EE4013-Lab-6

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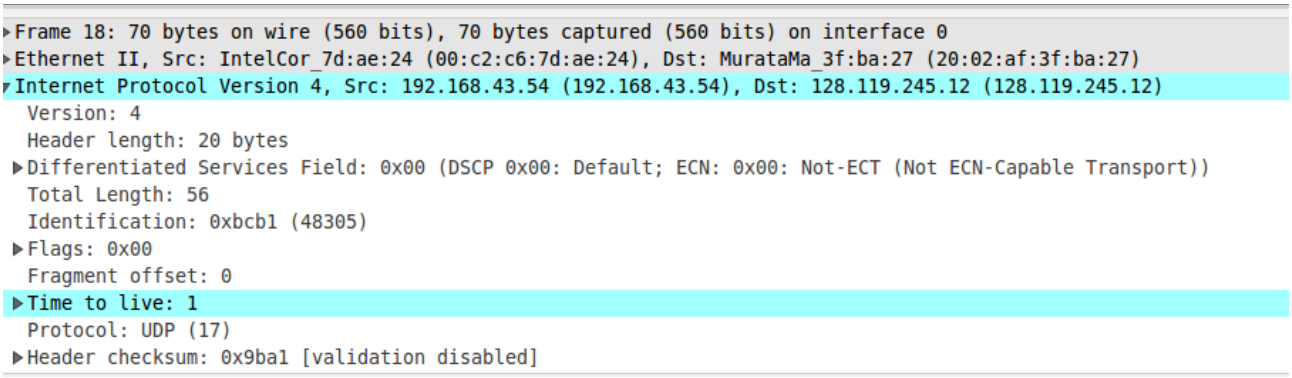
Q1: The IP address of my computer is 192.168.43.54



Q2: The value of the upper layer protocol field is UDP(17) (see above)

Q3: There are 20 bytes in the ip header. See header length above. The payload length us 36 bytes as the total length is 56 thus we have 56-20=36

Q4: The fragment offset is set to 0 thus the datagram has not been fragmented.

Q6: Header checksum and indentification change from one datagram to the next.

Q6: Fields that stay the same:

- version
- header length
- source IP
- Destination IP
- Upper layer protocol

Fields that must stay the same:
As above

Fields that must change:

- header checksum
- Identification

Q7: The value in the identification field increases by one at each strand of requests.

Q8: The identification field has the value 0x8ba0 and the time to live field has the value 244

```
▼Internet Protocol Version 4, Src: 128.119.0.233 (128.119.0.233), Dst: 192.168.43.54 (192.168.43.54)
  Version: 4
  Header length: 20 bytes
▶Differentiated Services Field: 0x28 (DSCP 0x0a: Assured Forwarding 11; ECN: 0x00: Not-ECT (Not ECN-Capable Transport))
  Total Length: 56
  Identification: 0x8ba0 (35744)
▶Flags: 0x00
  Fragment offset: 0
  Time to live: 244
  Protocol: ICMP (1)
▶Header checksum: 0xcdbd [validation disabled]
  Source: 128.119.0.233 (128.119.0.233)
  Destination: 192.168.43.54 (192.168.43.54)
```

Q9: The identification field changes as it has to be unique for each message however the time to live does not change. Eg: the next response after the one shown above has the TTL value 244 and the identification value of 0x8ba1

Q10: Yes this message has been seperated into multiple fragments. In the first fragment we can see that therer are more fragments:

```
▶Flags: 0x01 (More Fragments)
```

Q11: We can tell there are more fragments as it is indicated in flags and also because the length of the message is less than 2000 bytes (the rest of the information must be sent later)

```
▶Frame 797: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0
▶Ethernet II, Src: IntelCor_7d:ae:24 (00:c2:c6:7d:ae:24), Dst: MurataMa_3f:ba:27 (20:02:af:3f:ba:27)
▼Internet Protocol Version 4, Src: 192.168.43.54 (192.168.43.54), Dst: 128.119.245.12 (128.119.245.12)
  Version: 4
  Header length: 20 bytes
▶Differentiated Services Field: 0x00 (DSCP 0x00: Default; ECN: 0x00: Not-ECT (Not ECN-Capable Transport))
  Total Length: 1500
  Identification: 0xc49e (50334)
▶Flags: 0x01 (More Fragments)
  Fragment offset: 0
▶Time to live: 1
  Protocol: UDP (17)
▶Header checksum: 0x6e10 [validation disabled]

0000  20 02 af 3f ba 27 00 c2  c6 7d ae 24 08 00 45 00    ..?.'.. .}.$..E.
```

Q12: The fragment offfset of 1480 shows that this is not the same datagram fragment.
There are no more fragments as (More Fragments) is not set in the flags field

```
▶Frame 798: 534 bytes on wire (4272 bits), 534 bytes captured (4272 bits) on interface 0
▶Ethernet II, Src: IntelCor_7d:ae:24 (00:c2:c6:7d:ae:24), Dst: MurataMa_3f:ba:27 (20:02:af:3f:ba:27)
▼Internet Protocol Version 4, Src: 192.168.43.54 (192.168.43.54), Dst: 128.119.245.12 (128.119.245.12)
  Version: 4
  Header length: 20 bytes
▶Differentiated Services Field: 0x00 (DSCP 0x00: Default; ECN: 0x00: Not-ECT (Not ECN-Capable Transport))
  Total Length: 520
  Identification: 0xc49e (50334)
▶Flags: 0x00
  Fragment offset: 1480
▶Time to live: 1
  Protocol: UDP (17)
▶Header checksum: 0x912b [validation disabled]
```

Q13 The flags field shows more fragments as not set in the second fragment vs set in the first fragment, The fragment offset field changed from 0 to 1480. The length also changed.

Q14: 3 flags were created after switching to 3500 bytes.

Q15: The fragment offset, the checksum and the length of the fragments.