Computer Networks Lab

ASSIGNMENT – 9

Rahul Cheryala, 210010012

dhcp

No.	Time	Source	Destination	Protocol	Length	Info
512	2024-03-06 17:39:51.2937035…	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x99a02b7e
513	2024-03-06 17:39:51.2945009…	10.250.61.250	10.250.61.60	DHCP	316	DHCP Offer - Transaction ID 0x99a02b7e
515	2024-03-06 17:39:51.2949317…	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	2024-03-06 17:39:51.2958359…	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

1. UDP protocol is used as the underlying transport protocol

```
▸ Frame 512: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface enp2s0, id 0
▸ Ethernet II, Src: GigaByteTech_54:2f:a7 (d8:5e:d3:54:2f:a7), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▸ Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
▸ User Datagram Protocol, Src Port: 68, Dst Port: 67
▸ Dynamic Host Configuration Protocol (Discover)
```

2. The source IP address used in the IP datagram containing the Discover message is 0.0. 0.0 because the host doesn't have an IP address assigned to it yet.

3. The destination IP address used in the datagram containing the Discover message is 255.255.255.255. This address is used as the client does not know any of the DHCP servers IP addresses.

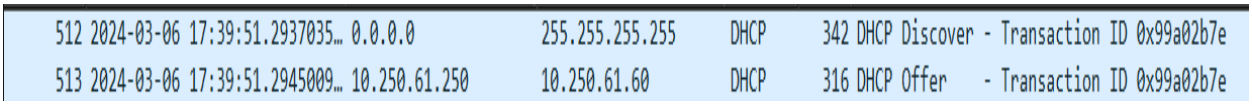
4. Transaction ID: 0x99a02b7e

```
▸ Frame 512: 342 bytes on wire (2736 bits), 342 bytes captured (273
▸ Ethernet II, Src: GigaByteTech_54:2f:a7 (d8:5e:d3:54:2f:a7), Dst
▸ Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
▸ User Datagram Protocol, Src Port: 68, Dst Port: 67
▾ Dynamic Host Configuration Protocol (Discover)
    Message type: Boot Request (1)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 0
    Transaction ID: 0x99a02b7e
```

5. Five pieces of information (beyond an IP address) that the client is suggesting or requesting to receive from the DHCP server as part of this DHCP transaction

1. DHCP Message Type (Discover)
2. Client identifier (Client MAC address)
3. Host Name (ASUS-TUF)
4. Vendor class identifier (MSFT 5.0)
5. Parameter Request List

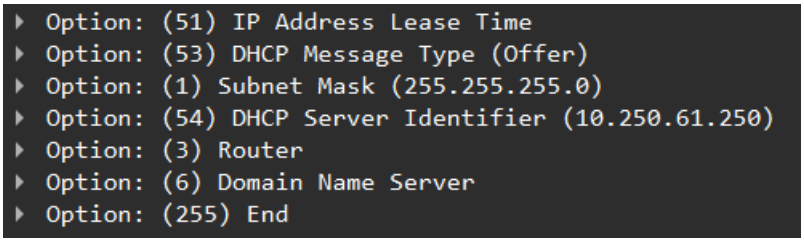
6. Analyzing the Transaction IDs of the Discover message and Offer message we can say that both have the same transaction ID and Offer message is the response to the Discover message



7. The source IP address used in the IP datagram containing the Offer message is 10.250.61.250. This is the DHCP Server Identifier

8. The destination IP address used in the datagram containing the Discover message is 10.250.61.60. This is the Client IP address (PC's IP address)

9. Five pieces of information that the DHCP server is providing to the DHCP client in the DHCP Offer message



10. DHCP source port: 68

    DHCP destination port: 67

11. The source IP address used in the IP datagram containing the Request message is 0.0. 0.0 because the host doesn't have an IP address assigned to it yet.

12. The destination IP address used in the datagram containing the Request message is 255.255.255.255. This address is used as the client does not know any of the DHCP servers IP addresses.

13. Transaction ID: 0x99a02b7e

YES, it does match with the transaction ID of the Discover and Offer message

14.

```
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (28) Broadcast Address
Parameter Request List Item: (2) Time Offset
Parameter Request List Item: (3) Router
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (12) Host Name
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List Item: (26) Interface MTU
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (42) Network Time Protocol Servers
```

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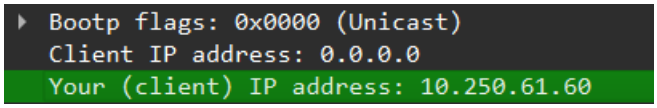
```

There is no difference in the Parameter Request List

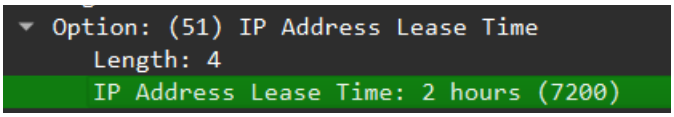
15. The source IP address used in the IP datagram containing the ACK message is 10.250.61.250. This is the DHCP Server Identifier

16. The destination IP address used in the datagram containing the ACK message is 10.250.61.60. This is the Client IP address (PC's IP address)

17. Name of the field in the DHCP ACK message that contains the assigned client IP address is Your (client) IP address i.e., 10.250.61.60



18. IP Address Lease Time is 2hours (7200 seconds)



19. The IP address of the first-hop router on the default path from the client to the rest of the Internet is 10.250.61.250