

Foundation of Computer Networks - Wireshark Project
Bhavin Oza (bo2115)

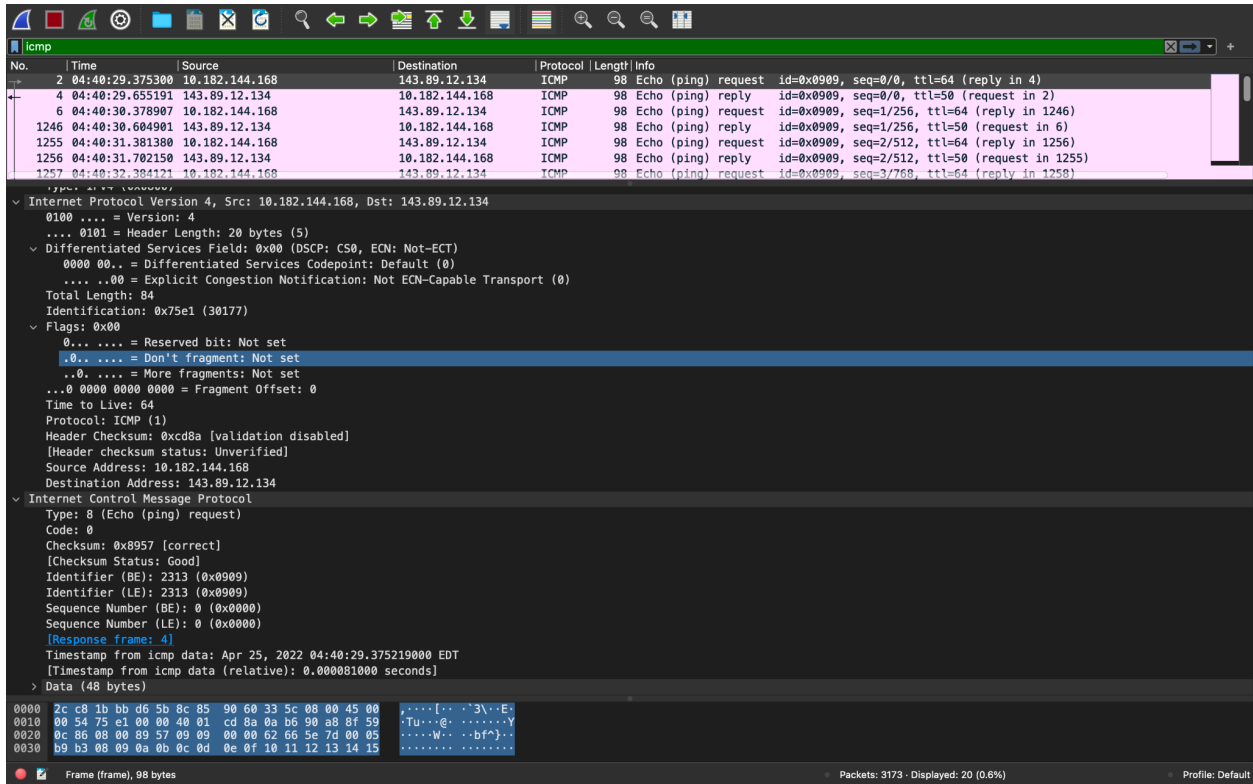
```
Round-trip min/avg/max/stddev = 234.232/316.294/760.316/150.057 ms
Bhavin@Ozas-MacBook-Pro ~ % ping -c 10 www.ust.hk
PING www.ust.hk (143.89.12.134): 56 data bytes
64 bytes from 143.89.12.134: icmp_seq=0 ttl=50 time=280.063 ms
64 bytes from 143.89.12.134: icmp_seq=1 ttl=50 time=226.232 ms
64 bytes from 143.89.12.134: icmp_seq=2 ttl=50 time=321.015 ms
64 bytes from 143.89.12.134: icmp_seq=3 ttl=50 time=239.900 ms
64 bytes from 143.89.12.134: icmp_seq=4 ttl=50 time=260.338 ms
64 bytes from 143.89.12.134: icmp_seq=5 ttl=50 time=222.026 ms
64 bytes from 143.89.12.134: icmp_seq=6 ttl=50 time=221.909 ms
64 bytes from 143.89.12.134: icmp_seq=7 ttl=50 time=323.488 ms
64 bytes from 143.89.12.134: icmp_seq=8 ttl=50 time=243.751 ms
64 bytes from 143.89.12.134: icmp_seq=9 ttl=50 time=262.760 ms

--- www.ust.hk ping statistics ---
10 packets transmitted, 10 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 221.909/260.148/323.488/35.868 ms
Bhavin@Ozas-MacBook-Pro ~ %
```

- 1). Source IP: 10.182.164.188
Destination IP: 143.89.12.134
- 2). ICMP is designed to communicate the network layer information between routers and hosts. The code and type fields help to determine the type of message to be delivered. All the ICMP messages are interpreted by the network softwares, no port numbers are required.

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3). ICMP type: 8

Code number: 0

The ICMP packet also has following fields:

Data fields

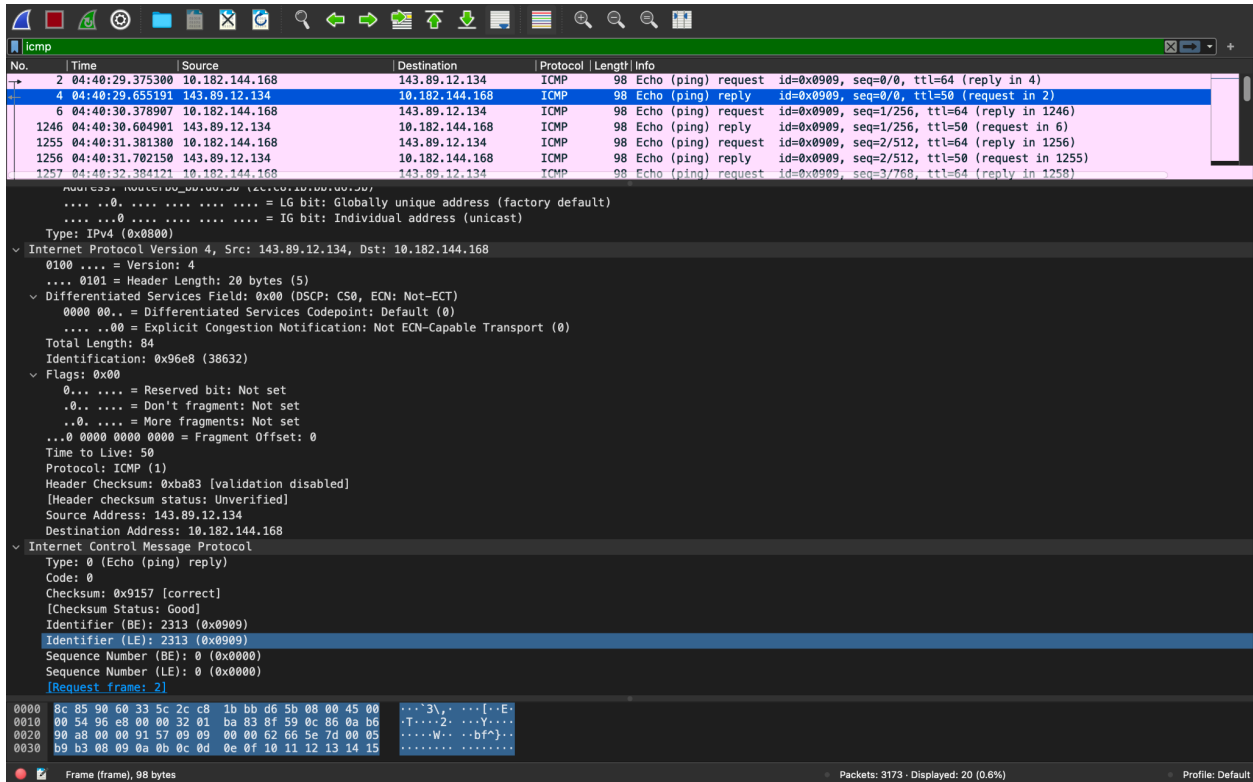
Checksum -> it is of 2 bytes length

Identifier -> It is of 2 bytes length

Sequence number -> It is of 2 bytes length

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4). ICMP type: 0

Code number: 0

The ICMP packet has following fields:

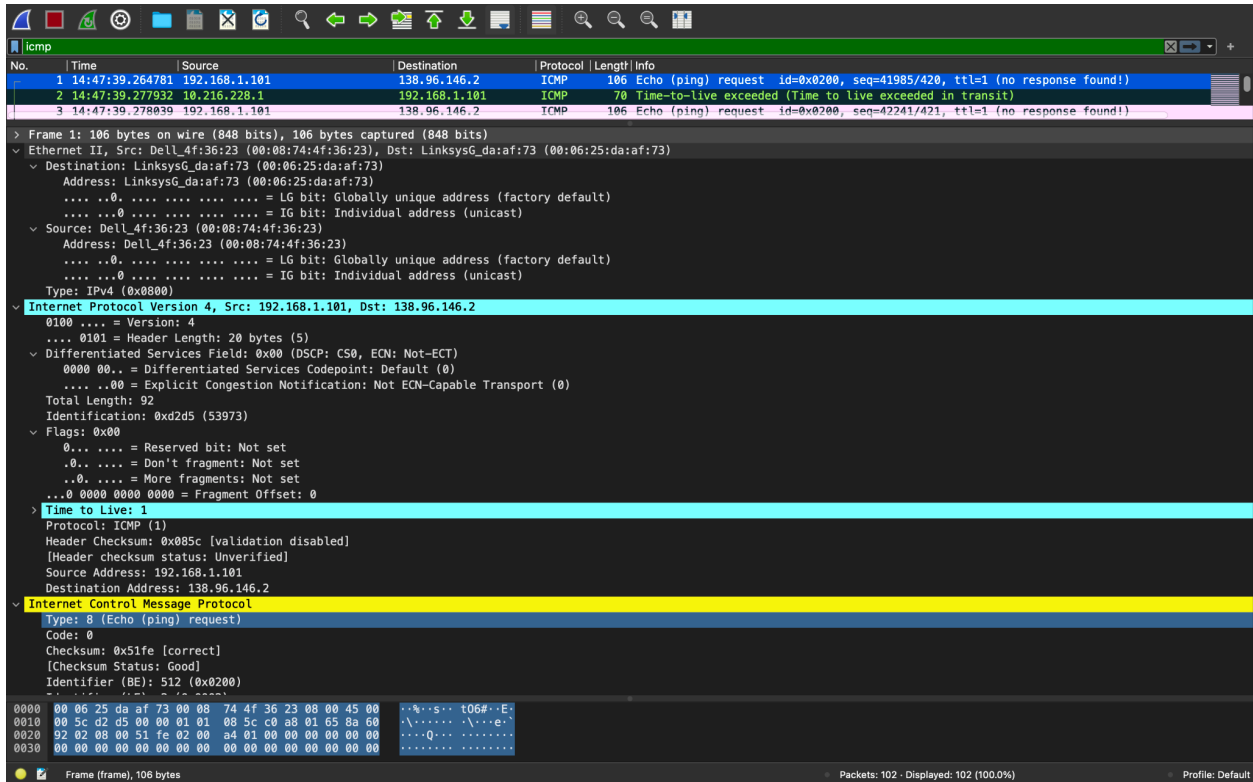
Checksum -> it is of 2 bytes length

Identifier -> It is of 2 bytes length

Sequence number -> It is of 2 bytes length

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5). Source IP: 192.168.1.101

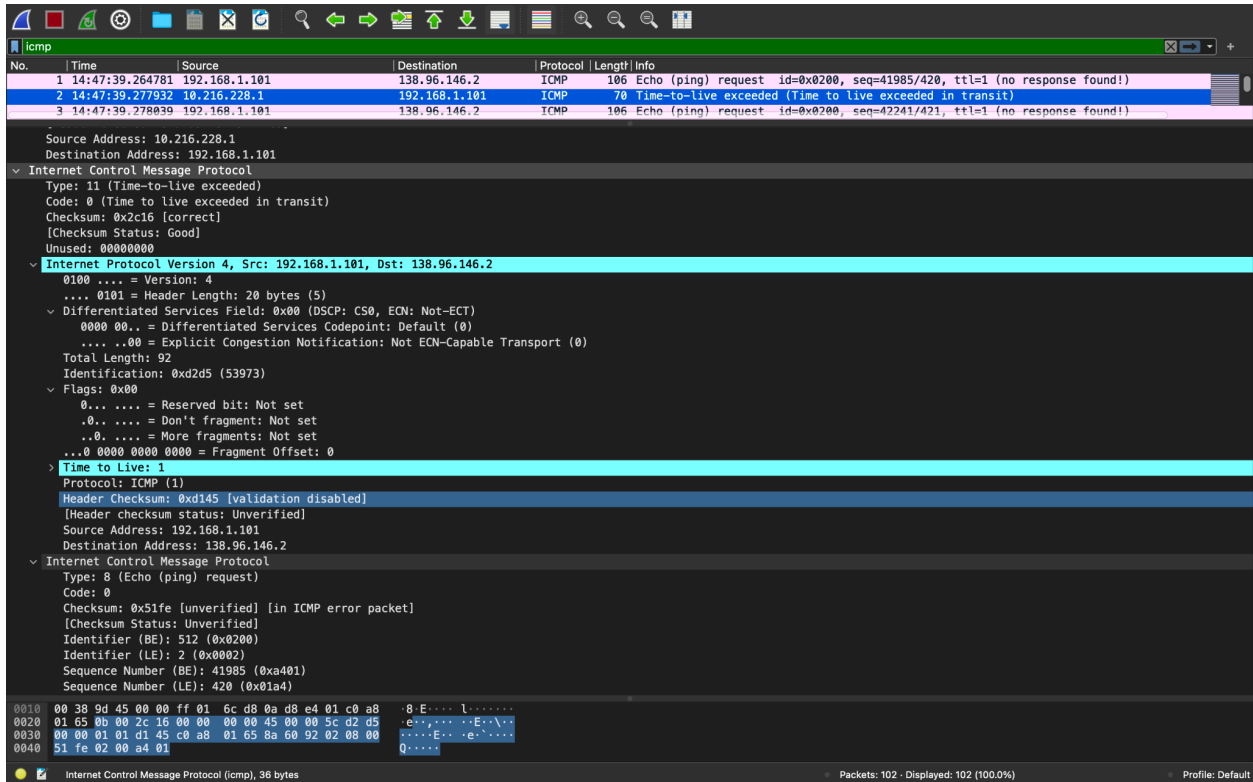
Destination IP: 138.96.146.2

6). No. The IP protocol number would be for UDP. i.e 17.

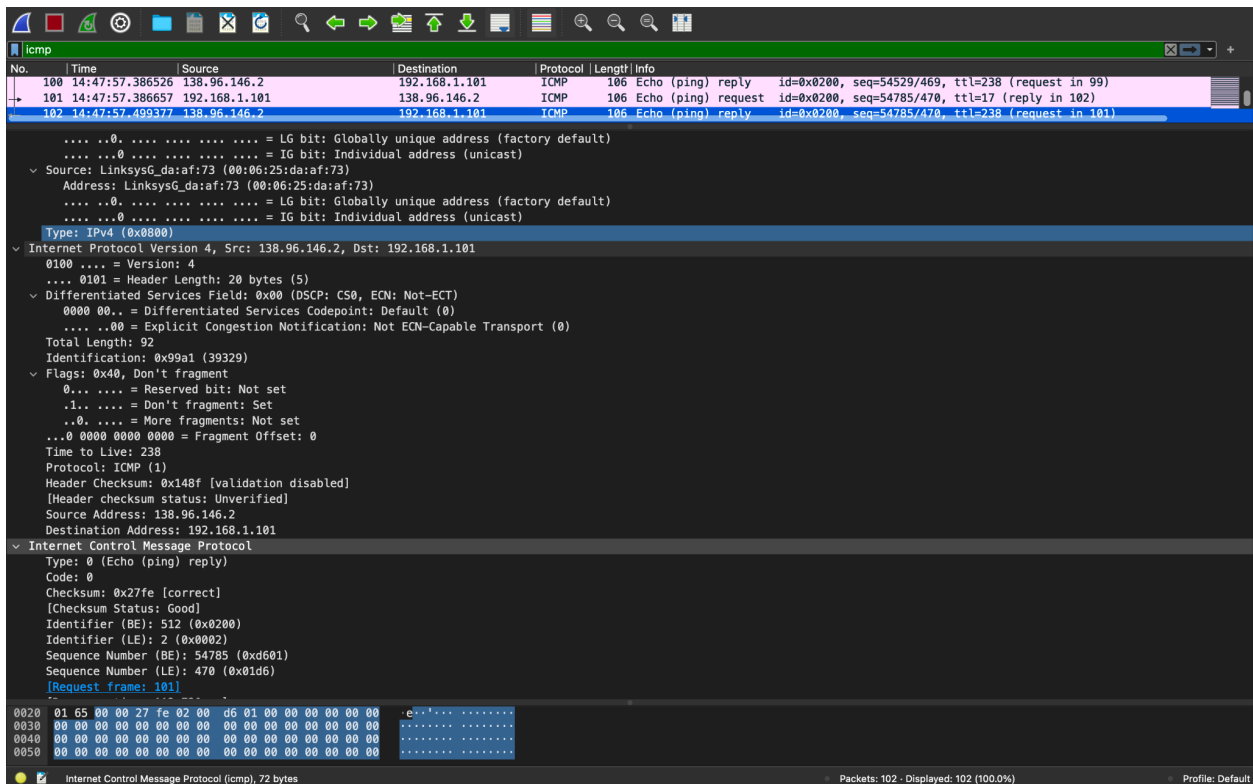
7). Both the packets have the same fields.

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8). The error packet contains the IP header and the first 8 bytes of the original ICMP packet that the error is for.



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9). The last three ICMP packets have message type 0, instead of 11, because datagrams have reached the destination host before the TTL expired.

```
Bhavin@Oza-MacBook-Pro: ~ % traceroute www.inria.fr
traceroute to inria.fr (128.93.162.83), 64 hops max, 52 byte packets
 1 10.182.112.1 (10.182.112.1)  2.548 ms  1.309 ms  1.260 ms
 2 173.230.5.21 (173.230.5.21)  1.536 ms  1.412 ms  1.586 ms
 3 host-252-18.ny.mylco.net (66.253.252.18)  19.098 ms  19.781 ms  19.037 ms
 4 e0-6.switch2.ny7.he.net (209.51.161.9)  19.092 ms  19.125 ms  19.172 ms
 5 100ge9-1.core1.ny4.he.net (184.105.64.49)  18.421 ms  18.673 ms  18.430 ms
 6 port-channel7.core2.par2.he.net (72.52.92.114)  182.225 ms * *
 7 renater.par.franceix.net (37.49.236.19)  89.879 ms  92.480 ms  89.147 ms
 8 et-1-1-1-ren-nr-parisi-rtr-131.noc.renater.fr (193.55.284.194)  90.201 ms  90.150 ms
 9 et-2-0-2-ren-nr-parisi-rtr-131.noc.renater.fr (193.55.284.192)  89.954 ms
10 * * *
11 inria-roquencourt-g13-2-inria-rtr-021.noc.renater.fr (193.51.184.177)  91.467 ms  90.287 ms  90.123 ms
12 * * *
13 * * *
14 * * *
15 * * *
16 * * *
17 * * *
18 * * *
19 * * *
20 * * *
21 * * *
22 * * *
23 * * *
24 * * *
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55 * * *
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58 * * *
59 * * *
60 * * *
```

```
c:\ Command Prompt
C:\WINDOWS\SYSTEM32>
C:\WINDOWS\SYSTEM32>
C:\WINDOWS\SYSTEM32>tracert www.inria.fr

Tracing route to www.inria.fr [138.96.146.2]
over a maximum of 30 hops:
  1    13 ms    12 ms    13 ms    10.216.228.1
  2    21 ms    14 ms    13 ms    24.218.0.153
  3    12 ms    11 ms    13 ms    bar01-p4-0.wsfde1.ma.attbb.net [24.128.190.197]
  4    16 ms    16 ms    15 ms    bar02-p6-0.ndhmhe1.ma.attbb.net [24.128.0.101]
  5    15 ms    15 ms    15 ms    12.125.47.49
  6    17 ms    17 ms    17 ms    12.123.40.218
  7    22 ms    23 ms    22 ms    tbr2-cl1.n54ny.ip.att.net [12.122.10.22]
  8    23 ms    23 ms    23 ms    ggr2-p3120.n54ny.ip.att.net [12.123.3.109]
  9    26 ms    21 ms    25 ms    att-gw.nyc.opentransit.net [192.205.32.138]
 10    98 ms    98 ms    96 ms    P4-0.PASCR1.Pastourelle.opentransit.net [193.251.241.133]
 11    97 ms    98 ms    98 ms    P9-0.AUUCR1.Aubervilliers.opentransit.net [193.251.243.29]
 12    98 ms    98 ms    108 ms    P6-0.BAGCR1.Bagnolet.opentransit.net [193.251.241.93]
 13    104 ms    106 ms    103 ms    193.51.185.30
 14    114 ms    114 ms    117 ms    grenoble-pos1-0.cssi.renater.fr [193.51.179.238]
 15    114 ms    115 ms    114 ms    nice-pos2-0.cssi.renater.fr [193.51.180.34]
 16    129 ms    114 ms    118 ms    inria-nice.cssi.renater.fr [193.51.181.137]
 17    113 ms    114 ms    112 ms    www.inria.fr [138.96.146.2]

Trace complete.
C:\WINDOWS\SYSTEM32>
```

10). The above image is fig 4 from the lab pdf file:
There is a link in steps 9 and 10 that has a longer delay.
Also, this is a transatlantic link from NYC to Pastourelle.