**Muhammad Ahmad**

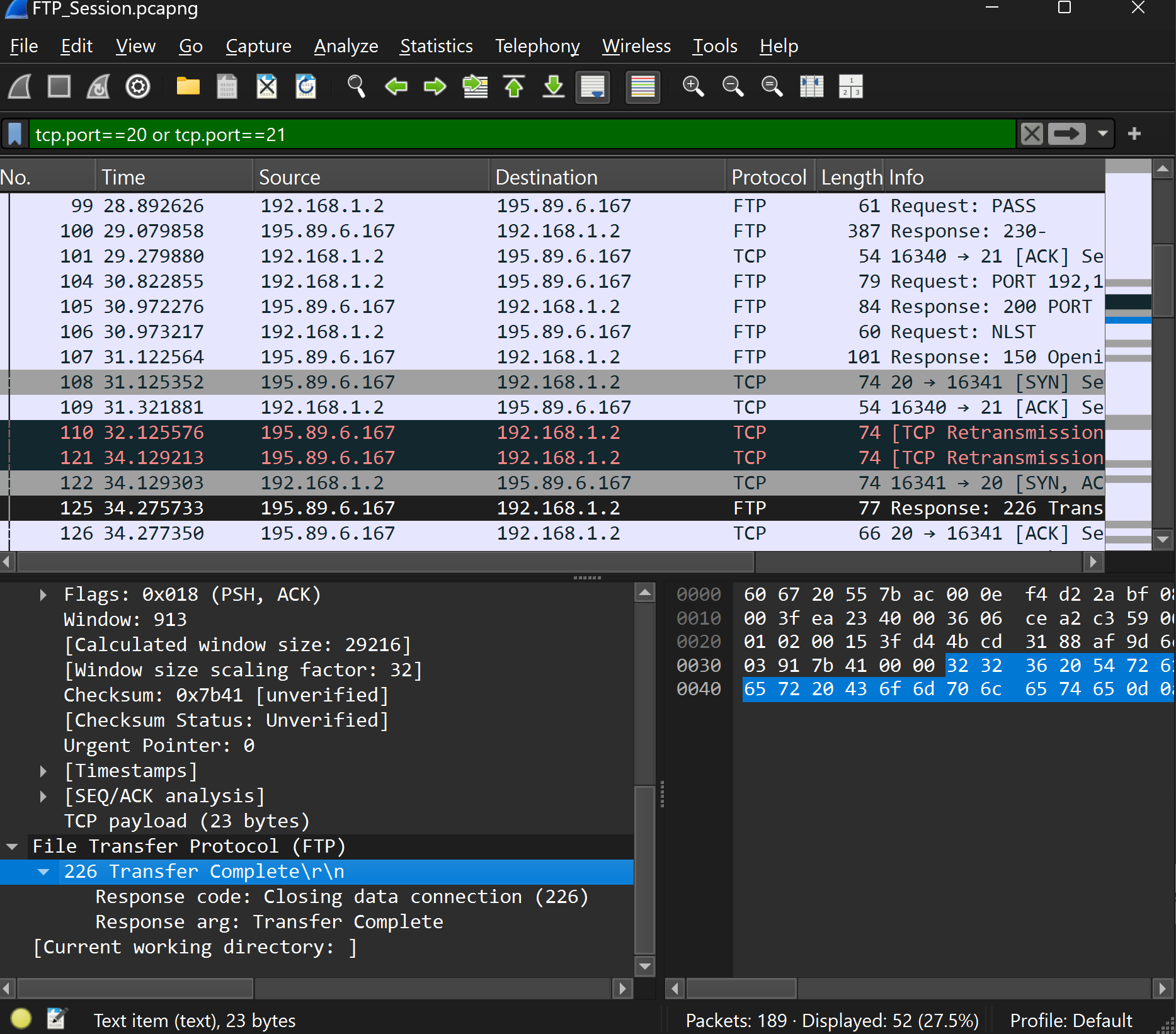
**21L-5617 BS(DS)7A**

**Question 1**

**1:**

The **226 Transfer Complete** response indicates a successful file transfer over **port 21** (FTP control).

Port 20 is used for FTP data transfer.

****

**2:**

Here is the information for the 19 packets obtained by applying the ftp || ftp-data filter

 **Packet 89**: The server at IP: 195.89.6.167 (Port: 21) responds to the user's request with response code 220.

 **Packet 94**: The client at IP: 192.168.1.2 (Port: 16340) sends a login request using the command USER anonymous.

 **Packet 96**: The server at IP: 195.89.6.167 (Port: 21) replies with code 331, requesting a password.

 **Packet 99**: The client at IP: 192.168.1.2 (Port: 16340) attempts to authenticate by sending the PASS command.

 **Packet 100**: The server at IP: 195.89.6.167 (Port: 21) replies with response code 230, indicating successful login.

 **Packet 104**: The client at IP: 192.168.1.2 (Port: 16340) requests data transfer from the server.

 **Packet 105**: The server at IP: 195.89.6.167 (Port: 21) responds with response code 200.

 **Packet 106**: The client at IP: 192.168.1.2 (Port: 16340) sends the command NLST to the server.

 **Packet 107**: The server at IP: 195.89.6.167 (Port: 21) responds with code 150, indicating it is ready to open a data connection.

 **Packet 125**: The server at IP: 195.89.6.167 (Port: 21) completes the data transfer and replies with response code 226.

 **Packet 127**: Data is transferred between the server (IP: 195.89.6.167, Port: 20) and the client.

 **Packet 151**: The client at IP: 192.168.1.2 (Port: 16340) sends another request to the server.

 **Packet 152**: The server at IP: 195.89.6.167 (Port: 21) replies with response code 200.

 **Packet 153**: The client at IP: 192.168.1.2 (Port: 16340) sends another command to the server.

 **Packet 155**: The server at IP: 195.89.6.167 (Port: 21) replies with response code 122.

 **Packet 160**: The server at IP: 195.89.6.167 (Port: 21) completes the transfer and responds with code 226.

 **Packet 161**: FTP data is exchanged between the server (IP: 195.89.6.167, Port: 20) and the client.

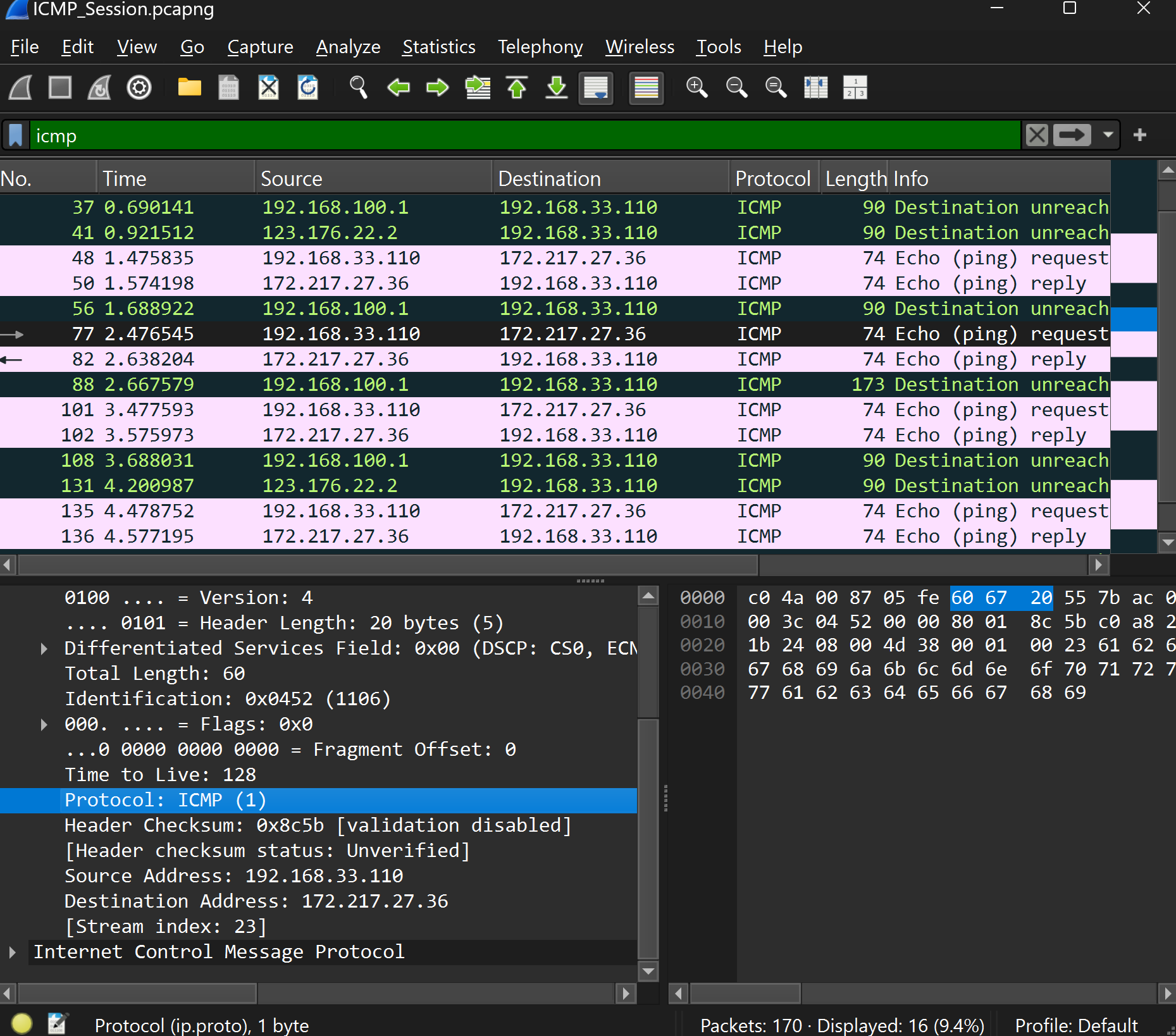
 **Packet 173**: The client at IP: 192.168.1.2 (Port: 16340) issues the QUIT command to terminate the session.

 **Packet 175**: The server at IP: 195.89.6.167 (Port: 21) replies with response code 221, confirming the session closure.

**Question2**

1:

No, ICMP messages are not sent over UDP or TCP; they are sent directly over IP.

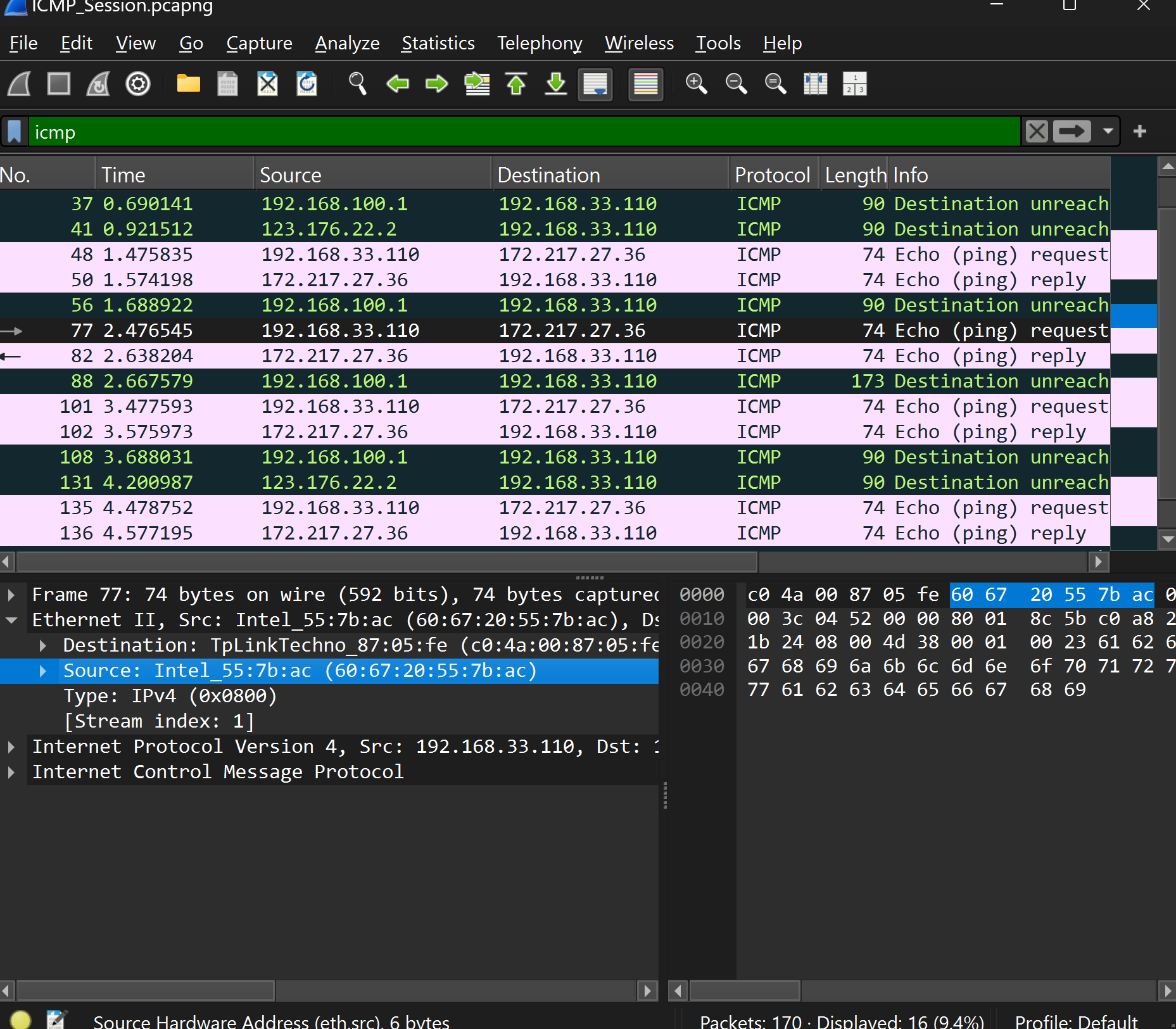


**2:**

 The **link-layer (Ethernet)** address of the source host is **60:67:20:55:7b**

.

 The **link-layer (Ethernet)** address of the destination host is **c0:4a:00:87:05**

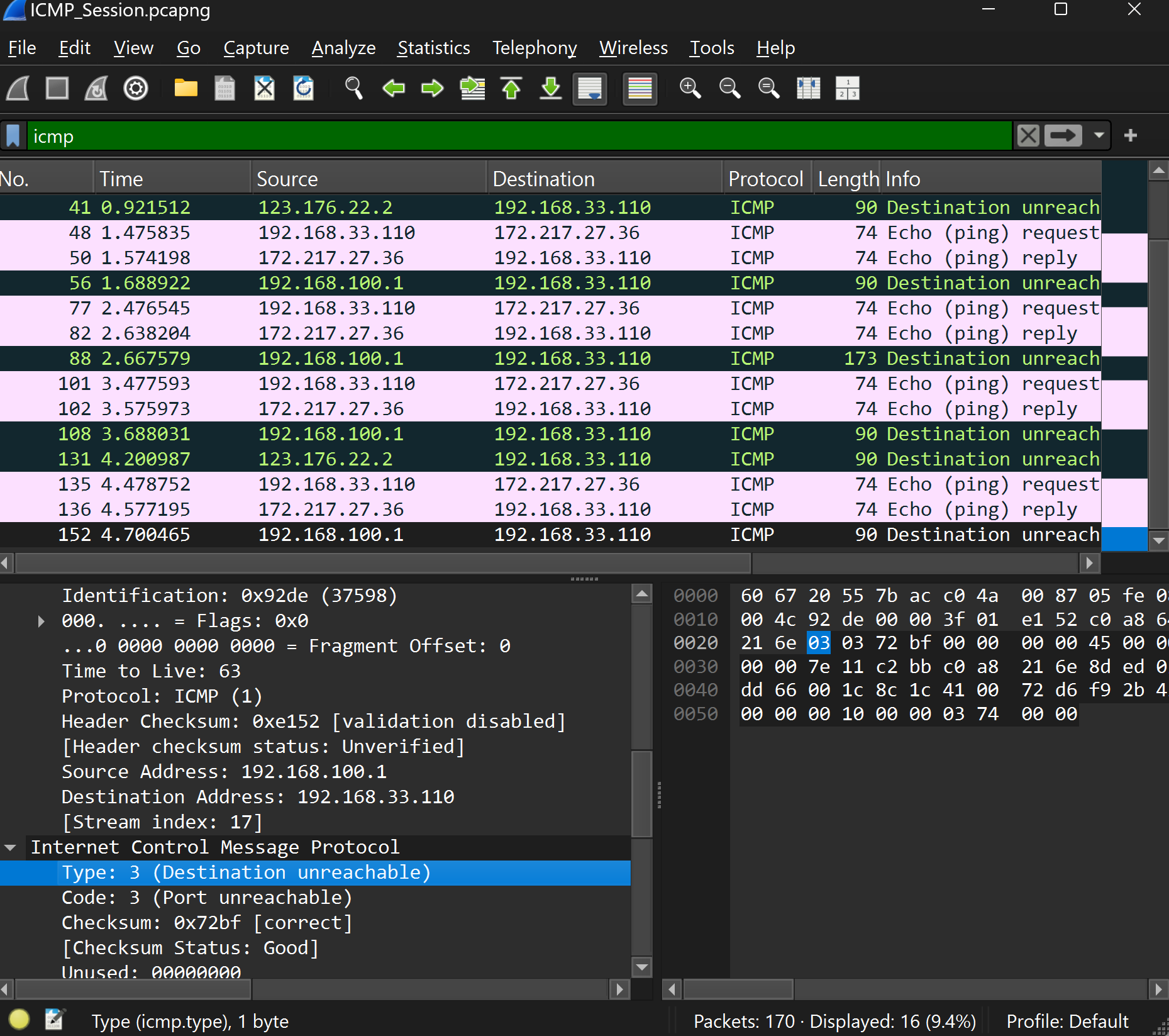


**3:**

Type: 8 (Echo (ping) request)

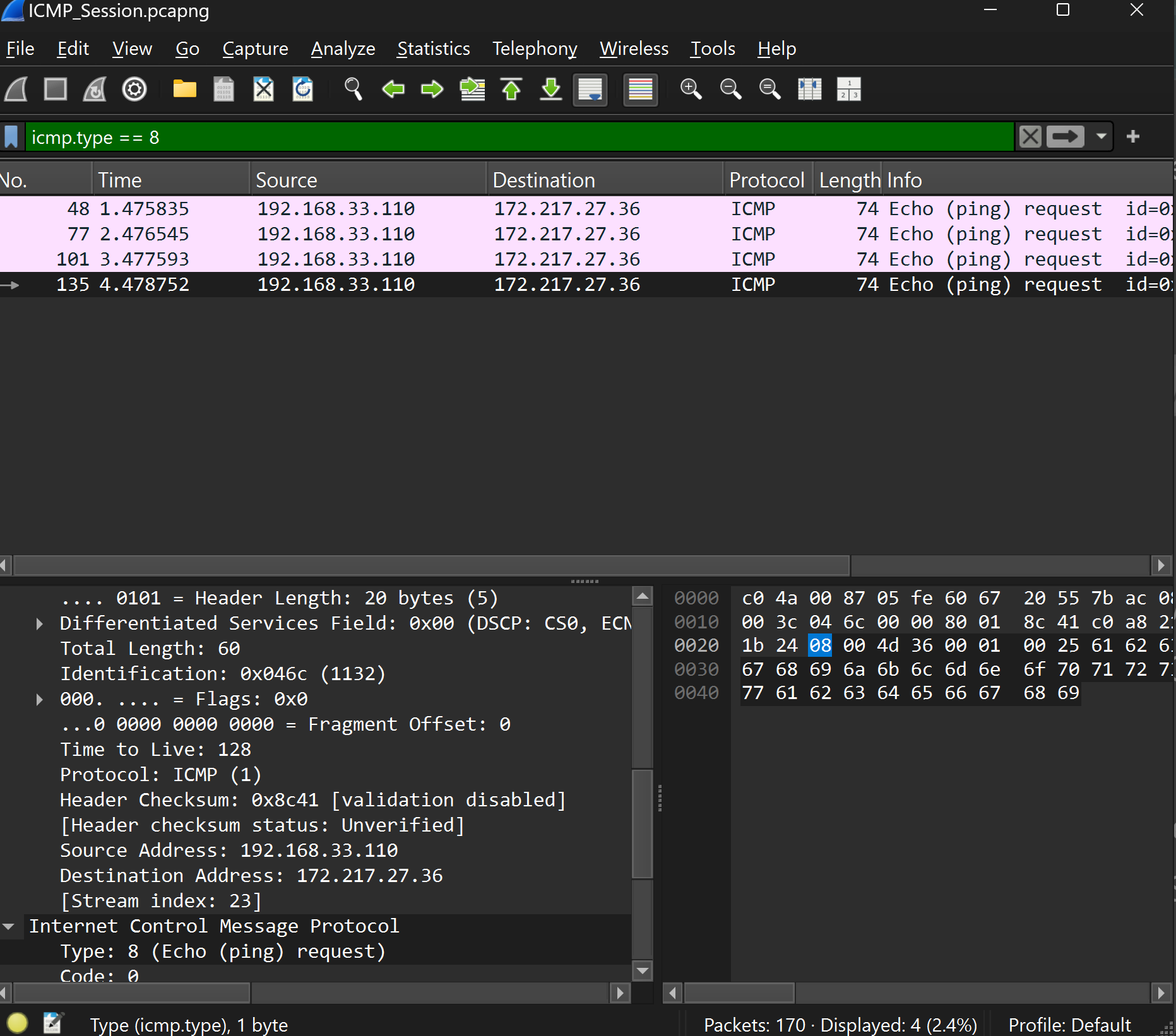
Type: 3 (Destination unreachable)

Type: 0 (Echo (ping) reply)



4:

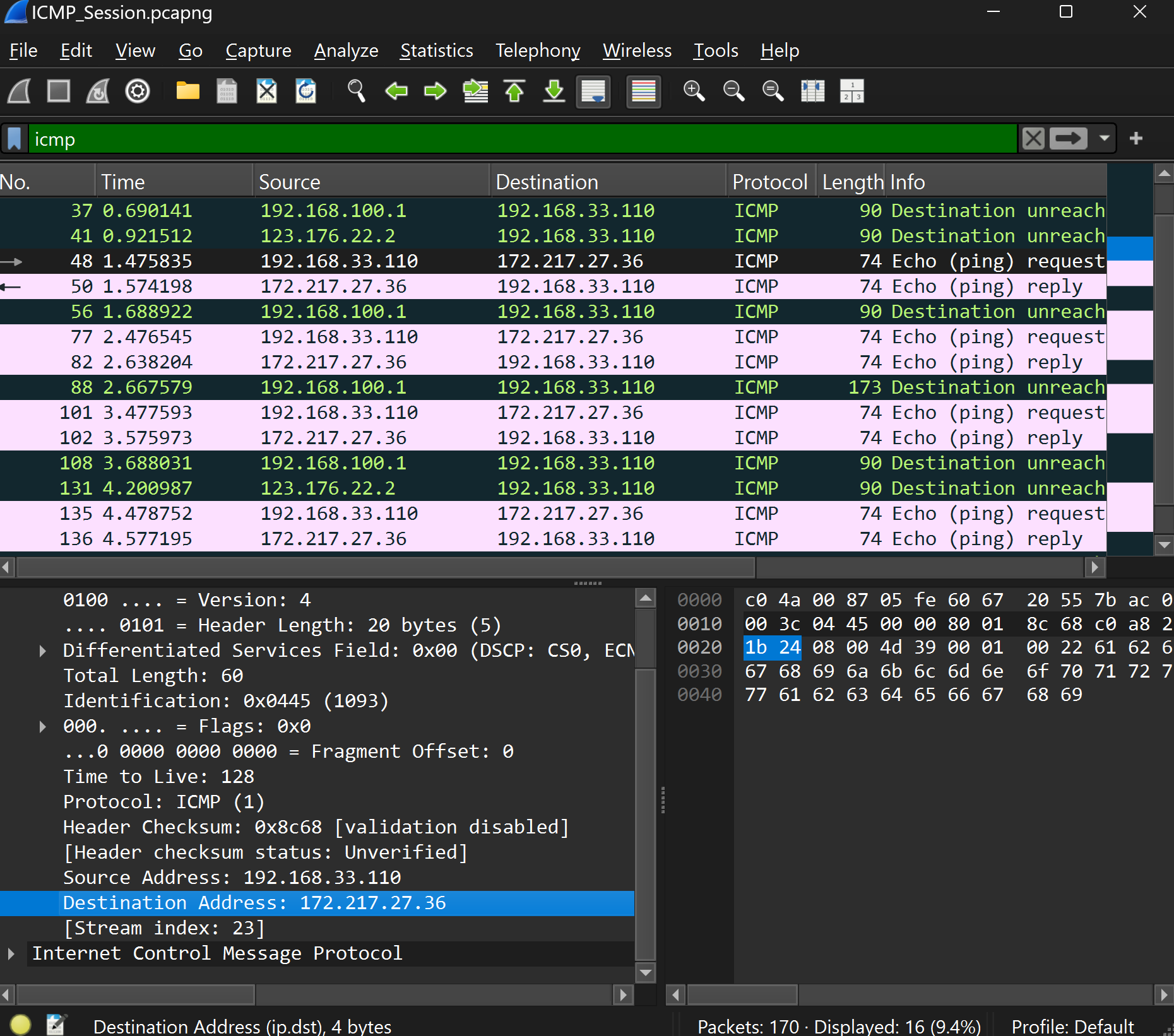
**Total ICMP Requests Sent: 4 Echo Requests**



**5:**

 My laptop Host IP Address: 192.168.33.110

 Destination Host IP Address: 172.217.27.36

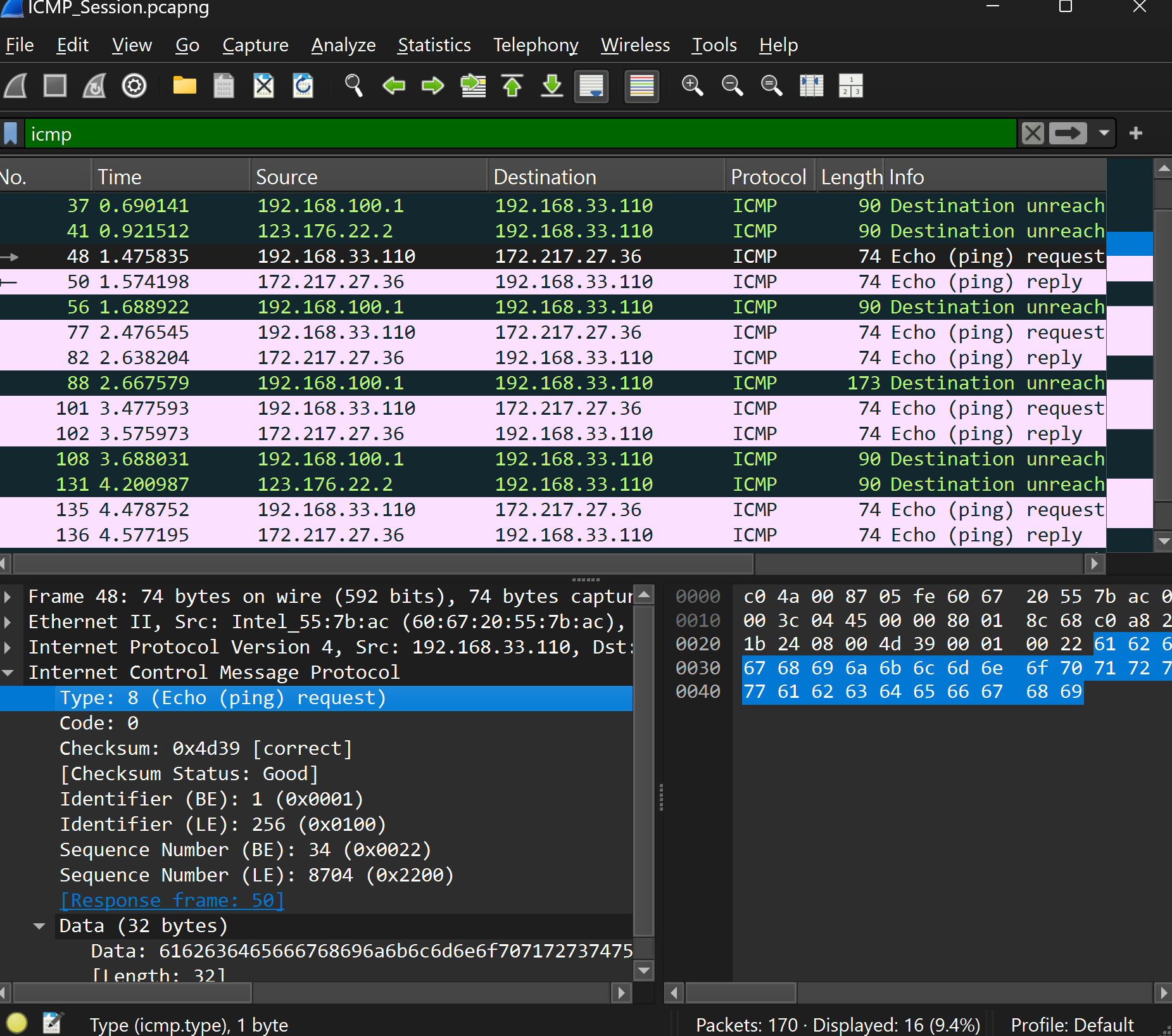


**Q6 :**

ICMP works at the network layer to help with network issues and error messages.ICMP doesn't need port numbers because it's not meant for application communication.

**Q7:**

An **ICMP Echo Request** has a **Type** value of **8**, while an **ICMP Echo Reply** has a **Type** value of **0**.



### 8:

### ICMP Echo Request Packet Details

* **ICMP Type**: **8** (Echo Request)
* **ICMP Code**: **0**

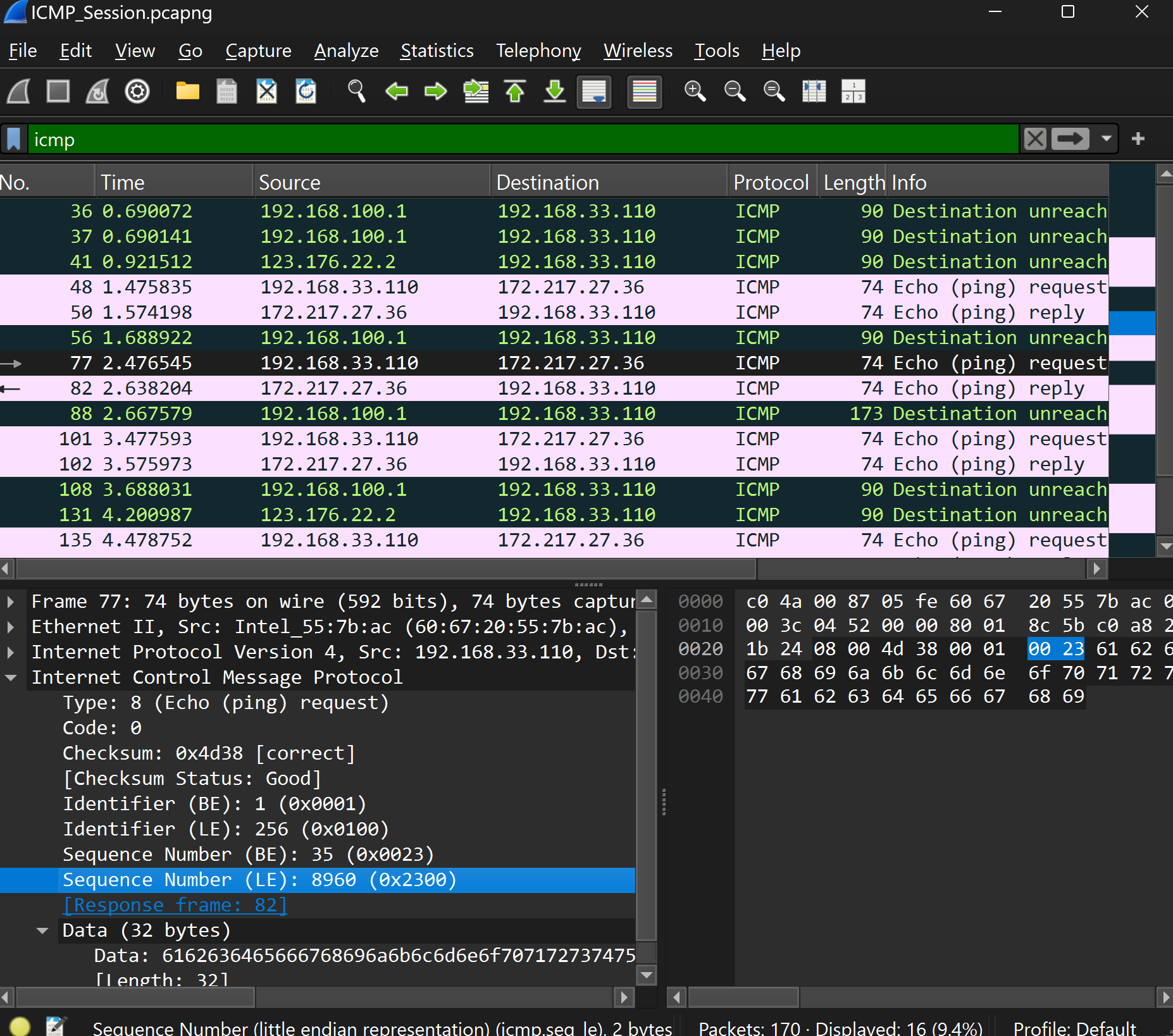
**Additional Fields in the ICMP Packet**

**Checksum**:

* + **Value**: 0x4d38
  + **Status**: Good (indicating no errors)
  + **Size**: **2 bytes**
* **Identifier**:
  + **Big Endian (BE)**: 1 (0x0001)
  + **Little Endian (LE)**: 256 (0x0100)
  + **Size**: **2 bytes**
* **Sequence Number**:
  + **Big Endian (BE)**: 35 (0x0023)
  + **Little Endian (LE)**: 8960 (0x2300)
  + **Size**: **2 bytes**

**Sizes**

* **Checksum Size**: 2 bytes
* **Identifier Size**: 2 bytes
* **Sequence Number Size**: 2 bytes



### 9:

### ICMP Echo Reply Packet Details

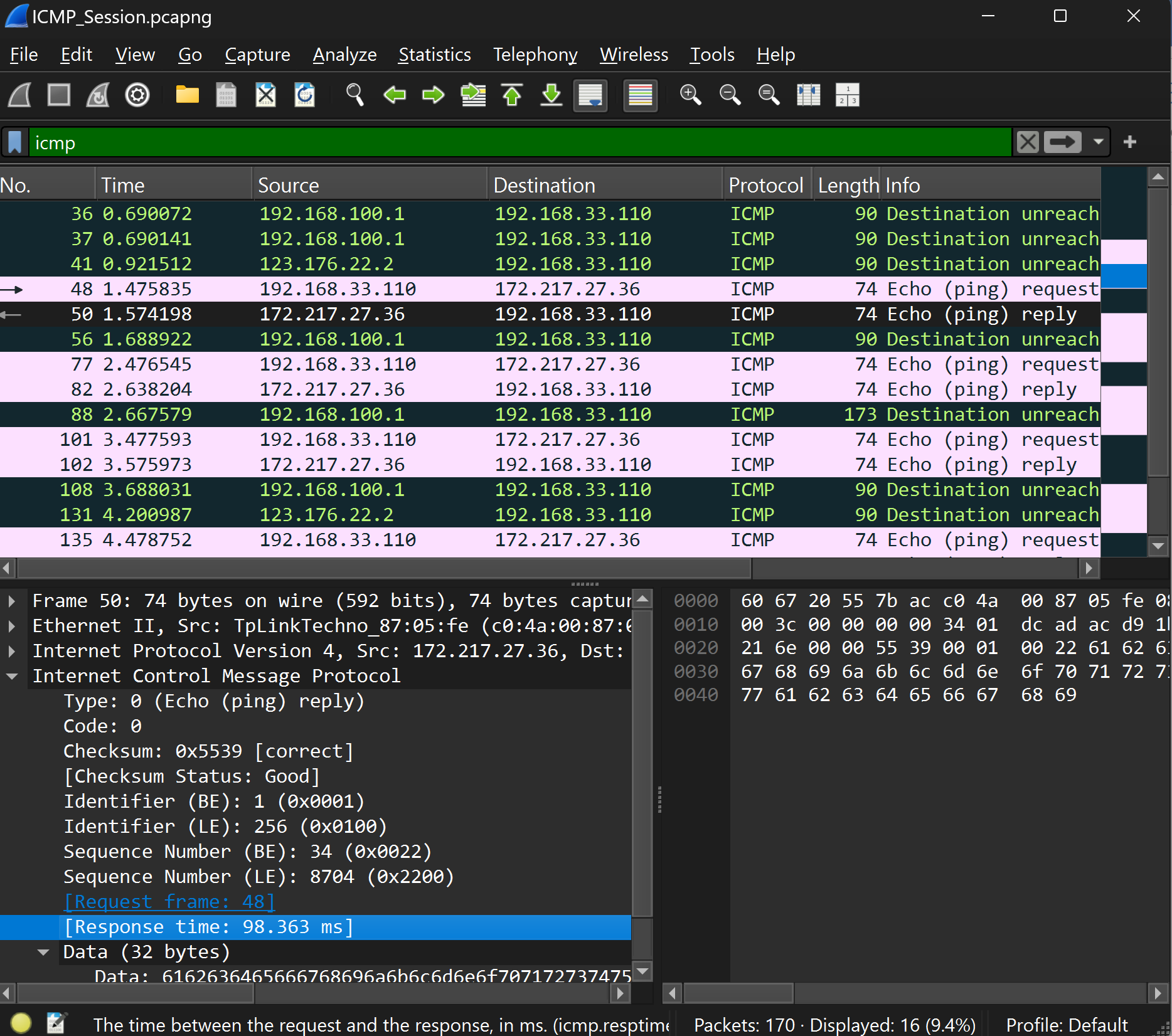
* **ICMP Type**: **0** (Echo Reply)
* **ICMP Code**: **0**

### Additional Fields in the ICMP Packet

* **Checksum**:
  + **Value**: 0x5539
  + **Status**: Good (indicating no errors)
  + **Size**: **2 bytes**
* **Identifier**:
  + **Big Endian (BE)**: 1 (0x0001)
  + **Little Endian (LE)**: 256 (0x0100)
  + **Size**: **2 bytes**
* **Sequence Number**:
  + **Big Endian (BE)**: 34 (0x0022)
  + **Little Endian (LE)**: 8704 (0x2200)
  + **Size**: **2 bytes**
* **Response Time**: **98.363 ms**

### Summary of Field Sizes

* **Checksum Size**: **2 bytes**
* **Identifier Size**: **2 bytes**
* **Sequence Number Size**: **2 bytes**



### 10:

### Packet No. 56 ICMP Details

* **ICMP Type**: 3 (Destination Unreachable)
* **ICMP Code**: 3 (Port Unreachable)
* **IP and TCP Headers**: Included to identify the original packet causing the error.
* **Header Depiction**: IP header shows source/destination addresses; TCP header shows segment and ports involved.