Trường Đại Học Bách Khoa Tp.Hồ Chí Minh
Khoa Khoa Học và Kỹ Thuật Máy Tính

ĐẠI HỌC QUỐC GIA TP. HỒ CHÍ MINH

TRƯỜNG ĐẠI HỌC BÁCH KHOA

KHOA KHOA HỌC VÀ KỸ THUẬT MÁY TÍNH

BÁO CÁO

MẠNG MÁY TÍNH THỰC HÀNH (CO3094)

LAB 4B

GV hướng dẫn: Bùi Xuân Giang

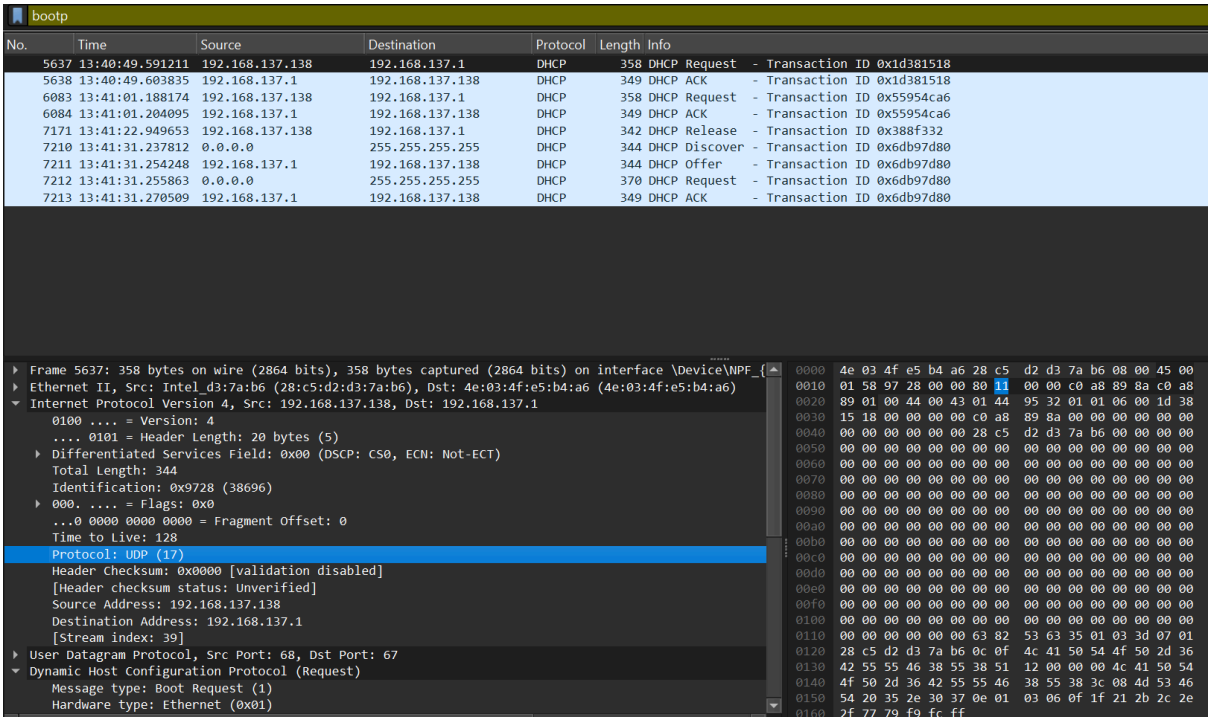
SV thực hiện: Trịnh Thị Mỹ Lệ

Thành phố Hồ Chí Minh, Tháng 3 năm 2025

1. Question 1

Question: Are DHCP messages sent over UDP or TCP?

Answer: DHCP messages are sent over UDP



2. Question 2

Question: Draw a timing datagram illustrating the sequence of the first four-packet Discover/Offer/Request/ACK DHCP exchange between the client and server. For each packet, indicated the source and destination port numbers. Are the port numbers the same as in the example given in this lab assignment?

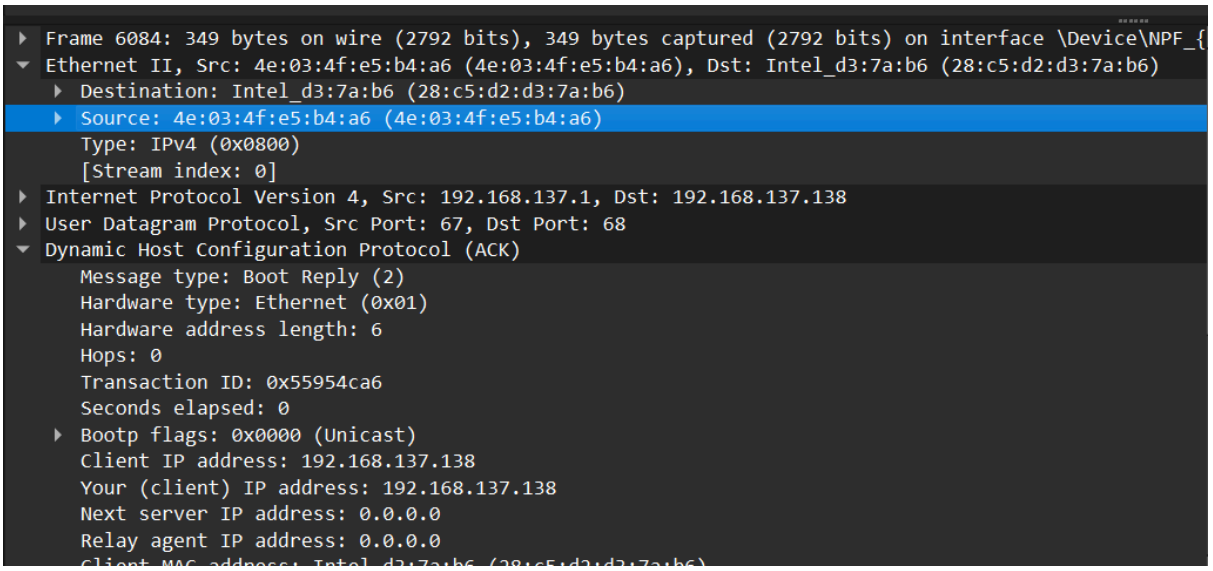
Answer:

- Discover source port- 68 and destination port – 67
- Offer source port – 67 and destination port – 68
- Request source port – 68 and destination port – 67
- ACK source port – 67 and destination port – 68

3. Question 3

Question: What is the link-layer (e.g., Ethernet) address of your host?

Answer: The ethernet address of my host is 4e:03:4f:e5:b4:a6



4. Question 4

Question: Source: 4e:03:4f:e5:b4:a6 (4e:03:4f:e5:b4:a6)

Answer:

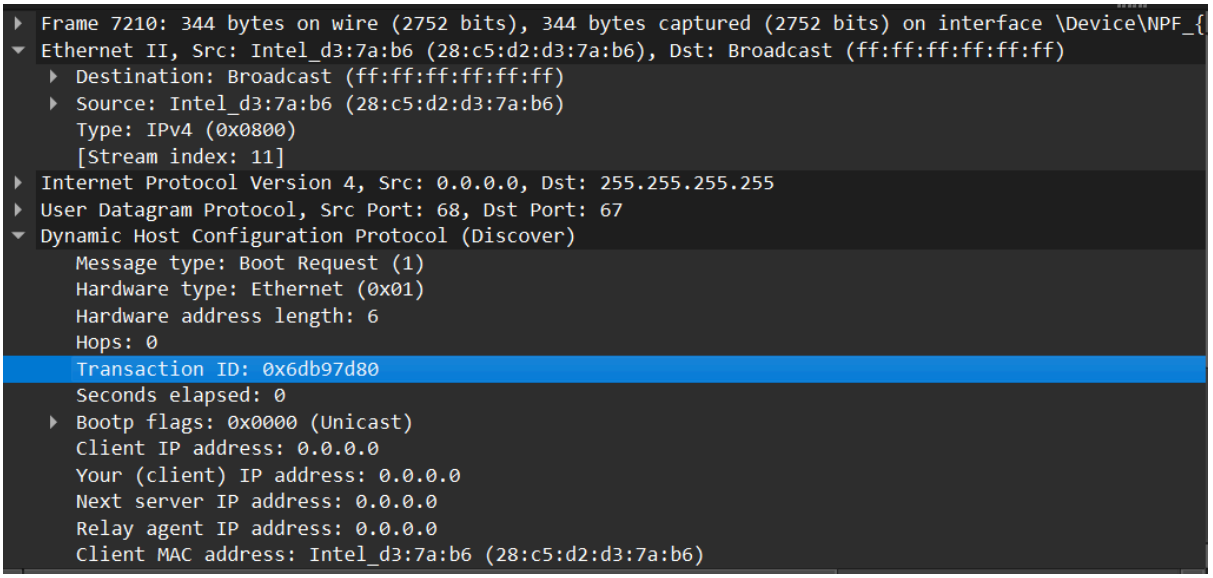
- DHCP Message Type
- Request includes a server identifier field

5. Question 5

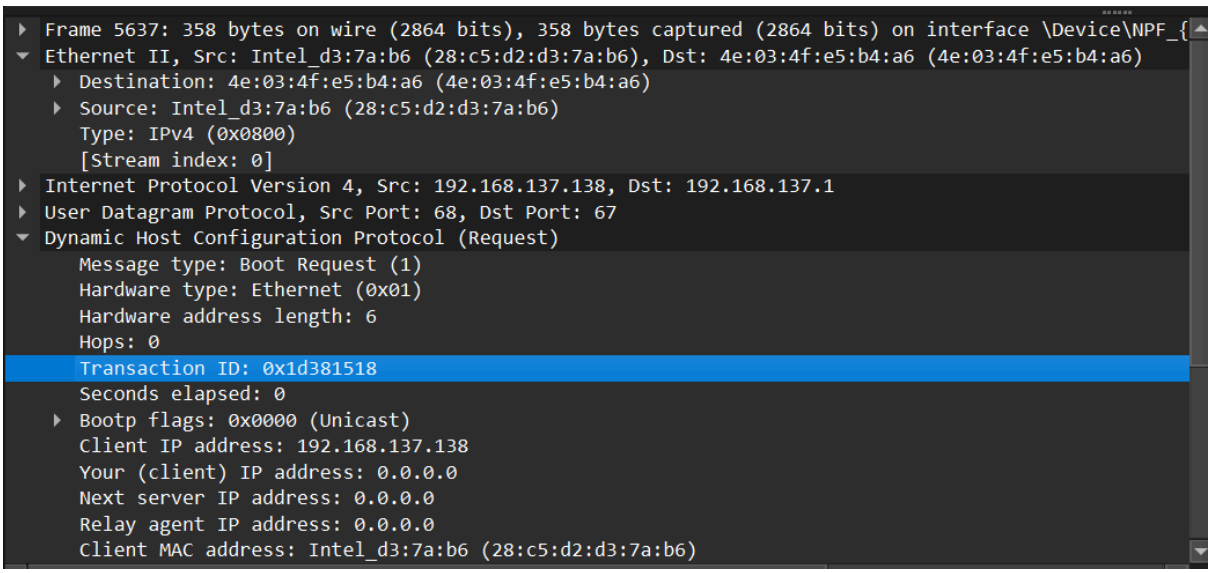
Question: What is the value of the Transaction-ID in each of the first four (Discover/Offer/Request/ACK) DHCP messages? What are the values of the Transaction-ID in the second set (Request/ACK) set of DHCP messages? What is the purpose of the Transaction-ID field?

Answer:

- 1st set of messages: 0x6db97d80



- 2st set of messages: 0x1d381518



6. Question 6

Question: A host uses DHCP to obtain an IP address, among other things. But a host's IP address is not confirmed until the end of the four-message exchange! If the IP address is not set until the end of the four-message exchange, then what values are used in the IP datagrams in the four-message exchange? For each of the four DHCP messages (Discover/Offer/Request/ACK DHCP), indicate the source and destination IP addresses that are carried in the encapsulating IP datagram.

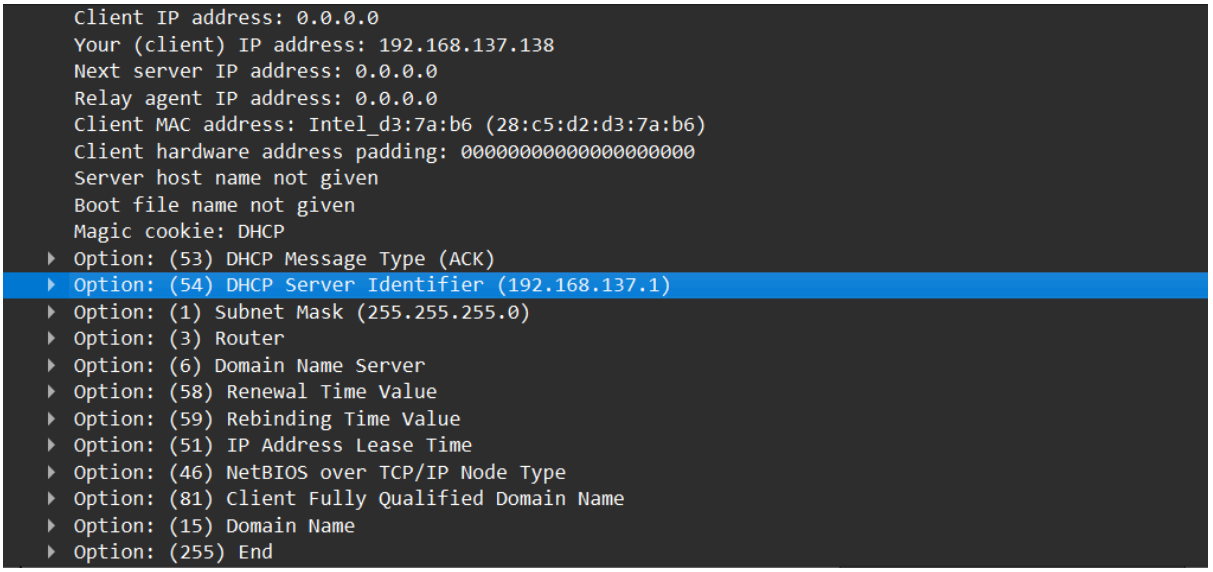
Answer:

- Discover: 0.0.0.0/255.255.255.255
- Offer: 192.168.137.1/192.168.137.138
- Request: 0.0.0.0/255.255.255.255
- ACK: 192.168.137.1/192.168.137.138

7. Question 7

Question: What is the IP address of your DHCP server?

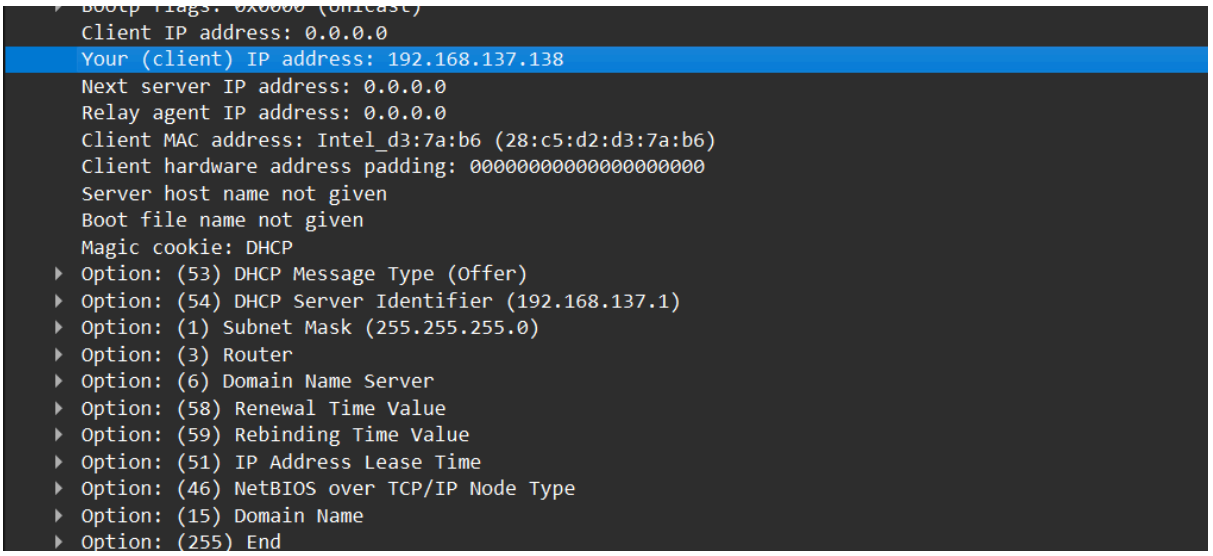
Answer: 192.168.137.1



8. Question 8

Question: What IP address is the DHCP server offering to your host in the DHCP Offer message? Indicate which DHCP message contains the offered DHCP address.

Answer: My client is offered 192.168.137.138 by the DHCP server. The offer message contains the DHCP address offered by the server



9. Question 9

Question: In the example screenshot in this assignment, there is no relay agent between the host and the DHCP server. What values in the trace indicate the absence of a relay agent? Is there a relay agent in your experiment? If so what is the IP address of the agent?

Answer: In the example given, the value that indicates there is no relay agent is 0.0.0.0, in the case of my capture, I also have a value for the relay agent of 0.0.0.0 indicating that I too did not have a relay agent.

10. Question 10

Question: Explain the purpose of the router and subnet mask lines in the DHCP offer message.

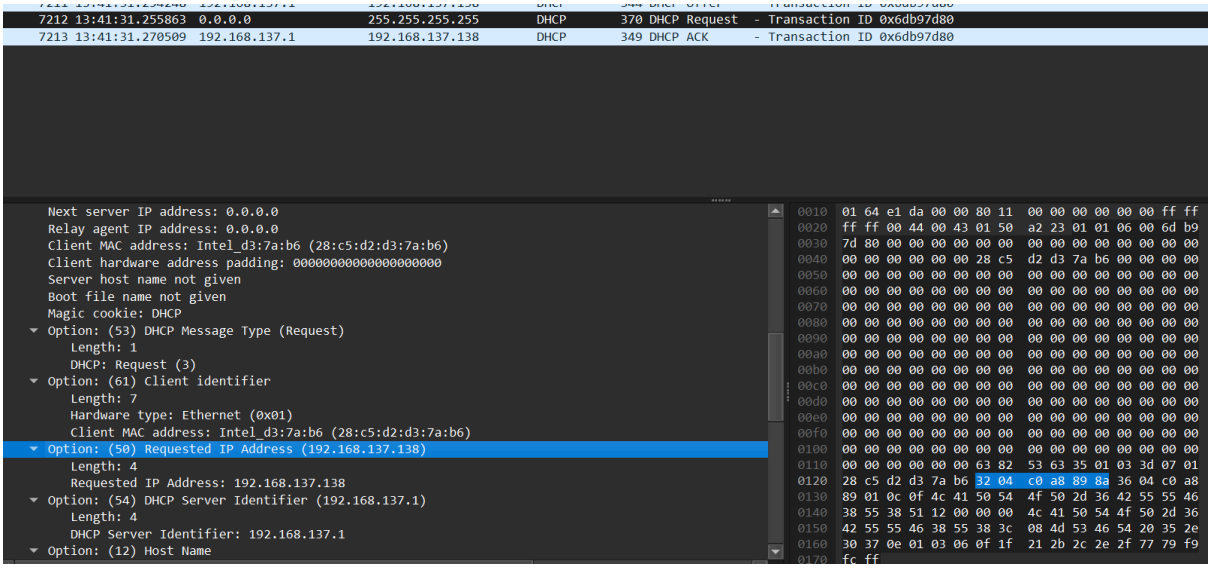
Answer:

- The subnet mask line tells the client which subnet mask to use.
- The router line indicates where the client should send messages by default.

11. Question 11

Question: . In the DHCP trace file noted in footnote 2, the DHCP server offers a specific IP address to the client (see also question 8. above). In the client's response to the first server OFFER message, does the client accept this IP address? Where in the client's RESPONSE is the client's requested address?

Answer: The client accepts the IP address given in the offer message within the request message. After being offered the IP address 192.168.137.138 in the offer message, my client sent back a message further requesting that specific IP address.



12. Question 12

Question: Explain the purpose of the lease time. How long is the lease time in your experiment?

Answer:

- The purpose of lease time is to tell the client how long they can use the specific IP address assigned by the server before they will have to be assigned a new one.
- The lease time in my experiment is 86400 seconds or 1 day

13. Question 13

Question: What is the purpose of the DHCP release message? Does the DHCP server issue an acknowledgment of receipt of the client's DHCP request? What would happen if the client's DHCP release message is lost?

Answer:

- The purpose of the release message is to release the IP address back to the server.
- There is no verification that the release message has been received by the server.
- If the message is lost, the client releases the IP address, but the server will not reassign that address until the clients lease on the address expires.

14. Question 14

Question: Clear the bootp filter from your Wireshark window. Were any ARP packets sent or received during the DHCP packet-exchange period? If so, explain the purpose of those ARP packets.

Answer: Yes, they appear to be broadcasts sent out by the network to build up the known IP addresses by the clients network.

No.	Time	Source	Destination	Protocol	Length	Info
7195	13:41:27.991367	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7196	13:41:28.962734	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7197	13:41:28.963114	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7198	13:41:28.978142	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7199	13:41:28.978686	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7200	13:41:28.993508	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7201	13:41:28.993925	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7202	13:41:29.925596	Intel_d3:7a:b6	Broadcast	ARP	42	Who has 169.254.187.73? (ARP Probe)
7203	13:41:30.926866	Intel_d3:7a:b6	Broadcast	ARP	42	Who has 169.254.187.73? (ARP Probe)
7204	13:41:30.974719	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7205	13:41:30.975271	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7206	13:41:30.990705	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7207	13:41:30.991323	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7208	13:41:30.998499	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7209	13:41:30.998886	fe80::7c61:c3d1:f51c…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
7210	13:41:31.237812	0.0.0.0	255.255.255.255	DHCP	344	DHCP Discover - Transaction ID 0x6db97d80
7211	13:41:31.254248	192.168.137.1	192.168.137.138	DHCP	344	DHCP Offer - Transaction ID 0x6db97d80
7212	13:41:31.255863	0.0.0.0	255.255.255.255	DHCP	370	DHCP Request - Transaction ID 0x6db97d80