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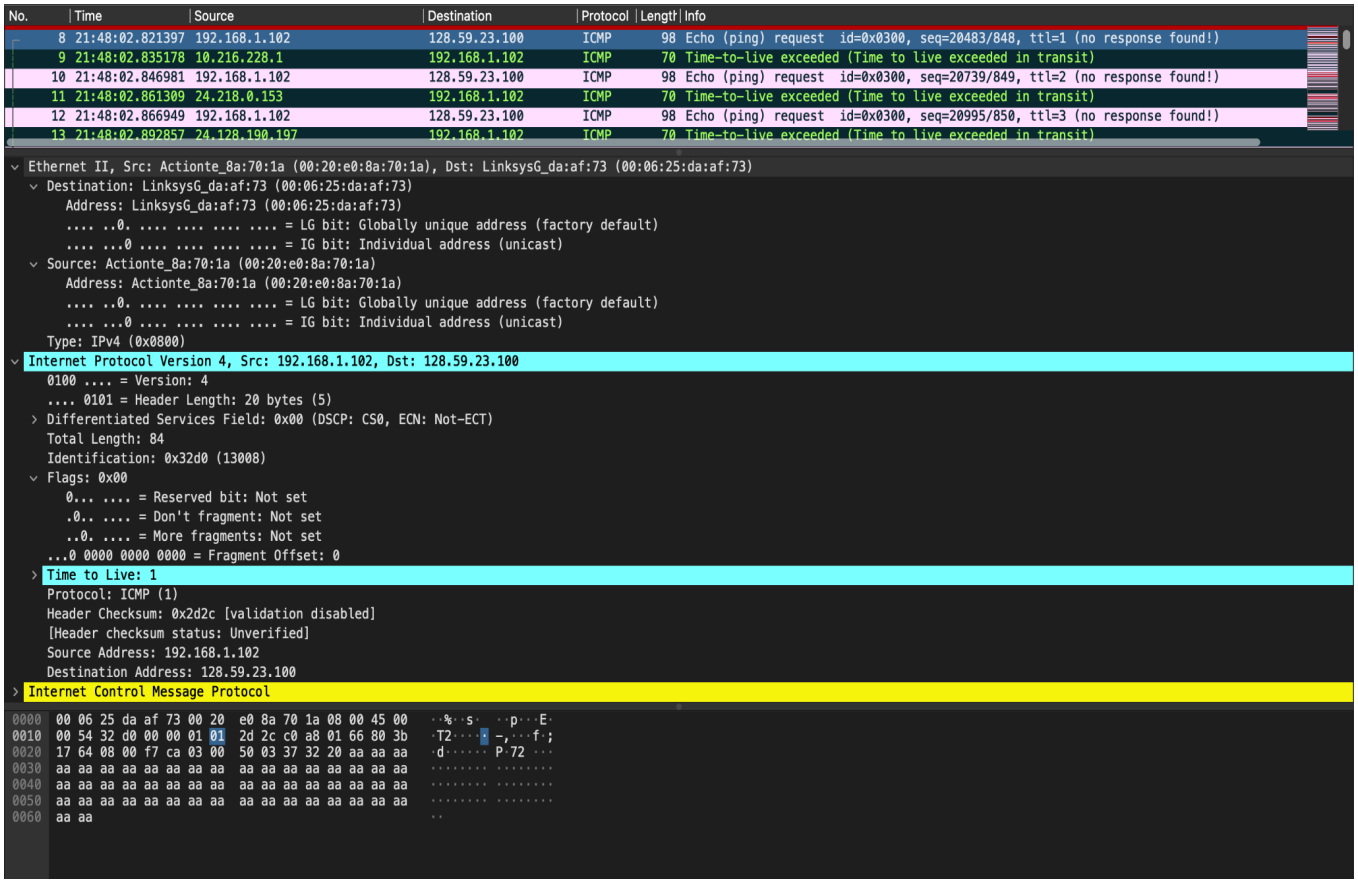
Bhavin Oza (bo2115)



1). 192.168.1.102

2). ICMP (1)

3). Header length = 20 bytes
Total length = 84 bytes.
Hence, 84 - 20 = 64 bytes in payload of IP datagram.

4). No. More fragmented bits set to 0.

5). Identification, Time to Live and Header checksum.

6). The fields that stay constant are:
Version, Header Length, Differentiated Services, Upper layer protocol, Source address and Destination address.
These fields need to be constant as:
Version -> All packets are IPv4
Header Length -> All are ICMP packets
Differentiated Services -> All use same type of service class

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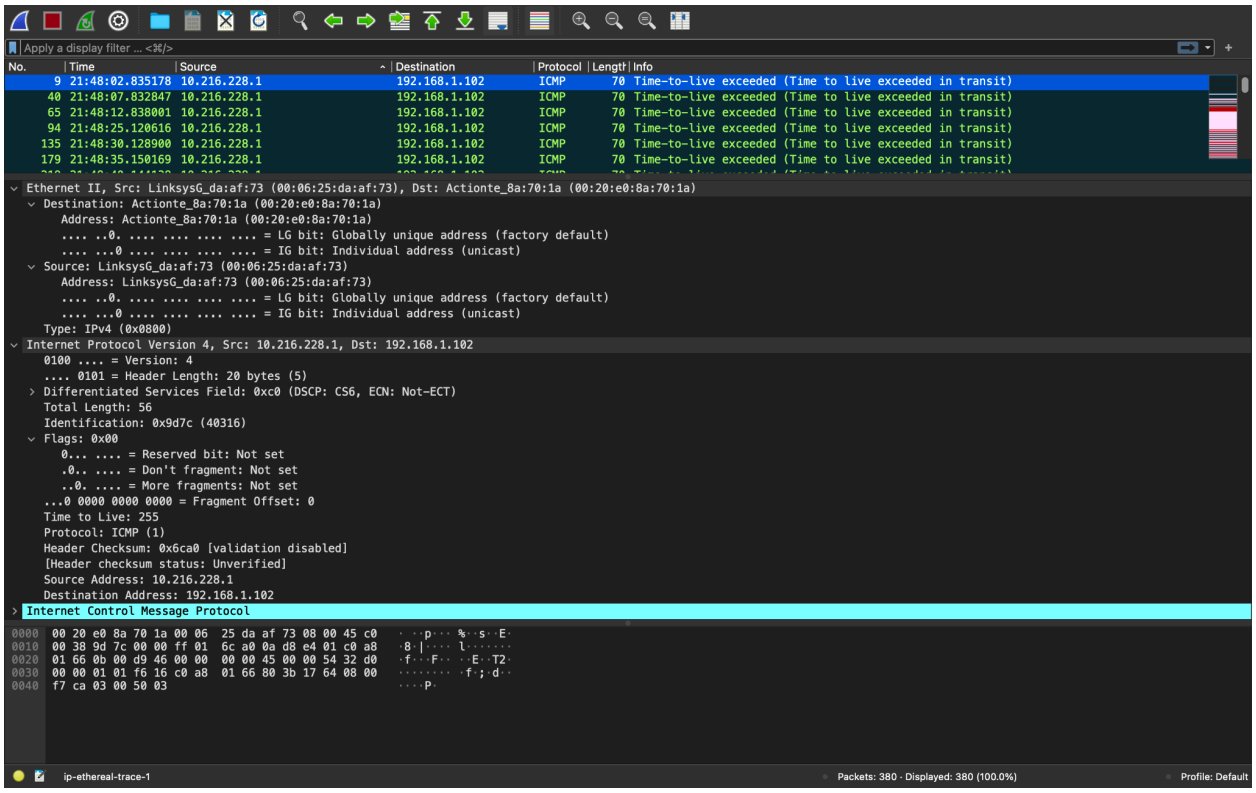
Upper layer protocol -> All are ICMP packets
Source address -> All packets are sent from same source IP
Destination address -> All packets are sent to same destination IP
These fields need to change as:
Identification -> Each of the IP packets should have a different id
Time to live -> Each subsequent packet is incremented by the traceroute
Header checksum -> As the header changes, so does the header checksum

7). TTL increases



8). Identification ID -> 40316
TTL-exceeded value -> 255

9). TTL-exceeded value always remains the same for first hop routers.
Identification field changes as it is always different for each IP datagram.

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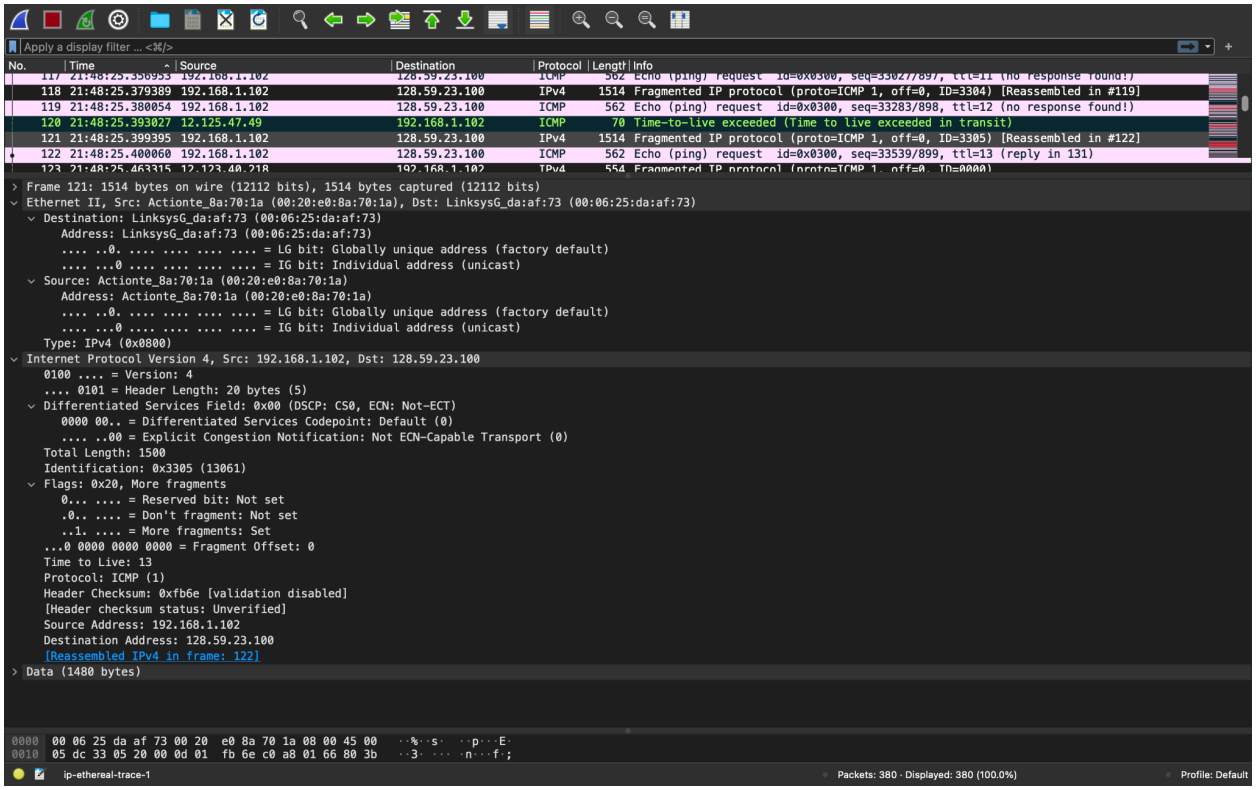

10). Yes

11). Flag for more fragments is set, indicating the datagram is fragmented.
Fragment offset is 0, indicating this is the first fragment.
Total length of first datagram -> 1500 bytes, including 20 bytes of header.

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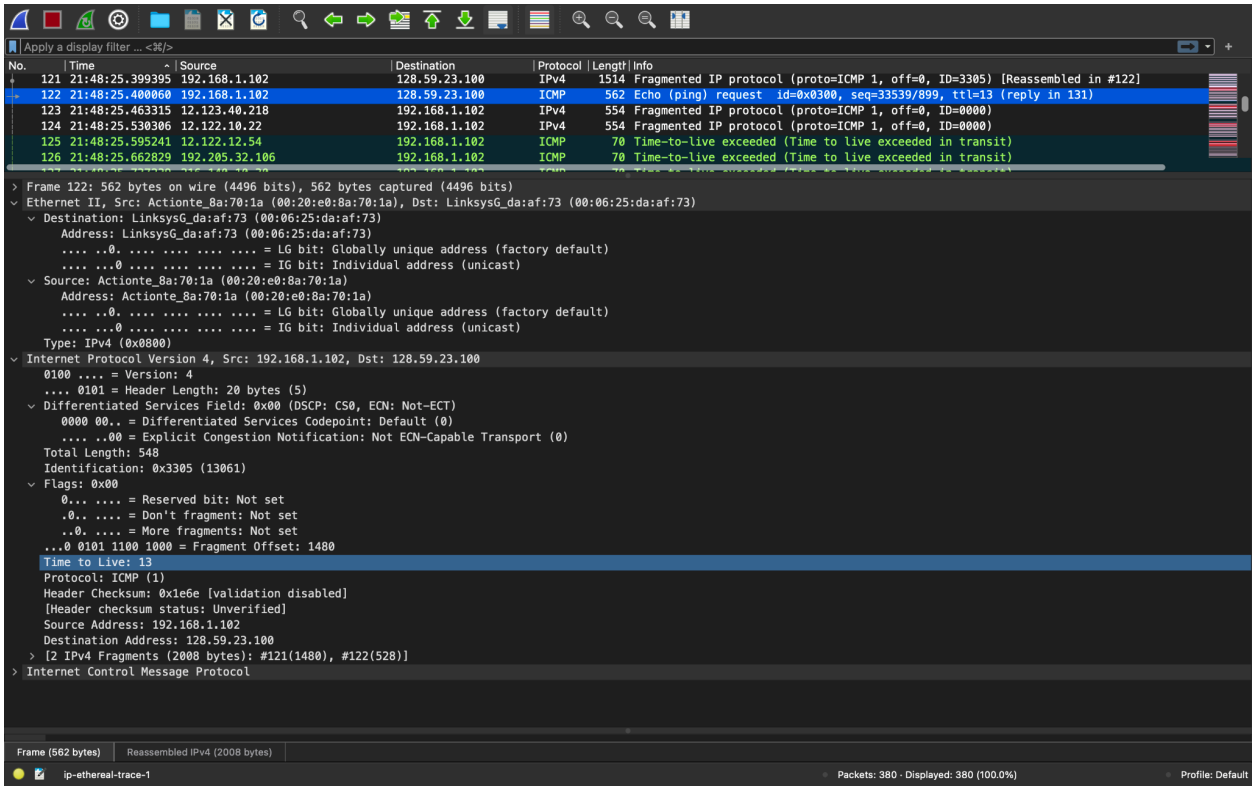

12). Fragment offset if set to 1480, indicating this is not the first fragment.
No, there are no more fragments, hence this is the last fragment.
Flag for more fragments is not set, indicating this is the last fragment.

13). Total length, checksum, flags and fragment offset.

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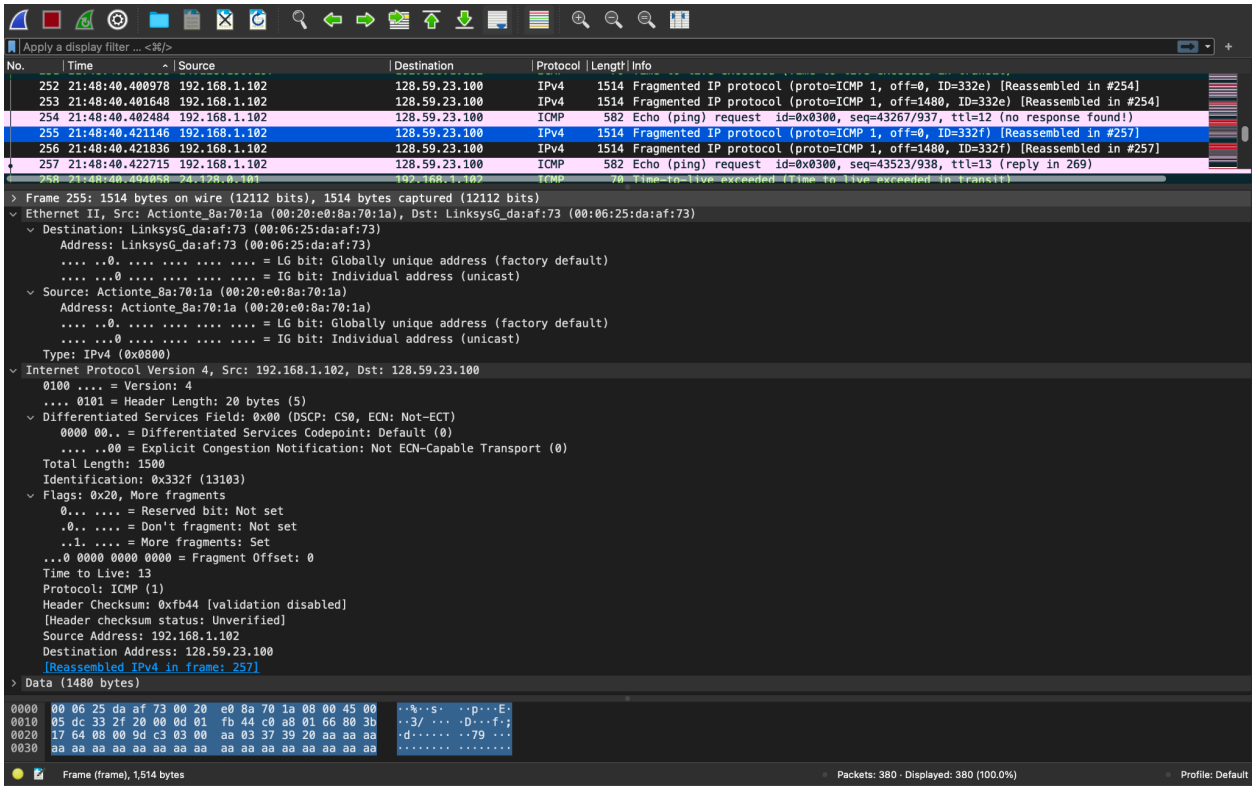

14). 3

15). Fragment offset, More fragment flag, Header checksum and total length.
The first two fragments have a total length as 1500 and the last fragment has a total length as 568.
The first two fragments have more fragment flags set, whereas the last fragment does not have it.
All three fragments have differences in header checksum and fragment offset.