# Computer Networks 1

## Lab 4b

## Wireshark Lab: DHCP v8.0

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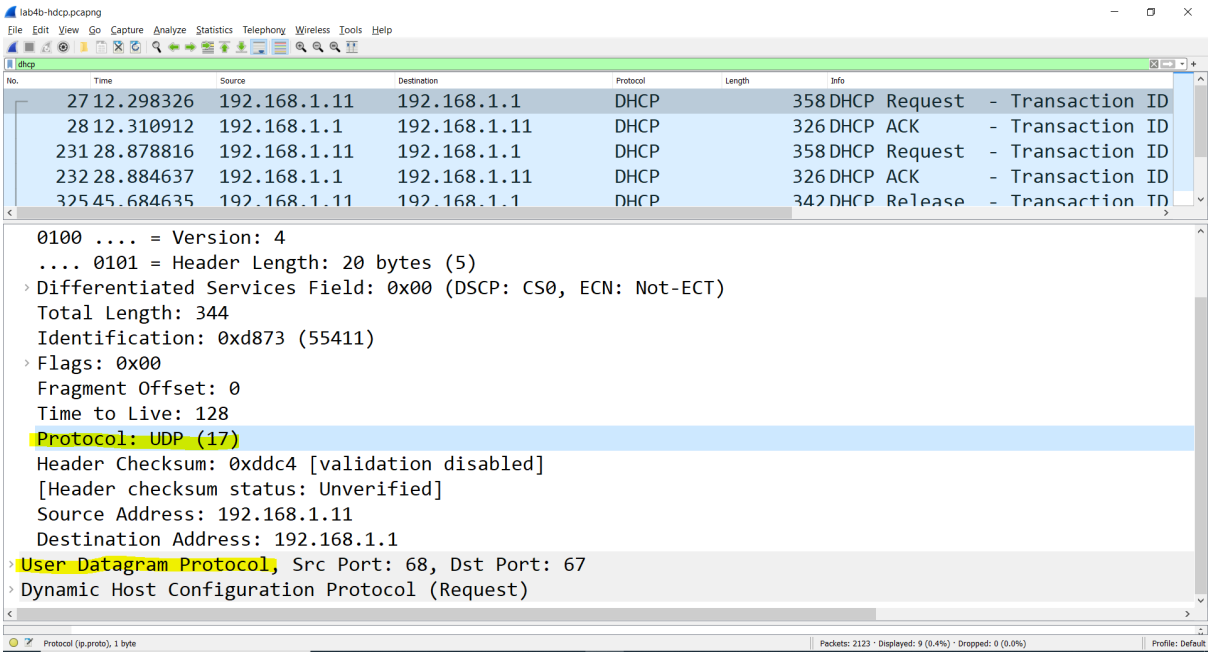
- Q1: Are DHCP messages sent over UDP or TCP?

  **Answer**: DHCP messages sent over UDP.

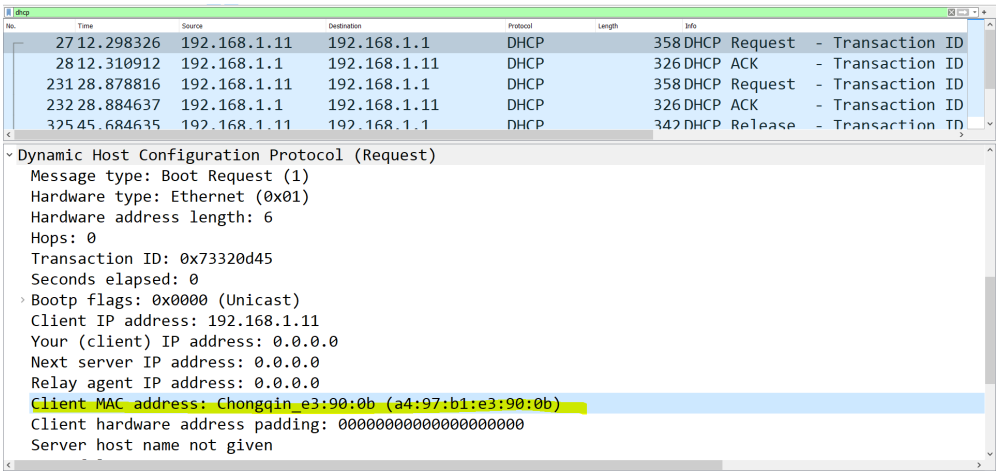



- Q2. Draw a timing datagram illustrating the sequence of the first four-packet Discover/Offer/Request/ACK DHCP exchange between the client and server. For each packet, indicate the source and destination port numbers. Are the port numbers the same as in the example given in this lab assignment?

  **Answer**: (chưa trả lời)

- Q3. What is the link-layer (e.g. Ethernet) address of your host?

  **Answer**: Client MAC address: a4:97:b1:e3:90:0b

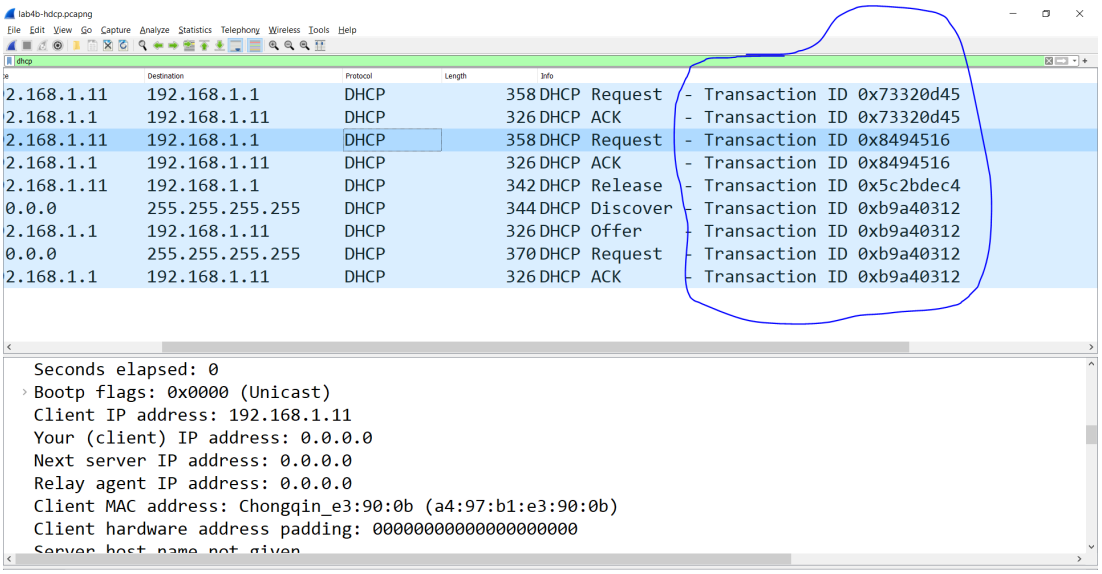



- Q4. What values in the DHCP discover message differentiate this message from the DHCP request message?

  **Answer**: DHCP discover message: 1, DHCP request message: 3

- Q5. 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**: The purpose of the Transaction-ID field is to differentiate between the groups of messages.




- Q6. 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**:

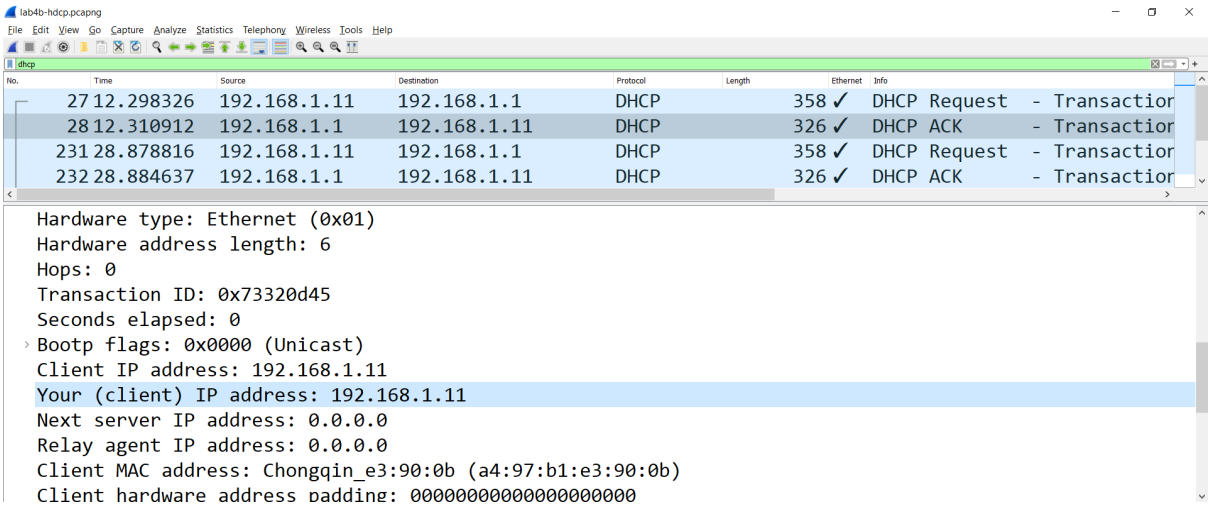
- Discover Src – 0.0.0.0, Dst – 255.255.255.255
- Offer Src – 192.168.1.1, Dst – 255.255.255.255
- Request Src – 0.0.0.0, Dst – 55.255.255.255
- ACK DHCP – 192.168.1.1, Dst – 255.255.255.255

- Q7. What is the IP address of your DHCP server?

  **Answer**: 192.168.1.1

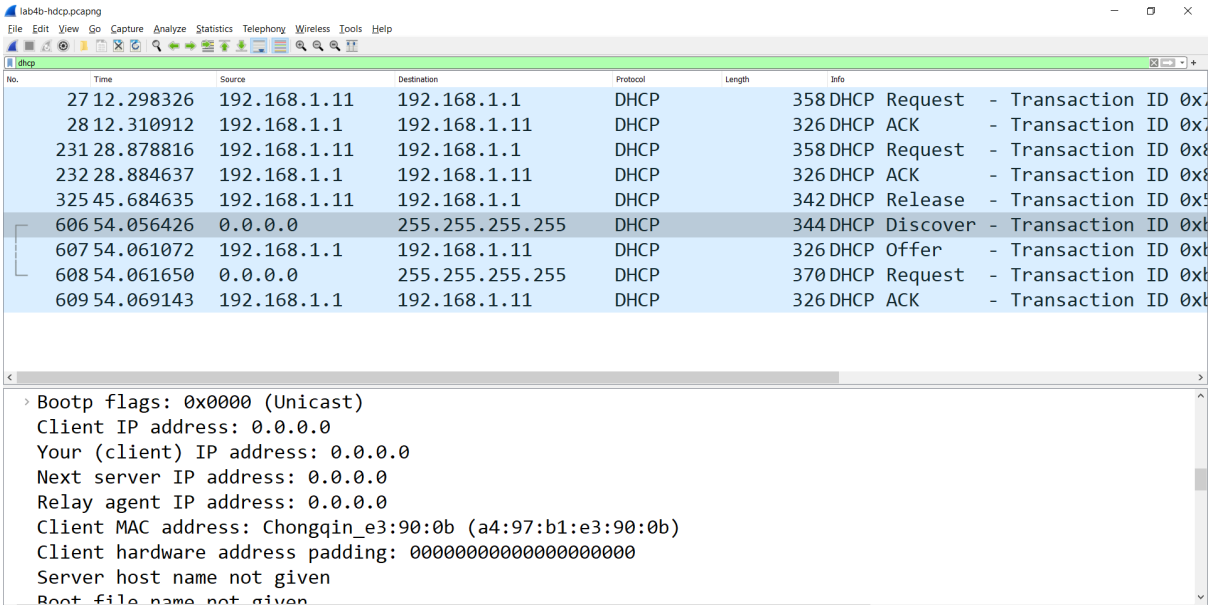
- Q8. What IP address is the DHCP server offering to your host in the DHCP Offer message? Indicate which DHCP message contains the offered DHCP address.

  **Answer**: The IP address which DHCP server is offering to my host in the DHCP Offer message is: 192.168.1.11. DHCP message contains address offered by server




- Q9. 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**: It is 0.0.0.0, and it exists in my experiment and the value is also 0.0.0.0




- Q10. Explain the purpose of the router and subnet mask lines in the DHCP offer message.

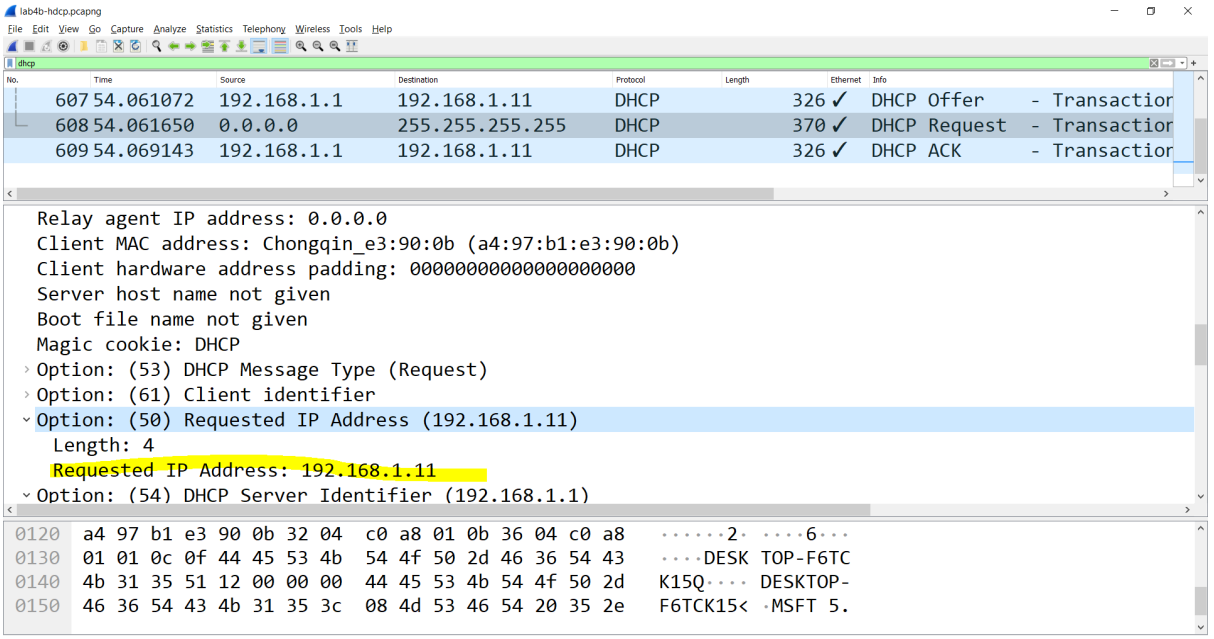
  **Answer**

  The subnet mask line tells the client which subnet mask to use.

  The router indicates where client should send messages by default

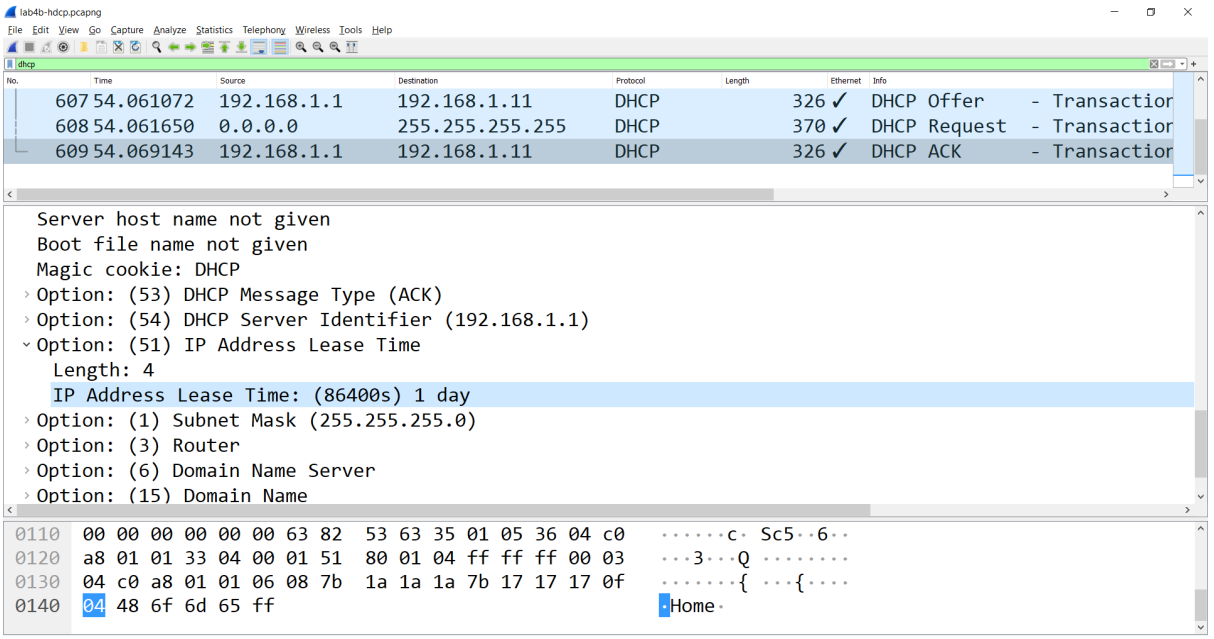
- Q11: In the DHCP trace file noted in footnote 2, the DHCP server offers a specific IP address to the client (see also question 8. above). In the client's response to the first server OFFER message, does the client accept this IP address? Where in the client's RESPONSE is the client's requested address?

  **Answer:** The client accepts the IP address given in the offer message within the request message. After being offered the IP address 192.168.1.11 in the offer message, my client sent back a message further requesting that specific IP address.




- Q12: Explain the purpose of the lease time. How long is the lease time in your experiment?

  **<u>Answer</u>**: 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. In my experiment, it is 86400s (1 day)




- Q13. 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.

- Q14. 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.