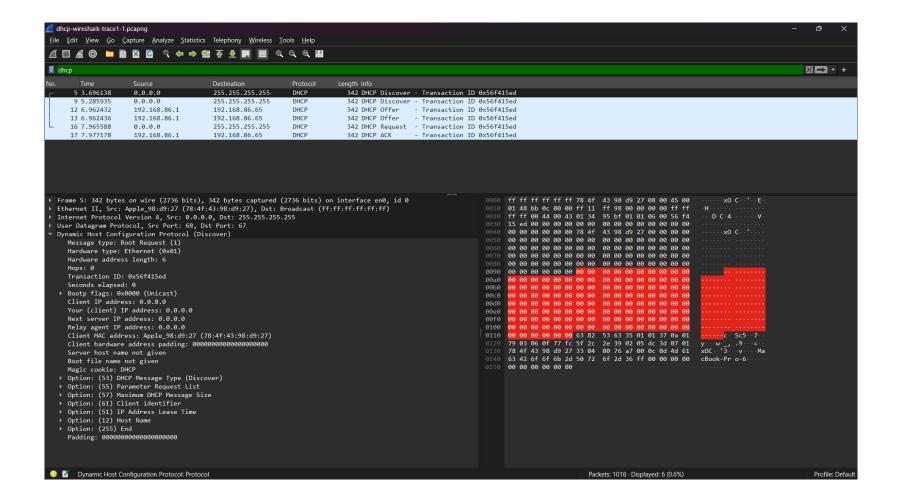
DHCP

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1.Is this DHCP Discover message sent out using UDP or TCP as the underlying transport protocol?

A: This DHCP Discover message is sent out using UDP as the underlying transport protocol.

2. What is the source IP address used in the IP datagram containing the Discover message? Is there anything special about this address? Explain.

A:The source IP address is 0.0.0.0. The speciality is the IP address 0.0.0.0 allows the computer and servers to temporarily communicate on the network before they receive a valid IP address from a DHCP server.

3. What is the destination IP address used in the datagram containing the Discover message. Is there anything special about this address? Explain.

A:The destination IP address used is 255.255.255.255. It represents the broadcast address, or place to route messages to be sent to every device within a network.

4. What is the value in the transaction ID field of this DHCP Discover message?

A: The value in the transaction ID field is 0x2b036af7.

5. Now inspect the options field in the DHCP Discover message. What are 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?

A: Parameter request list, Client identifier, Host name, Maximum DHCP message size, DHCPmessage type are the five pieces of information that the client is requesting

6. How do you know that this Offer message is being sent in response to the DHCP Discover message you studied in questions 1-5 above?

A:In the message type field, it is mentioned as a Boot reply. Whereas in the Discover message, the type was boot request.

7. What is the source IP address used in the IP datagram containing the Offer message? Is there anything special about this address? Explain.

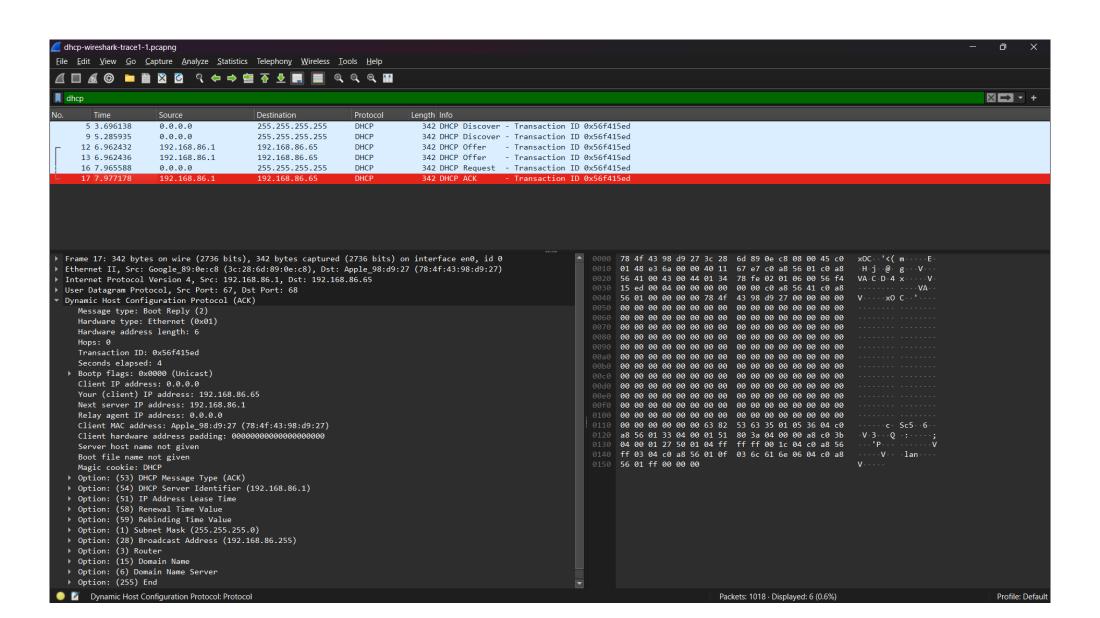
A:The source IP address used is 172.20.10.1. IP address is in a reserved range. Address ranges below are reserved by IANA for private intranets, and not routable to the Internet.

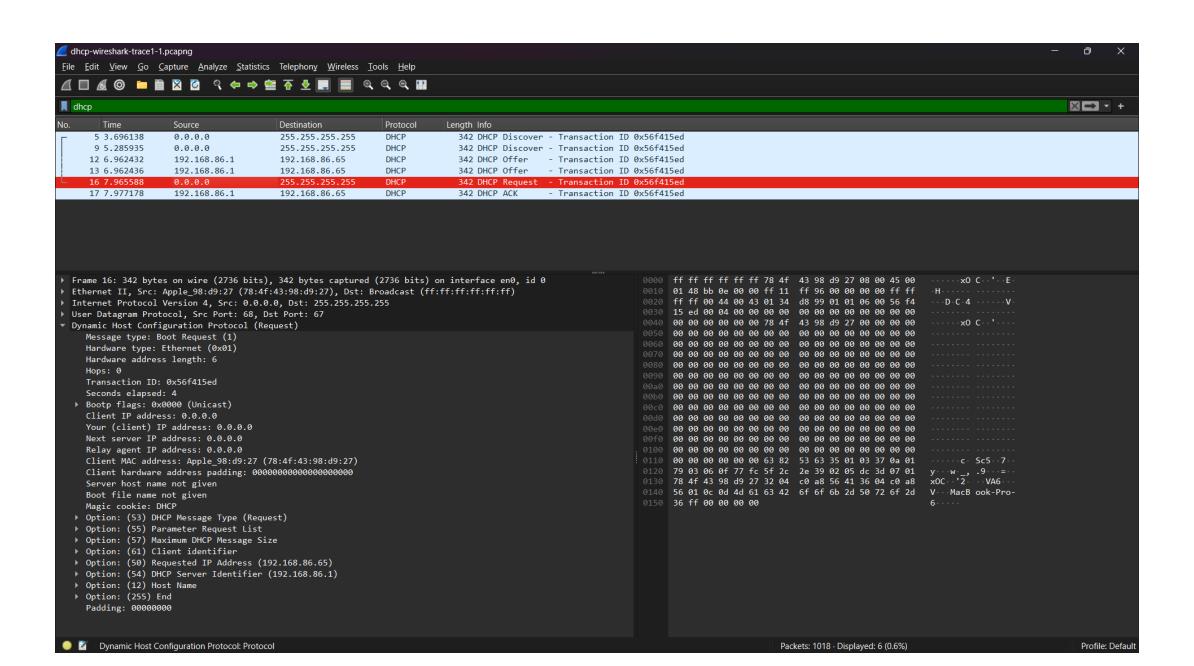
8. What is the destination IP address used in the datagram containing the Offer message? Is there anything special about this address? Explain. [Hint: Look at your trace carefully. The answer to this question may differ from what you see in Figure 4.24 in the textbook. If you really want to dig into this, consult the DHCP RFC, page 24.]

A:The destination IP address used is 172.20.10.2. It is a private IP address, and is only used in internal network environments. And it is just one number more than the source IP address.

9. Now inspect the options field in the DHCP Offer message. What are five pieces of information that the DHCP server is providing to the DHCP client in the DHCP Offer message?

A:DHCPMessage type, DHCP Server Identifier, Subnet Mask, Router, Domain Name Server are five pieces of information that the DHCP server is providing to the DHCP client.





10. What is the UDP source port number in the IP datagram containing the first DHCP Request message in your trace? What is the UDP destination port number being used?

A:The UDPsource port number is 68 and the UDP destination port number is 67.

11. What is the source IP address in the IP datagram containing this Request message? Is there anything special about this address? Explain.

A: The source IP address is 0.0.0.0. As already mentioned it allows the computer and servers to temporarily communicate on the network before they receive a valid IP address from a DHCP server.

12. What is the destination IP address used in the datagram containing this Request message. Is there anything special about this address? Explain.

A: The destination IP address is 255.255.255.255., The destination IP address 255.255.255.255 is a special address known as the "limited broadcast address" in IPv4 networking. When a packet is sent to this address, it is broadcasted to all devices on the same network segment.

13. What is the value in the transaction ID field of this DHCP Request message? Does it match the transaction IDs of the earlier Discover and Offer messages?

A:The transaction ID is 0x2b036af7. Yes, it matches the transaction IDs of the earlier Discover and Offer messages.

14. Now inspect the options field in the DHCP Discover message and take a close look at the "Parameter Request List". The DHCP RFC notes that "The client can inform the server which configuration parameters the client is interested in by including the 'parameter request list' option. The data portion of this option explicitly lists the options requested by tag number." What differences do you see between the entries in the 'parameter request list' option in this Request message and the same list option in the earlier Discover message?

A: There is no difference between the entries in the 'parameter request list' in both the cases.

15. What is the source IP address in the IP datagram containing this ACK message? Is there anything special about this address? Explain.

A: The source IP address 172.20.10.1 in the ACK message is a private IP address commonly used within local networks. It represents the device sending the acknowledgment and is not directly routable over the internet.

16. What is the destination IP address used in the datagram containing this ACK message. Is there anything special about this address? Explain.

A: The destination IP address 172.20.10.2 in the ACK message is a standard IP address within the local network subnet. It identifies the specific device receiving the acknowledgment, facilitating direct communication within the network.

17. What is the name of the field in the DHCP ACK message (as indicated in the Wireshark window) that contains the assigned client IP address?

A:The name of the field in the DHCP ACK message that contains the assigned client IP the address is Your (client) IP address.

- 18. For how long a time (the so-called "lease time") has the DHPC server assigned this IP address to the client?
- A:As indicated in one of the option fields, the lease time is 1 day(86400s)
- 19. What is the IP address (returned by the DHCP server to the DHCP client in this DHCP ACK message) of the first-hop router on the default path from the client to the rest of the Internet?
- A:The IP address of the first-hop router on the default path from the client to the rest of the Internet 172.20.10.2