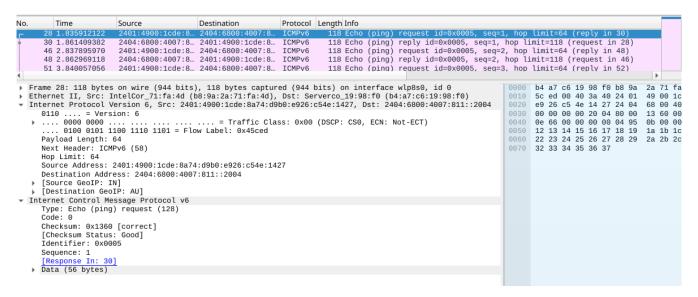
Assignment – 2 (ICMP)

PART - 1

- 1. What is the IP address of your host? What is the IP address of the destination host?
- A. IP address of my host is 2401:4900:1cde:8a74:d9b0:e926:c54e:1427
 IP address of the destination host is 2404:6800:4007:811::2004

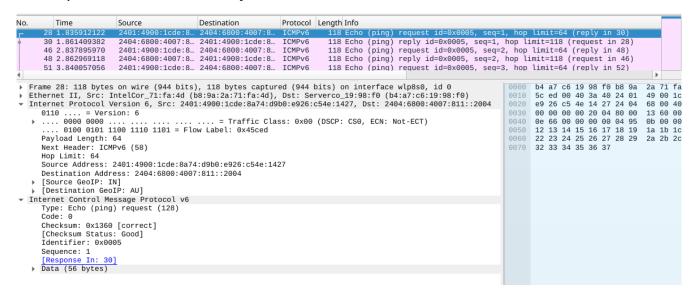


- 2. Why is it that an ICMP packet does not have source and destination port numbers?
- A. ICMP packet is a network layer protocol.
- 3. Examine one of the ping request packets sent by your host. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?
- A. ICMP Type is 128 and Code number is 0

Other fields are checksum, sequence number, identifier and data field Checksum is 2 bytes

Identifier is 2 bytes

Sequence number is 2 bytes



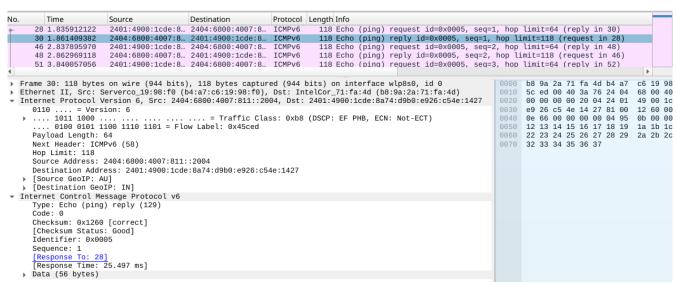
- 4. Examine the corresponding ping reply packet. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?
- A. ICMP Type is 129 and Code number is 0

Other fields are checksum, sequence number, identifier and data field

Checksum is 2 bytes

Identifier is 2 bytes

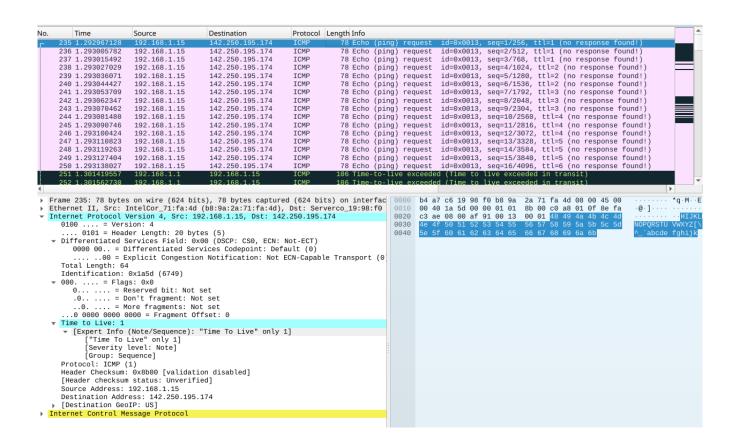
Sequence number is 2 bytes



PART - II

 Select the first ICMP Echo Request message sent by your computer, and expand the Internet Protocol part of the packet in the packet details window.

A.



- 2. Which of the IP datagrams are fragmented?
- A. Whenever data exceeds 1500 bytes, IP datagrams are fragmented.

```
Protocol Length Info
                                                  Destination
  1016 24.264793583
                           192.168.1.15
                                                  142.250.195.174
                                                                          ICMP
                                                                                        54 Echo (ping) request
54 Echo (ping) request
                                                                                                                       id=0x0014, seq=80/20480, ttl=27
  1019 24.264819714
                           192.168.1.15
                                                                                                   (ping)
(ping)
                                                  142.250.195.174
                                                                          ICMP
                                                                                                                       id=0x0014, seq=81/20736,
                                                                                                                                                       ttl=27
                                                                                                                                                                (no response found
                                                                                        54 Echo (ping)
54 Echo (ping)
   1022 24.264847598
                                                  142.250.195.174
                                                                                                                       id=0x0014, seq=82/20992,
                           192.168.1.15
                                                                          ICMP
  1025 24.264872974
                           192.168.1.15
                                                  142.250.195.174
                                                                                                           request
                                                                                                                       id=0x0014, seq=83/21248,
                                                                                                                                                       ttl=28
                                                                                                                                                                (no response found!
  1028 24.264897604
1031 24.264922551
                           192.168.1.15
                                                  142.250.195.174
                                                                          ICMP
ICMP
                                                                                        54 Echo (ping)
54 Echo (ping)
                                                                                                                       id=0x0014, seq=84/21504,
                                                                                                                                                       ttl=28
ttl=29
                                                                                                           request
                                                                                                                                                                (no response found!
                           192.168.1.15
                                                  142.250.195.174
                                                                                                                       id=0x0014, seq=85/21760,
                                                                                                           request
                                                                                                                                                                (no response found
  1034 24 264949006
                           192.168.1.15
                                                  142 . 250 . 195 . 174
                                                                          TCMP
                                                                                        54 Echo
                                                                                                   (ping)
                                                                                                           request
                                                                                                                       id=0x0014, seq=86/22016,
                                                                                                                                                       ttl=29
   1037 24.264974768
                                                                                                                       id=0x0014, seq=87/22272,
                                                  142.250.195.174
                                                                          ICMP
                                                                                                                                                       ttl=29 (no response found!
                           192.168.1.15
                                                                                         54 Echo (ping) request
   1043 24.265024678 192.168.1.15
                                                  142.250.195.174
                                                                                         54 Echo (ping) request id=0x0014, seq=89/22784, ttl=30 (no response found!
  1046 24.265047995
                         192.168.1.15
                                                  142.250.195.174
                                                                          TCMP
                                                                                        54 Echo (ping) request id=0x0014, seq=90/23040, ttl=30 (no response found!)
Frame 1040: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface wlp8s0, id 0 Ethernet II, Src: IntelCor_71:fa:4d (b8:9a:2a:71:fa:4d), Dst: Serverco_19:98:f0 (b4:a7:c6:19:98:f0)
Internet Protocol Version 4, Src: 192.168.1.15, Dst: 142.250.195.174
 0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
> Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 40
Identification: 0x4b79 (19321)
      90. .... = Flags: 0x0
..0 0001 0111 0010 = Fragment Offset: 2960
    Time to Live: 30
Protocol: ICMP (1)
    Header Checksum: 0x3b8a [validation disabled]
[Header checksum status: Unverified]
Source Address: 192.168.1.15
    Destination Address: 142.250.195.174
[Destination GeoIP: US]
        [Frame: 1038, payload: 0-1479 (1480 bytes)]
        [Frame: 1039, payload: 1480-2959 (1480 bytes
[Frame: 1040, payload: 2960-2979 (20 bytes)]
        [Fragment count: 3]
         [Reassembled IPv4 length: 2980]
        [Reassembled IPv4 data: 0800e2b60014005848494a4b4c4d4e4f505152535455565758595a5b5c5d5e5f60616263...]
```

- 3. Which fields in the IP datagram always change from one datagram to the next within this series of ICMP messages sent by your computer?
- A. Identification, Time to live and Header checksum fields always change.
- 4. Which fields stay constant? Why?
- A. The fields that stay constant across the IP datagrams are:
 - Version (since we are using IPv4 for all packets)
 - Header length (since these are ICMP packets)
 - Source IP (since we are sending from the same source)
 - Destination IP (since we are sending to the same dest)
 - Differentiated Services (since all packets are ICMP they use the same Type of Service class)
 - Upper Layer Protocol (since these are ICMP packets)

These fields are essential for routing and processing the IP datagram across the network and remain constant to ensure proper delivery and handling of the packet by intermediate routers and the final destination.