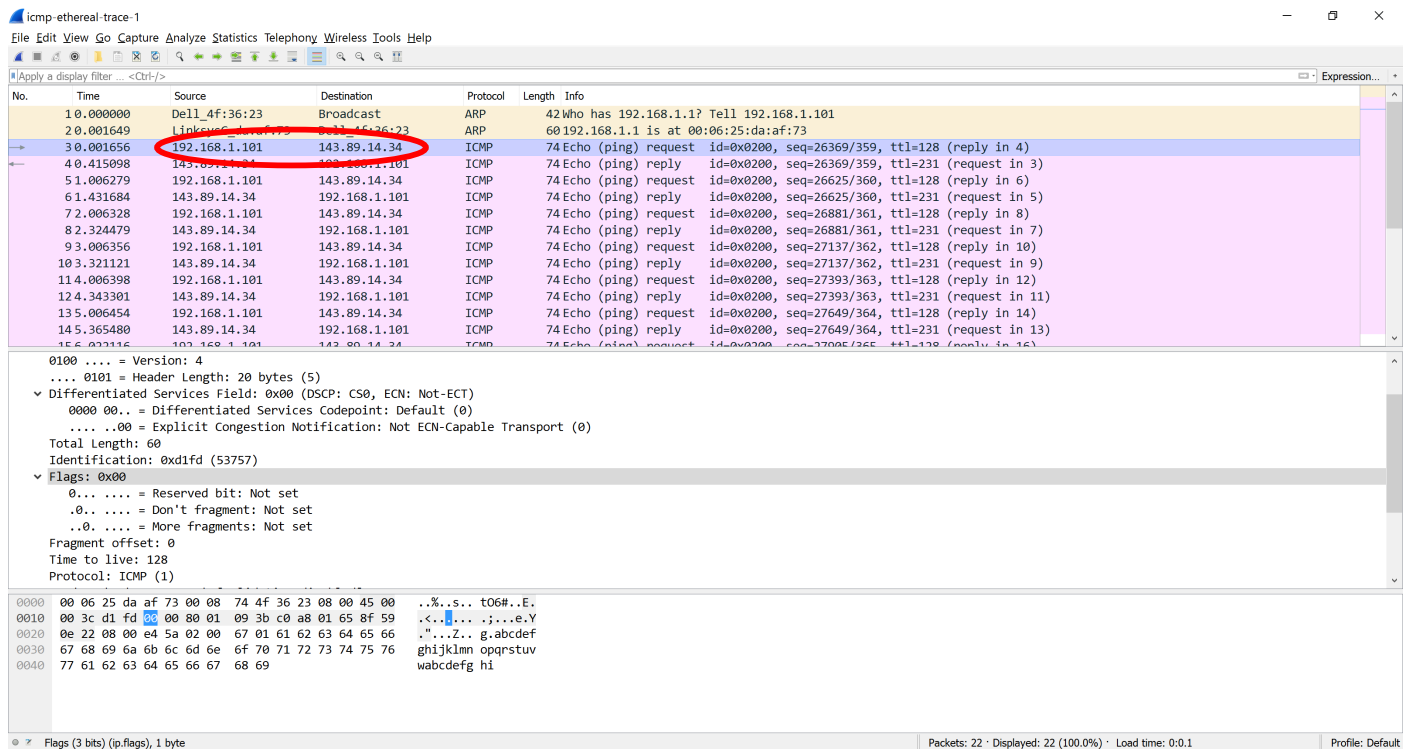


## Wireshark ICMP

### 1. What is the IP address of your host? What is the IP address of the destination host?

IP address of my host: 192.168.1.101

IP address of the destination host 143.89.14.34



### 2. Why is it that an ICMP packet does not have source and destination port numbers?

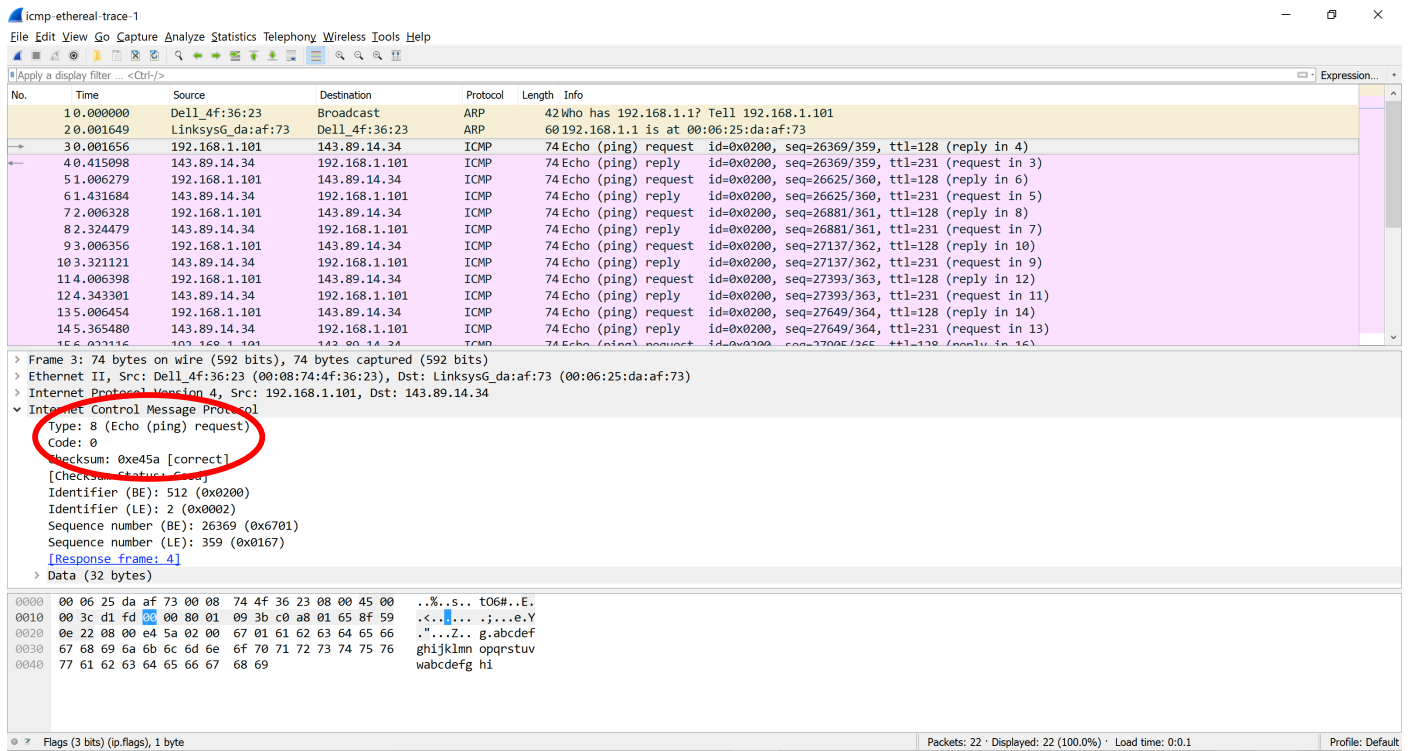
Each ICMP packet has a "Type" and a "Code". The Type/Code combination identifies the specific message being received.

3. Examine one of the ping request packets sent by your host. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?

ICMP type: 8

ICMP code: 0

The ICMP packet also has checksum, identifier, sequence number, and data fields. The checksum, sequence number and identifier fields are two bytes each.



Wireshark packet capture showing an ICMP Echo (ping) request. The packet is highlighted in yellow. The details pane shows the ICMP type as 8 (Echo (ping) request) and code as 0. The packet bytes are displayed in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Info
10.000000		Dell_4f:36:23	Broadcast	ARP	42	Who has 192.168.1.1? Tell 192.168.1.101
20.001649		LinksysG_da:af:73	Dell_4f:36:23	ARP	60	192.168.1.1 is at 00:06:25:da:af:73
30.001656		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=26369/359, ttl=128 (reply in 4)
40.415098		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=26369/359, ttl=231 (request in 3)
51.006279		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=26625/360, ttl=128 (reply in 6)
61.431684		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=26625/360, ttl=231 (request in 5)
72.006328		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=26881/361, ttl=128 (reply in 8)
82.324479		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=26881/361, ttl=231 (request in 7)
93.006356		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=27137/362, ttl=128 (reply in 10)
103.321121		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=27137/362, ttl=231 (request in 9)
114.006398		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=27393/363, ttl=128 (reply in 12)
124.343301		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=27393/363, ttl=231 (request in 11)
135.006454		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=27649/364, ttl=128 (reply in 14)
145.365480		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=27649/364, ttl=231 (request in 13)

Frame 3: 74 bytes on wire (592 bits), 74 bytes captured (592 bits)  
Ethernet II, Src: Dell\_4f:36:23 (00:08:74:4f:36:23), Dst: LinksysG\_da:af:73 (00:06:25:da:af:73)  
Internet Protocol Version 4, Src: 192.168.1.101, Dst: 143.89.14.34  
Internet Control Message Protocol  
Type: 8 (Echo (ping) request)  
Code: 0  
Checksum: 0xe45a [correct]  
[Checksum Status: Good]  
Identifier (BE): 512 (0x0200)  
Identifier (LE): 2 (0x0002)  
Sequence number (BE): 26369 (0x6701)  
Sequence number (LE): 359 (0x0167)  
[Response frame: 4]  
Data (32 bytes)

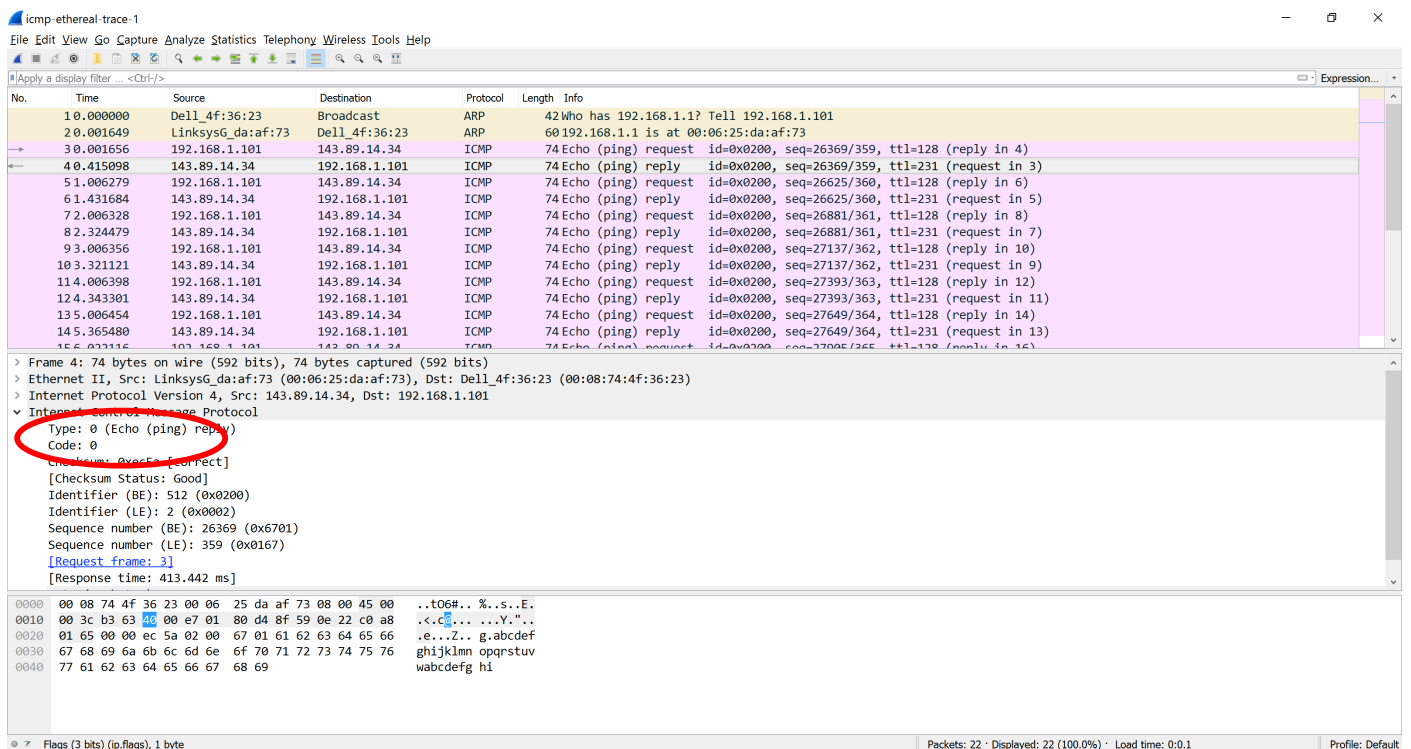
0000 00 06 25 da af 73 00 08 74 4f 36 23 08 00 45 00 ..%.s.. t06#..E.  
0010 00 3c d1 fd 00 08 01 09 3b c0 a8 01 65 8f 59 <.<...Y  
0020 0e 22 08 00 e4 5a 02 00 67 01 61 62 63 64 65 66 ..Z.. g.abcdef  
0030 67 68 69 6a 6b 6c 6d 6e 6f 70 71 72 73 74 75 76 ghijklmn opqrstuv  
0040 77 61 62 63 64 65 66 67 68 69 wabcdfgh i

**4. Examine the corresponding ping reply packet. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?**

ICMP type: 0

ICMP code: 0

The ICMP packet also has checksum, identifier, sequence number, and data fields. The checksum, sequence number and identifier fields are two bytes each.



Wireshark packet capture showing an ICMP Echo (ping) reply. The packet is highlighted in yellow. The details pane shows the ICMP type as 0 (Echo (ping) reply) and code as 0. The packet bytes are displayed in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Info
10.000000		Dell_4f:36:23	Broadcast	ARP	42	Who has 192.168.1.1? Tell 192.168.1.101
20.001649		LinksysG_da:af:73	Dell_4f:36:23	ARP	60	192.168.1.1 is at 00:06:25:da:af:73
30.001656		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=26369/359, ttl=128 (reply in 4)
40.415098		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=26369/359, ttl=231 (request in 3)
51.006279		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=26625/360, ttl=128 (reply in 6)
61.431684		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=26625/360, ttl=231 (request in 5)
72.006328		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=26881/361, ttl=128 (reply in 8)
82.324479		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=26881/361, ttl=231 (request in 7)
93.006356		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=27137/362, ttl=128 (reply in 10)
103.321121		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=27137/362, ttl=231 (request in 9)
114.006398		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=27393/363, ttl=128 (reply in 12)
124.343301		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=27393/363, ttl=231 (request in 11)
135.006454		192.168.1.101	143.89.14.34	ICMP	74	Echo (ping) request id=0x0200, seq=27649/364, ttl=128 (reply in 14)
145.365480		143.89.14.34	192.168.1.101	ICMP	74	Echo (ping) reply id=0x0200, seq=27649/364, ttl=231 (request in 13)

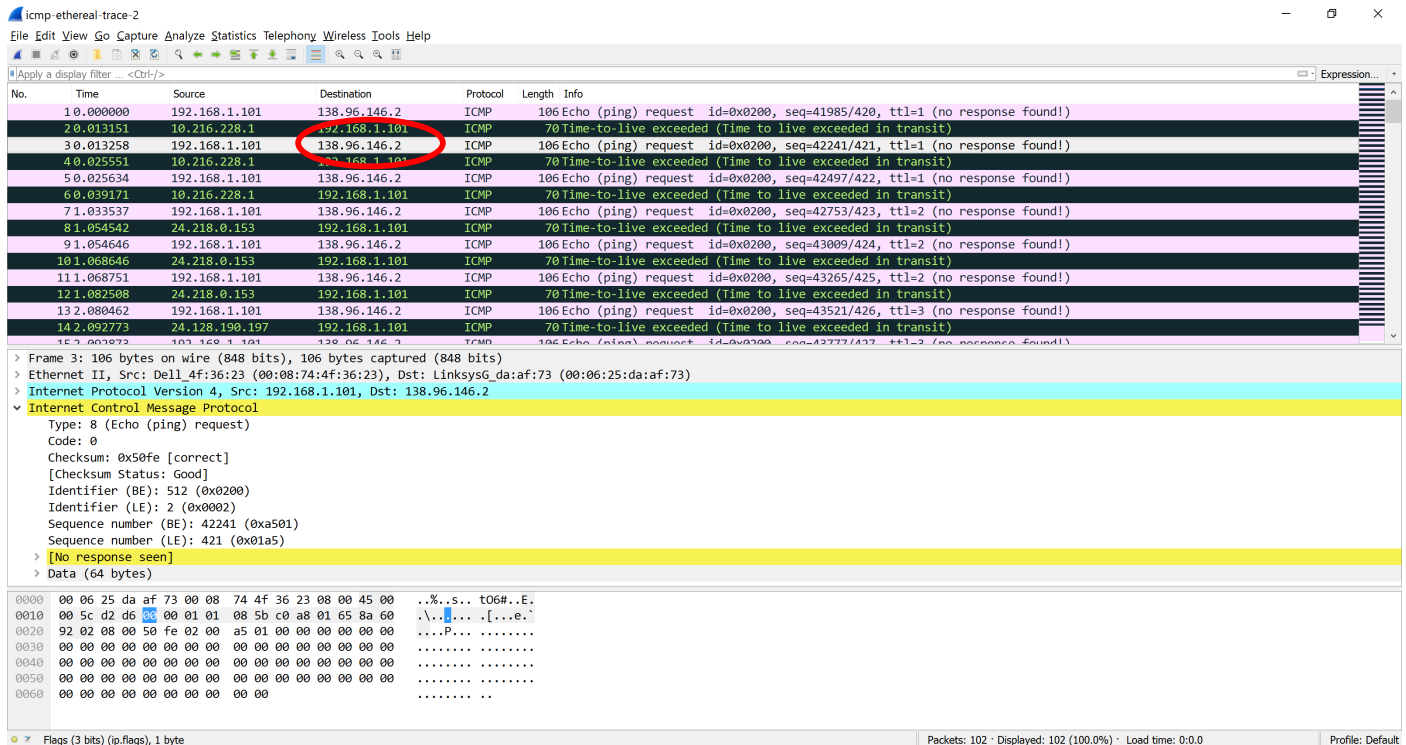
Frame 4: 74 bytes on wire (592 bits), 74 bytes captured (592 bits)  
Ethernet II, Src: LinksysG\_da:af:73 (00:06:25:da:af:73), Dst: Dell\_4f:36:23 (00:08:74:4f:36:23)  
Internet Protocol Version 4, Src: 143.89.14.34, Dst: 192.168.1.101  
Internet Control Message Protocol  
Type: 0 (Echo (ping) reply)  
Code: 0  
Checksum: 0xae5e [correct]  
[Checksum Status: Good]  
Identifier (BE): 512 (0x0200)  
Identifier (LE): 2 (0x0002)  
Sequence number (BE): 26369 (0x6701)  
Sequence number (LE): 359 (0x0167)  
[Request frame: 3]  
[Response time: 413.442 ms]

0000 00 08 74 4f 36 23 00 06 25 da af 73 08 00 45 00 ..t06#..%.s..E.  
0010 00 3c b3 63 00 e0 07 01 80 d4 8f 59 0e 22 c0 a8 <.<...Y."  
0020 01 65 00 00 ec 5a 02 00 67 01 61 62 63 64 65 66 e...Z.. g.abcdef  
0030 67 68 69 6a 6b 6c 6d 6e 6f 70 71 72 73 74 75 76 ghijklmn opqrstuv  
0040 77 61 62 63 64 65 66 67 68 69 wabcdfgh i

## 5. What is the IP address of your host? What is the IP address of the target destination host?

The IP address of my host: 192.168.1.101.

The IP address of the destination host: 138.96.146.2.



## 6. If ICMP sent UDP packets instead (as in Unix/Linux), would the IP protocol number still be 01 for the probe packets? If not, what would it be?

No. The IP protocol number should be 0x11.

## 7. Examine the ICMP echo packet in your screenshot. Is this different from the ICMP ping query packets in the first half of this lab? If yes, how so?

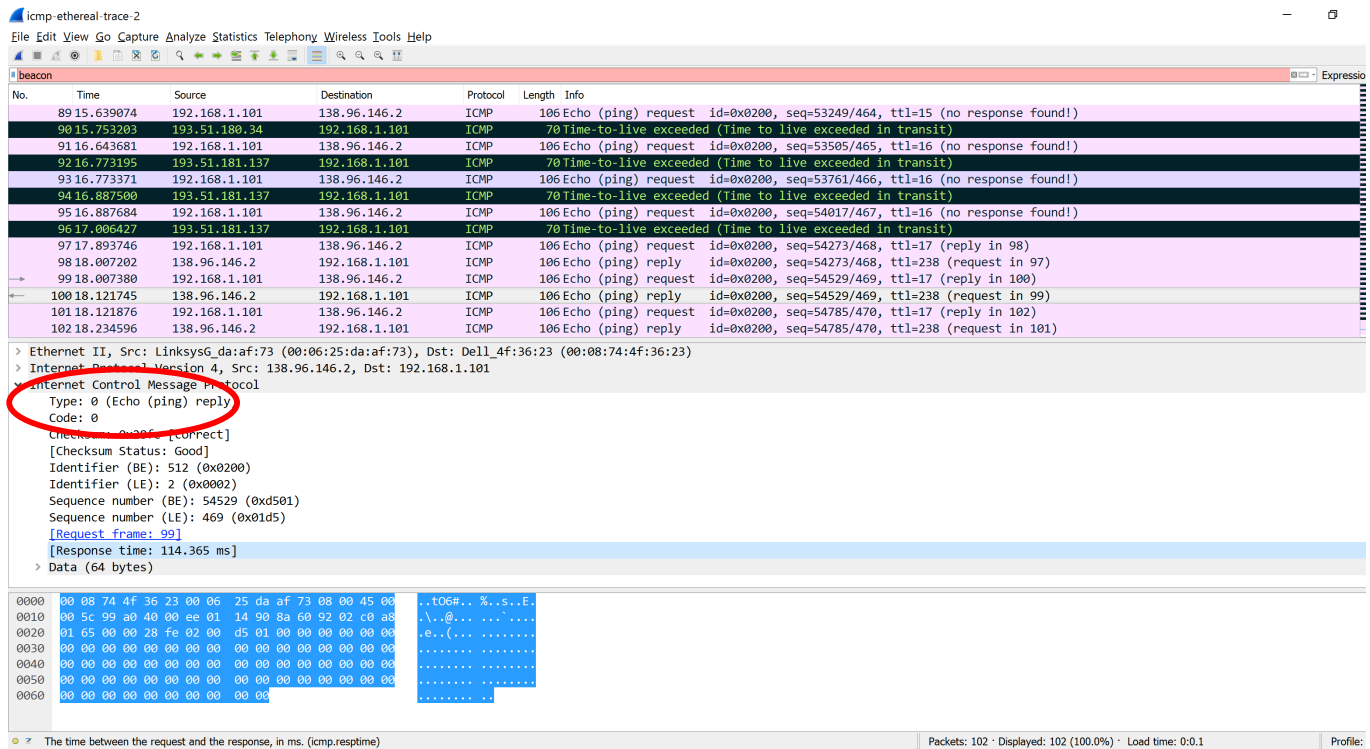
The ICMP echo packet has the same fields as the ping query packets.

## 8. Examine the ICMP error packet in your screenshot. It has more fields than the ICMP echo packet. What is included in those fields?

The ICMP echo packet does not have the same fields as the ping query packets. It contains the IP header and the first 8 bytes of the original ICMP packet.

## 9. Examine the last three ICMP packets received by the source host. How are these packets different from the ICMP error packets? Why are they different?

The last three packets have type 0 meaning echo reply not type 11 meaning TTL expires because the packets manage to the destination host before expiring.



10. Within the traceroute measurements, is there a link whose delay is significantly longer than others? Refer to the screenshot in Figure 4, is there a link whose delay is significantly longer than others? On the basis of the router names, can you guess the location of the two routers on the end of this link?

Step 11 and 12 have longer delay. The routers are from New York to Aubervilliers, France. In figure 4 is from New York to Pastourelle, France.

```
C:\Documents and Settings\Paula Wing>tracert www.inria.fr

Tracing route to www.inria.fr [138.96.146.2]
over a maximum of 30 hops:

  0  1 ms    1 ms    1 ms    dslrouter [192.168.1.1]
  1  35 ms   33 ms   34 ms   10.14.10.1
  2  31 ms   32 ms   31 ms   P1-0.LCR-01.SPFDMA.verizon-gni.net [130.81.44.10]
  3  36 ms   37 ms   37 ms   so-1-3-1-0.BB-RTR1.BOS.verizon-gni.net [130.81.2]
  4  39 ms   37 ms   39 ms   0.so-5-2-0.XL1.BOS4.ALTER.NET [152.63.19.129]
  5  67 ms   67 ms   69 ms   0.so-7-0-0.XL1.CHI13.ALTER.NET [152.63.64.206]
  6  67 ms   69 ms   68 ms   0.so-6-0-0.BR2.CHI13.ALTER.NET [152.63.73.25]
  7  67 ms   69 ms   67 ms   sl-st21-chi-3-0-0.sprintlink.net [144.232.18.141]
  8  66 ms   68 ms   67 ms   sl-st20-chi-1-0.sprintlink.net [144.232.8.102]
  9  68 ms   67 ms   67 ms   sl-franc2-76974-0.sprintlink.net [160.81.179.186]
 10  88 ms   89 ms   89 ms   po14-0.nykcr2.NewYork.opentransit.net [193.251.2]
 11  *      174 ms  173 ms   pos0-0-0-1.auvtr1.Aubervilliers.opentransit.net
 12  [193.251.241.165]
 13  172 ms  171 ms  171 ms   tengige0-15-0-4.pastr1.Paris.opentransit.net [19]
 14  172 ms  171 ms  171 ms   gi9-0-0.passe2.Paris.opentransit.net [193.251.24]
 15  172 ms  171 ms  171 ms   po6-2.bagse1.Bagnolet.opentransit.net [193.251.2]
 16  177 ms  177 ms  175 ms   lyon-pos1-0.cssi.renater.fr [193.51.185.30]
 17  199 ms  197 ms  199 ms   grenoble-pos1-0.cssi.renater.fr [193.51.179.238]
 18  199 ms  197 ms  197 ms   nice-pos2-0.cssi.renater.fr [193.51.180.34]
 19  198 ms  198 ms  197 ms   inria-nice.cssi.renater.fr [193.51.181.137]
 20  197 ms  197 ms  197 ms   www.inria.fr [138.96.146.2]

Trace complete.
```