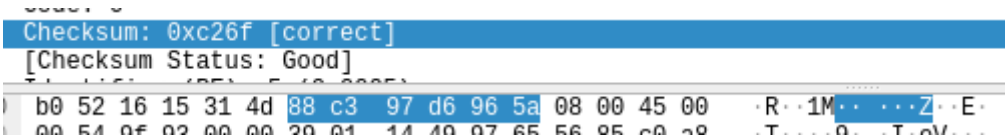
И 2 байта на порядковый номер



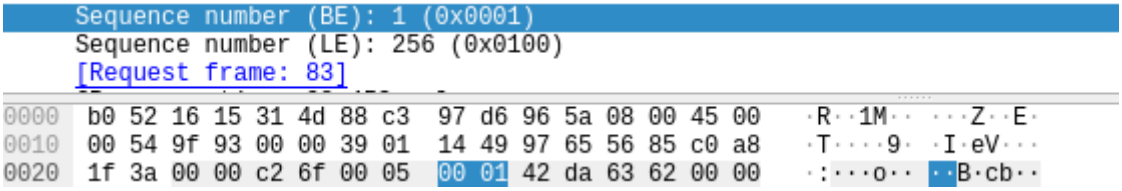
2 байта на идентификатор.

1.1.4)

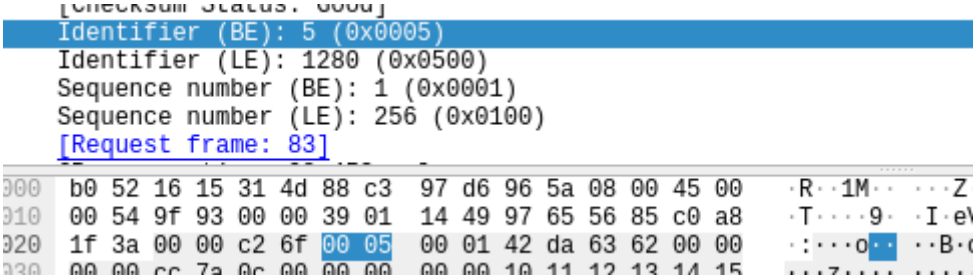
Тип 0, Код 0.
Ещё есть чексумма, идентификатор и порядковый номер.



На чексумму приходится 6 байт.

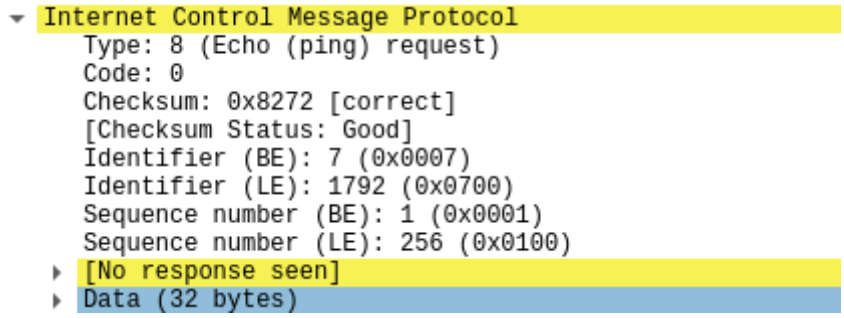


И 2 байта на порядковый номер



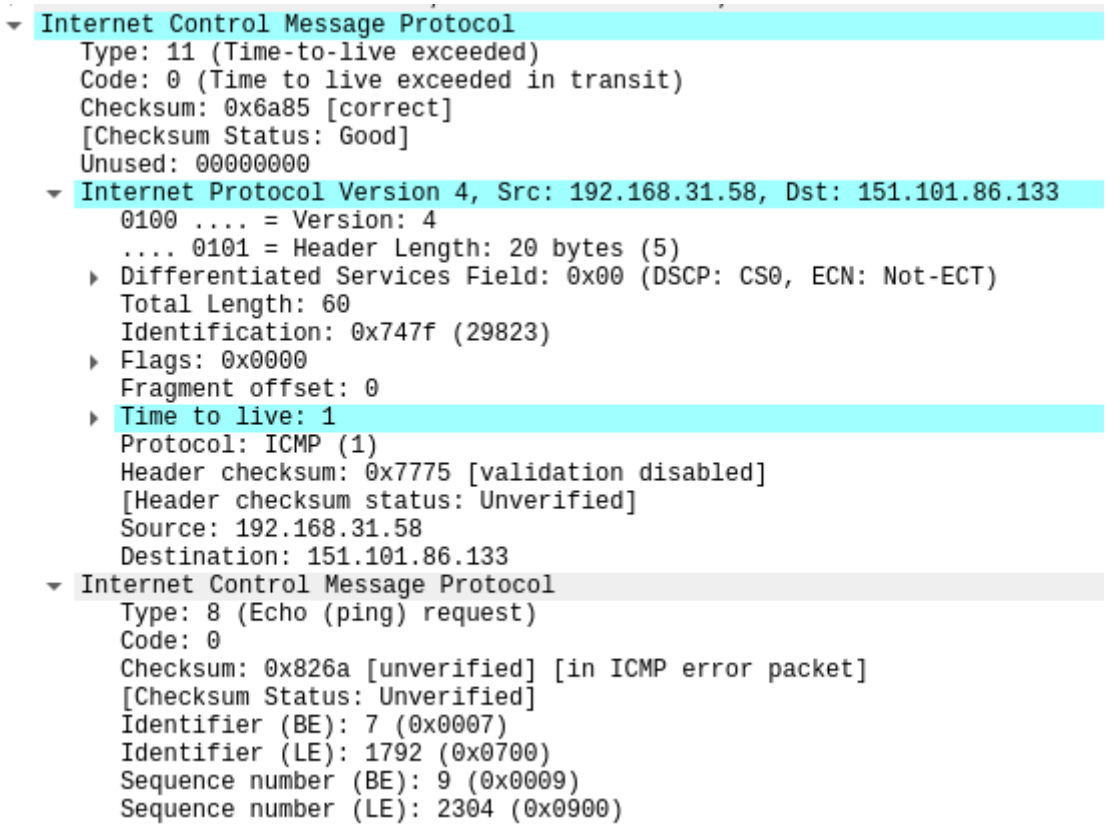
2 байта на идентификатор.

1.2.1)



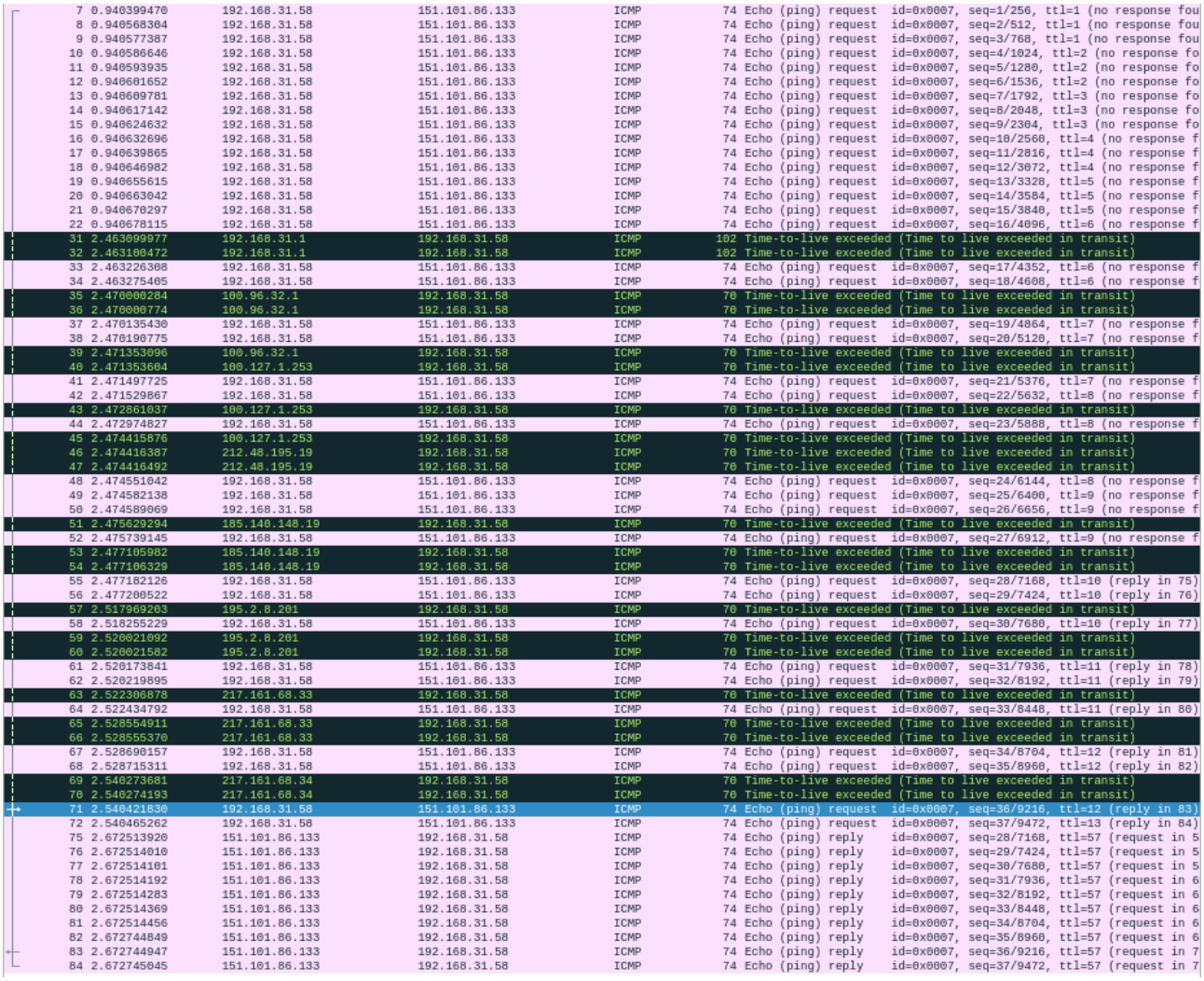
Именно по заголовкам вроде такой-же
Но wireshark жалуется, что time to live only one.

1.2.2)



В нём содержатся: Тип 11 - TL, всё та же чексумма и копии Хедеров запроса.

1.2.3)
Не уверен о чём вы:



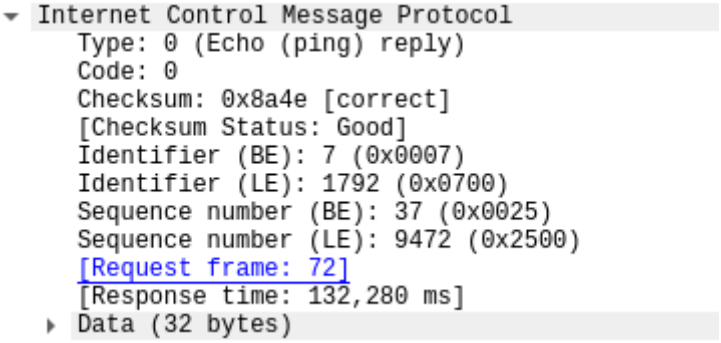
7	0.940399470	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=1/256, ttl=1 (no response fou
8	0.940568304	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=2/512, ttl=1 (no response fou
9	0.940577387	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=3/768, ttl=1 (no response fou
10	0.940586646	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=4/1024, ttl=2 (no response fo
11	0.940593935	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=5/1280, ttl=2 (no response fo
12	0.940601652	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=6/1536, ttl=2 (no response fo
13	0.940609781	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=7/1792, ttl=3 (no response fo
14	0.940617142	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=8/2048, ttl=3 (no response fo
15	0.940624632	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=9/2304, ttl=3 (no response fo
16	0.940632696	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=10/2560, ttl=4 (no response f
17	0.940639865	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=11/2816, ttl=4 (no response f
18	0.940646982	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=12/3072, ttl=4 (no response f
19	0.940655615	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=13/3328, ttl=5 (no response f
20	0.940663042	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=14/3584, ttl=5 (no response f
21	0.940670297	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=15/3840, ttl=5 (no response f
22	0.940678115	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=16/4096, ttl=6 (no response f
31	2.463099977	192.168.31.1	192.168.31.58	ICMP	102 Time-to-live exceeded (Time to live exceeded in transit)
32	2.463100472	192.168.31.1	192.168.31.58	ICMP	102 Time-to-live exceeded (Time to live exceeded in transit)
33	2.463226368	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=17/4352, ttl=6 (no response f
34	2.463275405	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=18/4608, ttl=6 (no response f
35	2.470000284	100.96.32.1	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
36	2.470000774	100.96.32.1	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
37	2.470135430	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=19/4864, ttl=7 (no response f
38	2.470190775	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=20/5120, ttl=7 (no response f
39	2.471353096	100.96.32.1	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
40	2.471353604	100.127.1.253	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
41	2.471497725	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=21/5376, ttl=7 (no response f
42	2.471529867	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=22/5632, ttl=8 (no response f
43	2.472861037	100.127.1.253	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
44	2.472974827	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=23/5888, ttl=8 (no response f
45	2.474415876	100.127.1.253	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
46	2.474416387	212.48.195.19	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
47	2.474416492	212.48.195.19	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
48	2.474551042	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=24/6144, ttl=8 (no response f
49	2.474582138	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=25/6400, ttl=9 (no response f
50	2.474589069	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=26/6656, ttl=9 (no response f
51	2.475629294	185.140.148.19	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
52	2.475739145	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=27/6912, ttl=9 (no response f
53	2.477105982	185.140.148.19	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
54	2.477106329	185.140.148.19	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
55	2.477182126	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=28/7168, ttl=10 (reply in 75)
56	2.477200522	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=29/7424, ttl=10 (reply in 76)
57	2.517969203	195.2.8.201	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
58	2.518255229	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=30/7680, ttl=10 (reply in 77)
59	2.520021092	195.2.8.201	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
60	2.520021582	195.2.8.201	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
61	2.520173841	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=31/7936, ttl=11 (reply in 78)
62	2.520219895	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=32/8192, ttl=11 (reply in 79)
63	2.522306878	217.161.68.33	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
64	2.522434792	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=33/8448, ttl=11 (reply in 80)
65	2.528554911	217.161.68.33	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
66	2.528555370	217.161.68.33	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
67	2.528690157	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=34/8704, ttl=12 (reply in 81)
68	2.528715311	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=35/8960, ttl=12 (reply in 82)
69	2.540273681	217.161.68.34	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
70	2.540274193	217.161.68.34	192.168.31.58	ICMP	70 Time-to-live exceeded (Time to live exceeded in transit)
71	2.540421830	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=36/9216, ttl=12 (reply in 83)
72	2.540465262	192.168.31.58	151.101.86.133	ICMP	74 Echo (ping) request id=0x0007, seq=37/9472, ttl=13 (reply in 84)
75	2.672513920	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=28/7168, ttl=57 (request in 5
76	2.672514010	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=29/7424, ttl=57 (request in 5
77	2.672514101	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=30/7680, ttl=57 (request in 5
78	2.672514192	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=31/7936, ttl=57 (request in 6
79	2.672514283	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=32/8192, ttl=57 (request in 6
80	2.672514369	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=33/8448, ttl=57 (request in 6
81	2.672514456	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=34/8704, ttl=57 (request in 6
82	2.672744849	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=35/8960, ttl=57 (request in 6
83	2.672744947	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=36/9216, ttl=57 (request in 7
84	2.672745045	151.101.86.133	192.168.31.58	ICMP	74 Echo (ping) reply id=0x0007, seq=37/9472, ttl=57 (request in 7

Тут есть поледние нормальные ответы, а не ошибки. Но их не 3.

Есть 1 запрос с ttl=13 это мы уже достучались до хоста видимо. Оно было 1 раз.

Надеюсь вопрос про это. (Я на линуксе, у нас и не ICMP без ключа и видимо вот это)

В любом случае.



```
▾ Internet Control Message Protocol
    Type: 0 (Echo (ping) reply)
    Code: 0
    Checksum: 0x8a4e [correct]
    [Checksum Status: Good]
    Identifier (BE): 7 (0x0007)
    Identifier (LE): 1792 (0x0700)
    Sequence number (BE): 37 (0x0025)
    Sequence number (LE): 9472 (0x2500)
    [Request frame: 72]
    [Response time: 132,280 ms]
  ▸ Data (32 bytes)
```

Ответ точно такой-же как при пинге.
Различия объясняются, тем, что ttl не сработал и нам не кинуло ошибку.
(Вообще на все запросы пришли ответы, просто с ними так же пришла и ошибка.)

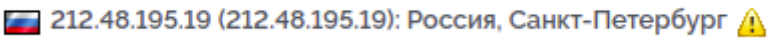
1.2.4)
У меня не лучший wifi поэтому по 10 раз сделал. Итог

```
traceroute to www.stanford.edu (151.101.86.133), 30 hops max, 60 byte packets
 1  XiaoQiang (192.168.31.1)  3.604 ms  3.349 ms  3.330 ms  3.318 ms  3.311 ms  3.304 ms * * * *
 2  100.96.32.1 (100.96.32.1)  28.541 ms  32.333 ms  32.327 ms  32.319 ms  32.311 ms  32.301 ms  12.033 ms  11.994 ms  14.795 ms  14.789 ms
 3  100.127.1.253 (100.127.1.253)  14.781 ms  14.775 ms  15.730 ms  15.723 ms  15.716 ms  17.569 ms *  19.595 ms  19.525 ms  19.501 ms
 4  212.48.195.19 (212.48.195.19)  19.301 ms  19.284 ms  19.277 ms  19.266 ms  19.258 ms  19.481 ms  19.471 ms  19.458 ms  19.448 ms  19.439 ms
 5  185.140.148.19 (185.140.148.19)  27.455 ms  27.447 ms  27.310 ms  132.507 ms  132.466 ms  132.442 ms  132.430 ms  132.414 ms  132.406 ms  132.395 ms
 6  217.161.68.34 (217.161.68.34)  132.613 ms  58.728 ms  58.665 ms  58.640 ms  58.618 ms  58.596 ms  58.581 ms  58.570 ms  61.085 ms  58.672 ms
 7  217.161.68.33 (217.161.68.33)  58.618 ms  58.354 ms  58.333 ms  58.318 ms  58.304 ms  59.802 ms  59.789 ms * * *
 8  ae17-xcr1.skt.cw.net (195.2.8.201)  49.478 ms  49.469 ms  49.462 ms  49.451 ms  47.119 ms  136.851 ms  136.806 ms  136.779 ms  136.767 ms  136.759 ms
 9  * * * * * * * * * *
10  151.101.86.133 (151.101.86.133)  151.328 ms  334.470 ms  334.435 ms  334.424 ms  334.417 ms  334.411 ms  204.659 ms  61.496 ms  67.987 ms  67.966 ms
```

Наибольший рост кажется между

212.48.195.19
и
185.140.148.19
и
217.161.68.34
и

Вычислим их по IP...



Не понял, что за прикол.
А конечная точка вообще тут

Так, пробуем stanford.com

```
alex@alex:~$ traceroute -I -q 10 www.stanford.com
traceroute to www.stanford.com (3.33.152.147), 30 hops max, 60 byte packets
 1  * XiaoQiang (192.168.31.1)  1054.785 ms  1054.759 ms  1054.736 ms  1054.713 ms  1054.692 ms  1054.671 ms * * *
 2  100.96.32.1 (100.96.32.1)  1062.995 ms  1062.974 ms  1062.951 ms  1062.929 ms  1062.907 ms  1062.885 ms  13.757 ms  13.671 ms  13.657 ms  13.648 ms
 3  100.127.1.253 (100.127.1.253)  18.380 ms  18.371 ms  10.091 ms  24.834 ms  24.827 ms  24.821 ms  24.815 ms  24.779 ms  19.412 ms  19.575 ms
 4  212.48.195.19 (212.48.195.19)  14.146 ms  14.134 ms  9.504 ms  14.647 ms  14.641 ms *  331.339 ms  334.666 ms  329.543 ms  329.486 ms
 5  185.140.148.19 (185.140.148.19)  329.474 ms  329.466 ms  329.459 ms  329.429 ms  329.422 ms  329.641 ms  329.623 ms  14.670 ms  13.555 ms  13.478 ms
 6  * 217.161.68.34 (217.161.68.34)  303.512 ms  307.231 ms  307.215 ms  307.200 ms  307.184 ms  307.156 ms  307.415 ms  296.185 ms  293.987 ms
 7  217.161.68.33 (217.161.68.33)  293.640 ms * * * * * * * * *
 8  99.83.88.232 (99.83.88.232)  534.930 ms  48.972 ms  46.684 ms  44.978 ms  45.842 ms  47.248 ms  45.875 ms  51.653 ms  45.702 ms  64.403 ms
 9  150.222.192.152 (150.222.192.152)  67.122 ms *  59.543 ms  59.480 ms  59.455 ms  59.432 ms  59.409 ms  59.387 ms  59.323 ms  61.137 ms
10  150.222.192.155 (150.222.192.155)  64.227 ms  64.219 ms  64.211 ms  64.202 ms  64.193 ms  64.184 ms  75.428 ms *  3623.435 ms  3623.410 ms
11  * * * * * * * * * *
12  150.222.192.142 (150.222.192.142)  257.753 ms *  457.639 ms *  702.363 ms  702.354 ms  1980.268 ms  1980.214 ms  1980.189 ms  1980.178 ms
13  * * * * * * * * * *
14  * * * * * * * * * *
15  150.222.194.138 (150.222.194.138)  1455.111 ms  1455.040 ms  82.587 ms  82.506 ms  117.571 ms  117.495 ms  117.480 ms  117.470 ms  115.136 ms  115.080 ms
16  a4ec4c6ea1c92e2e6.awsglobalaccelerator.com (3.33.152.147)  104.719 ms  104.664 ms  104.656 ms  104.637 ms  104.629 ms  104.623 ms  68.848 ms  68.803 ms  68.783 ms  68.774 ms
alex@alex:~$
```

Во, тот же путь, но из великобритании мы отправились в США.

Может кто-то по IP может называть страны, но вот даже россия в моём примере это 198 и 185, сомневаюсь, что есть какое-то супер простое правило.