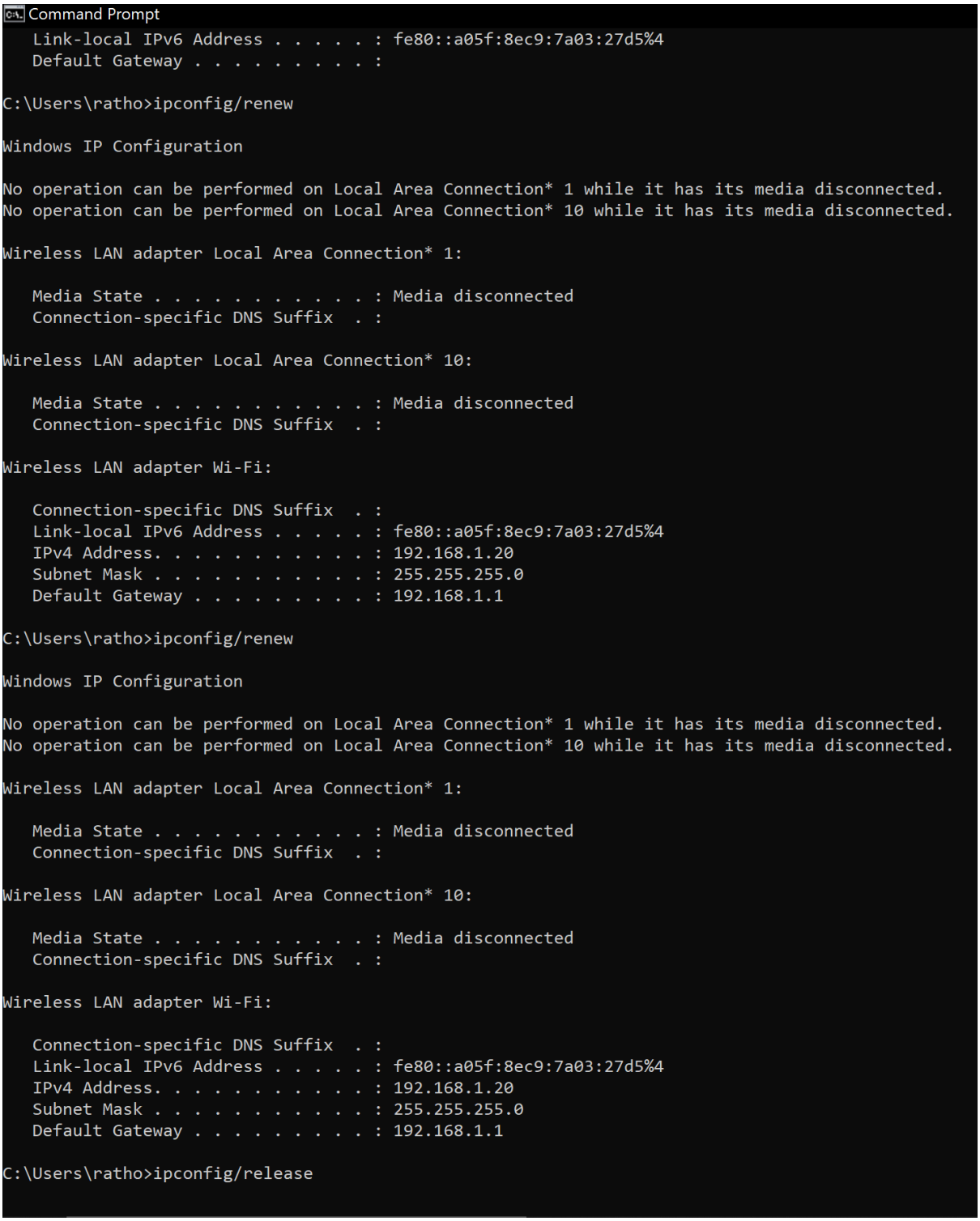
SHUBHAM SHANKAR
UTA ID: 1001761068 **COMPUTER NETWORK ORGANIZATION LAB - 3**

Terminal :



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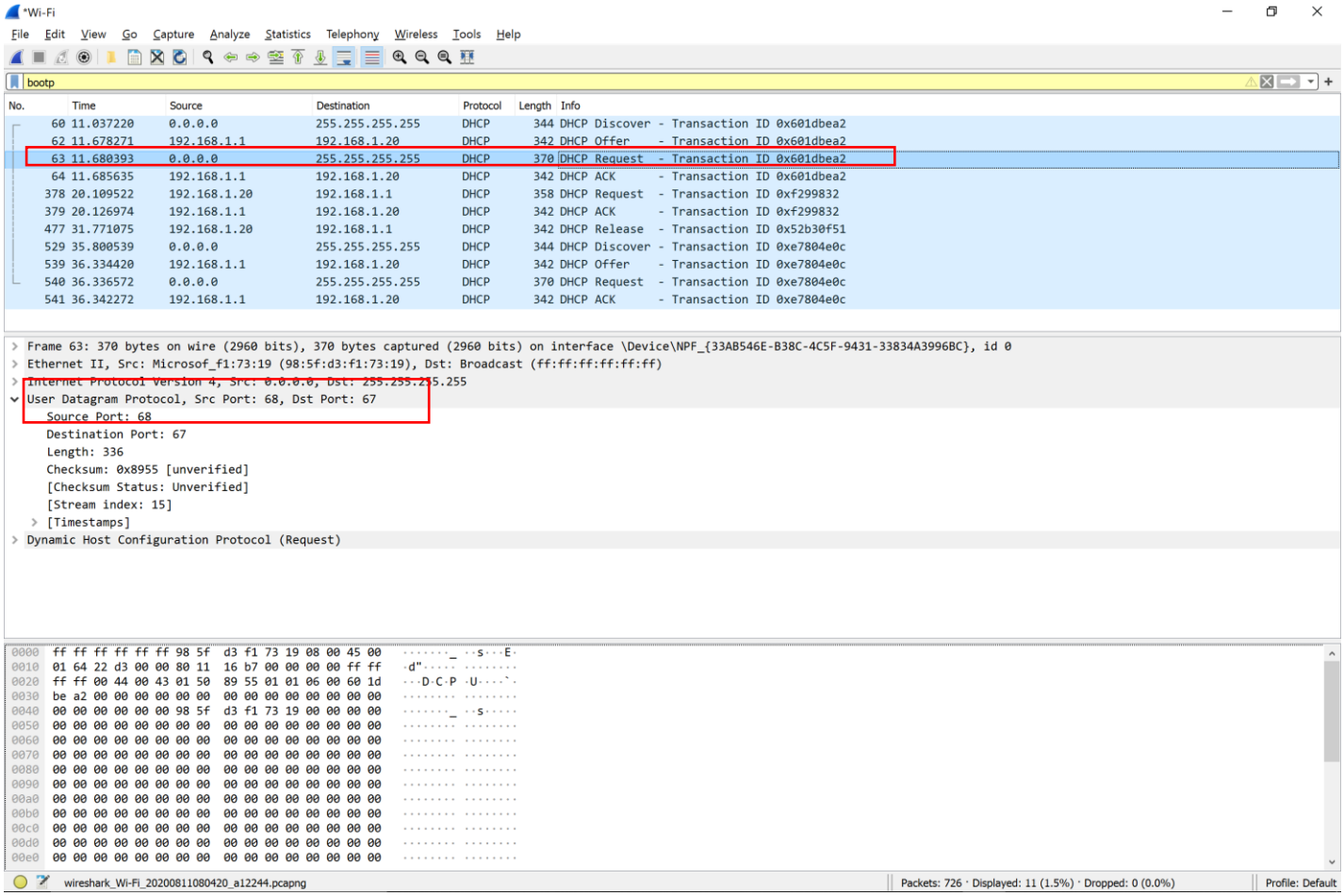
1. Are DHCP messages sent over UDP or TCP?

Answer : DHCP messages are sent over UDP.



2. 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:

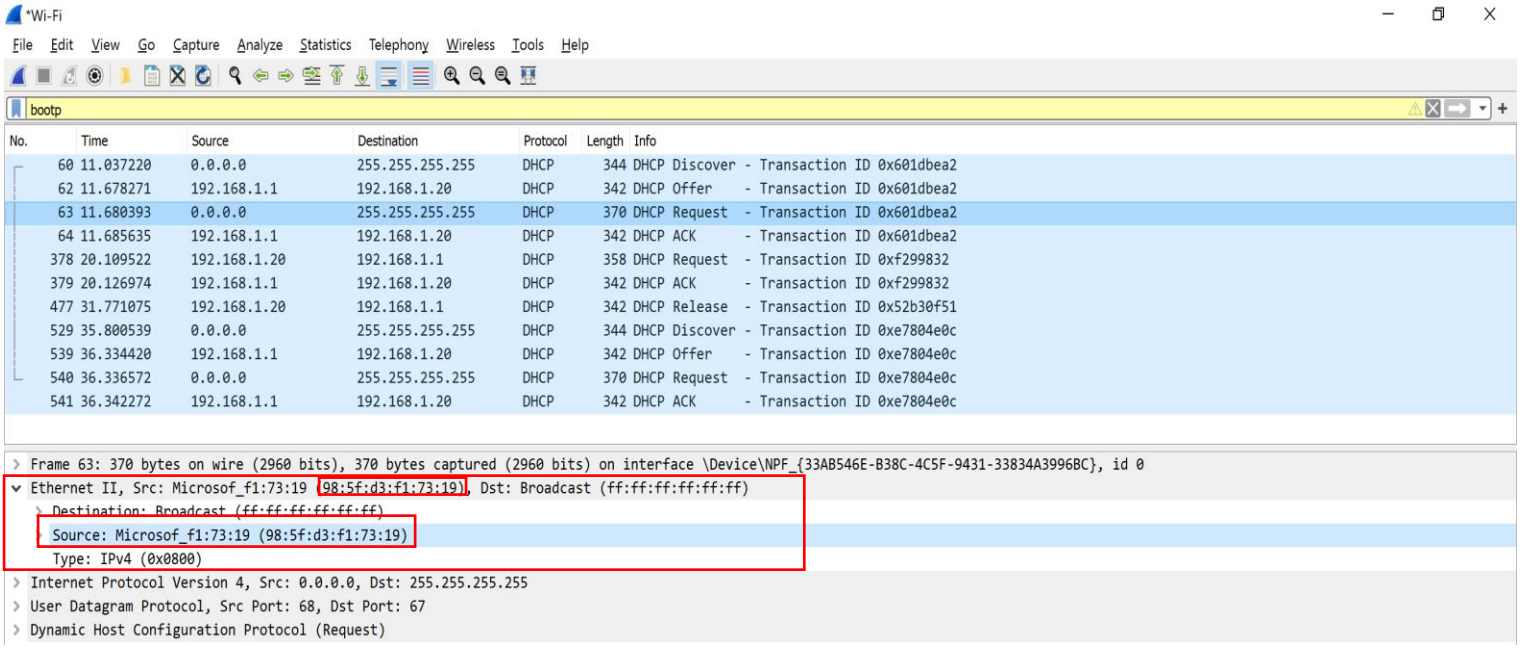
Yes, the ports are the same as in the example given in this assignment.

1. Src – 68 , Dst – 67
2. Dst – 67 , Src – 68
3. Src – 68 , Dst – 68
4. Dst – 67 , Src – 68.

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

Answer :

The Link-Layer Address is : (Source: Microsof_f1:73:19) 98:5f:d3:f1:73:19



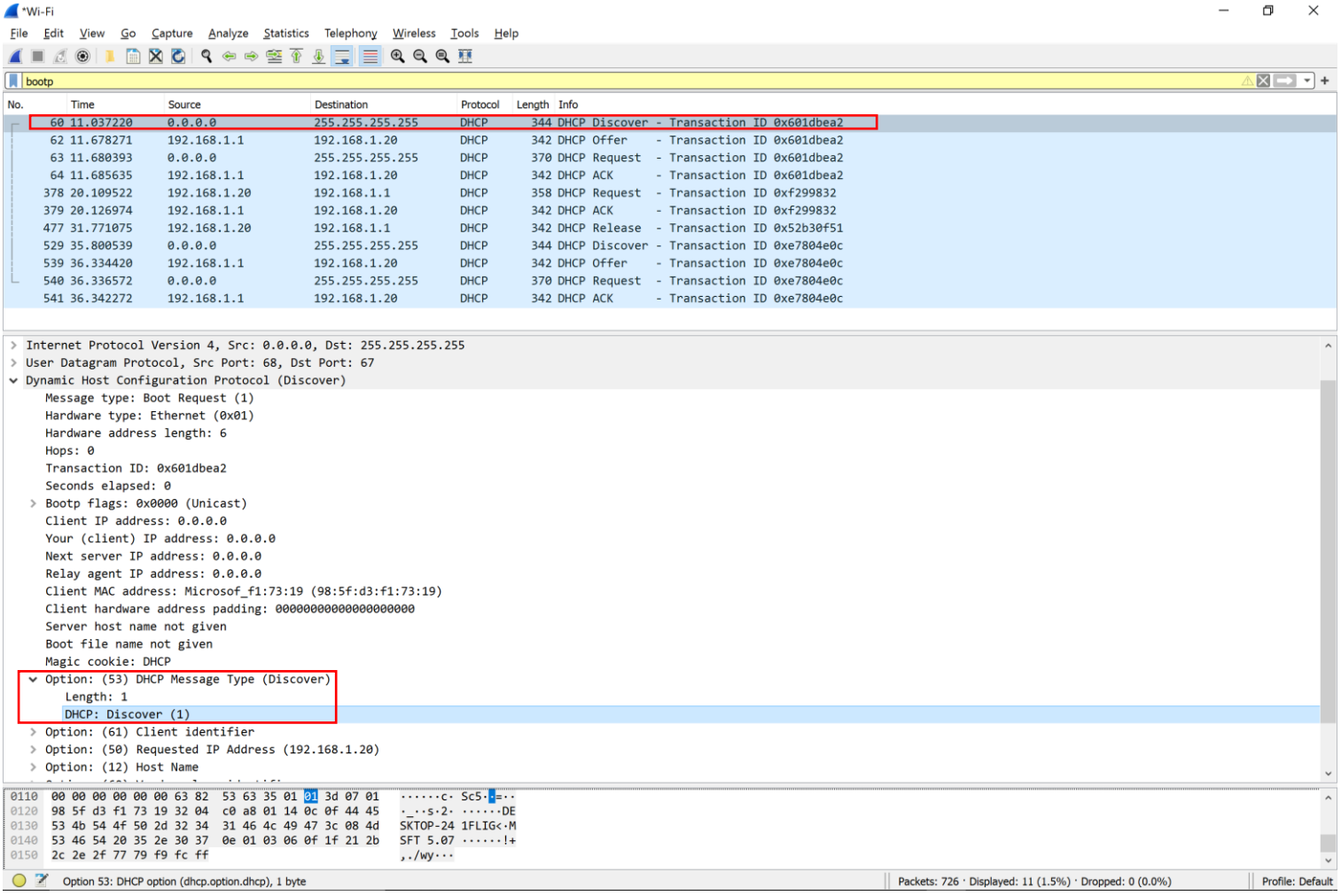
4. What values in the DHCP discover message differentiate this message from the DHCP request message?

Answer :

Message type values helps differentiate between the types of messages.

DHCP request – message type value is 3

DHCP discover – message type value is 1.



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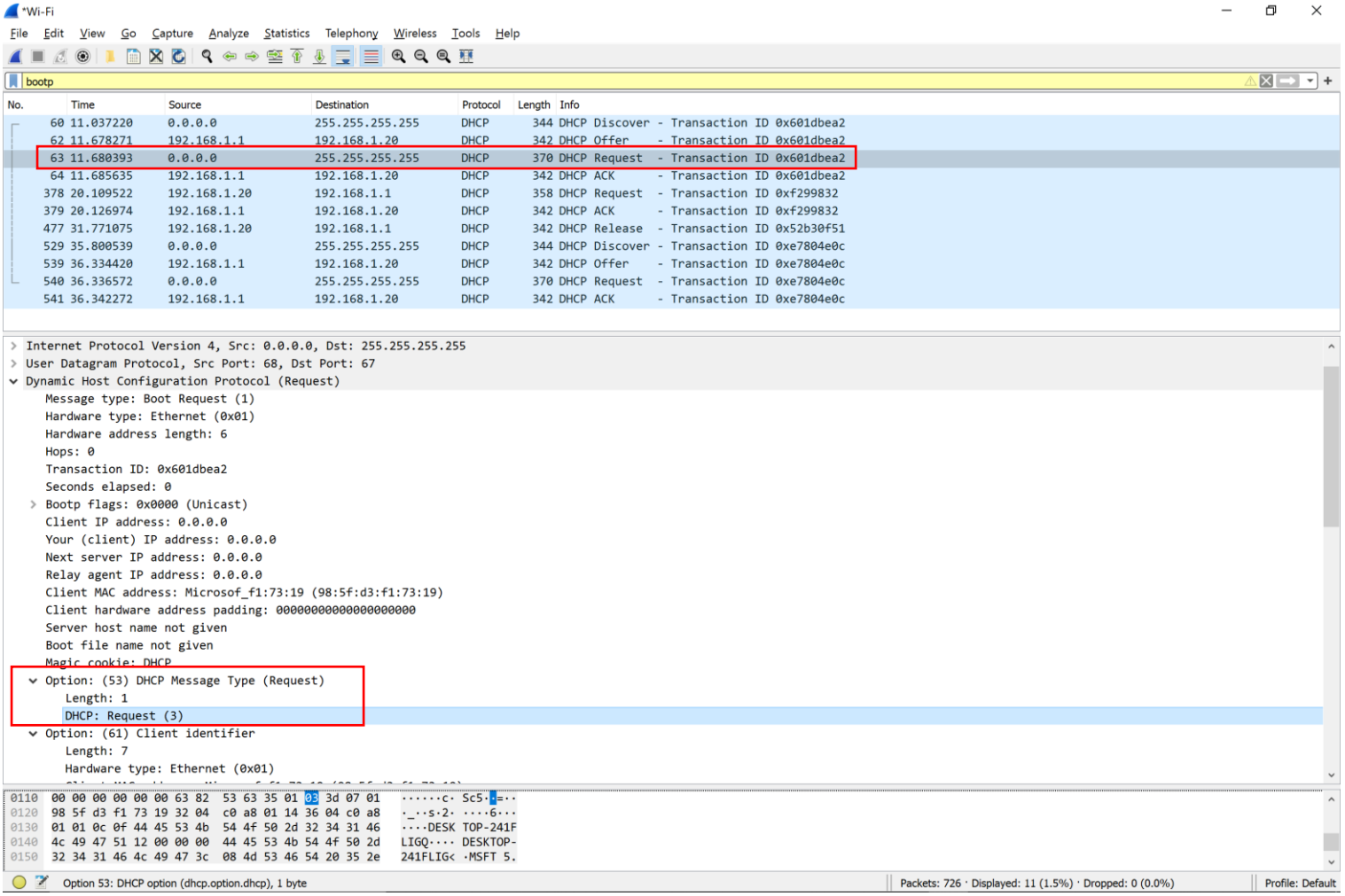

5. What is the value of the Transaction-ID in each of the first four (Discover/Offer/Request/ACK) DHCP messages? What are the values of the Transaction-ID in the second set (Request/ACK) set of DHCP messages? What is the purpose of the Transaction-ID field?

Answer :

Transaction-ID – First Four set :

1. Discover = 0x601dbea2
2. Offer = 0x601dbea2
3. Request = 0x601dbea2
4. ACK = 0x601dbea2

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No.	Time	Source	Destination	Protocol	Length	Info
60	11.037220	0.0.0.0	255.255.255.255	DHCP	344	DHCP Discover - Transaction ID 0x601dbea2
62	11.678271	192.168.1.1	192.168.1.20	DHCP	342	DHCP Offer - Transaction ID 0x601dbea2
63	11.680393	0.0.0.0	255.255.255.255	DHCP	370	DHCP Request - Transaction ID 0x601dbea2
64	11.685635	192.168.1.1	192.168.1.20	DHCP	342	DHCP ACK - Transaction ID 0x601dbea2

Transaction-ID - second set :

1. Request = 0xf299832
2. ACK = 0xf299832

378	20.109522	192.168.1.20	192.168.1.1	DHCP	358	DHCP Request - Transaction ID 0xf299832
379	20.126974	192.168.1.1	192.168.1.20	DHCP	342	DHCP ACK - Transaction ID 0xf299832

The purpose of the Transaction-ID field is so that host can differentiate between different request made by user. (Differentiate between the group of message)

6. 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 :

Source : 0.0.0.0

Destination : 255.255.255.255.

Offer :

Source : 192.168.1.1

Destination : 192.168.1.20.

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Request :

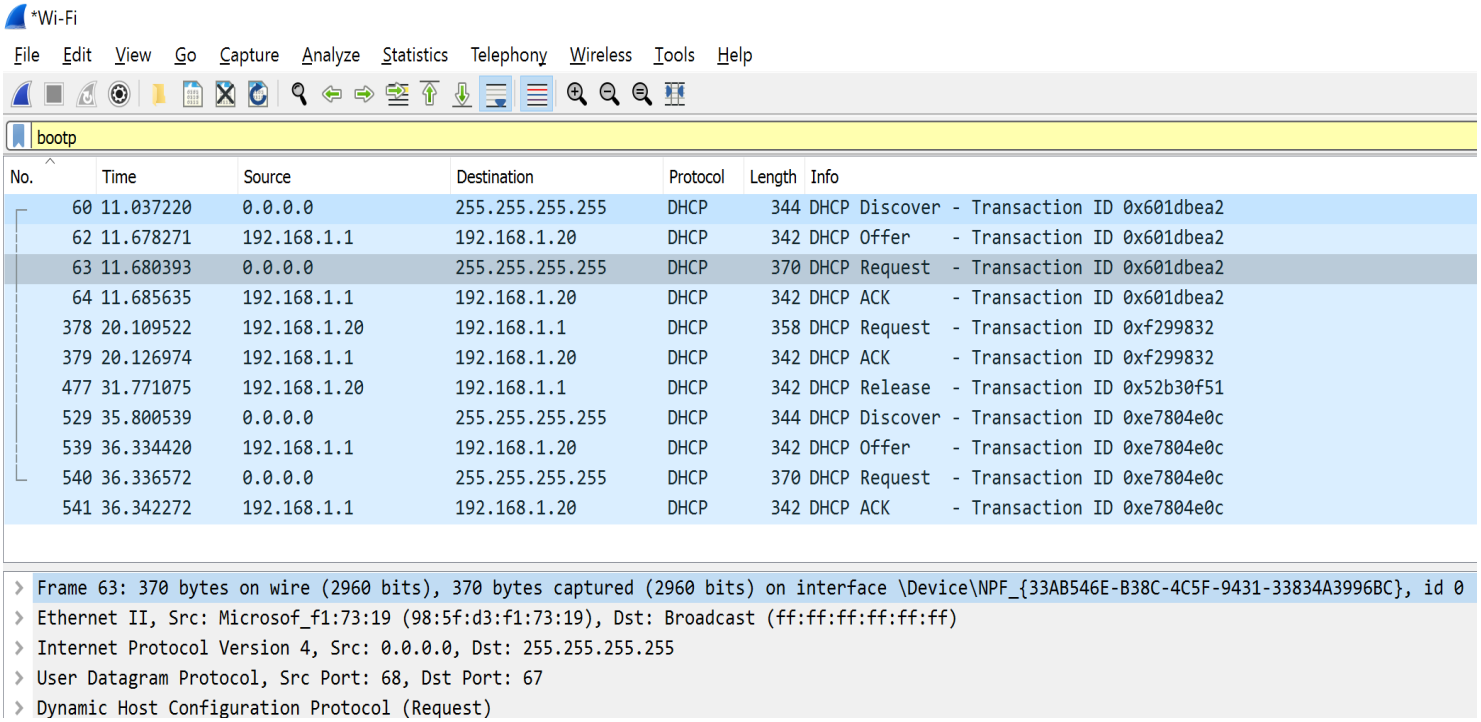
Source : 0.0.0.0

Destination : 255.255.255.255.

Ack :

Source : 192.168.1.1

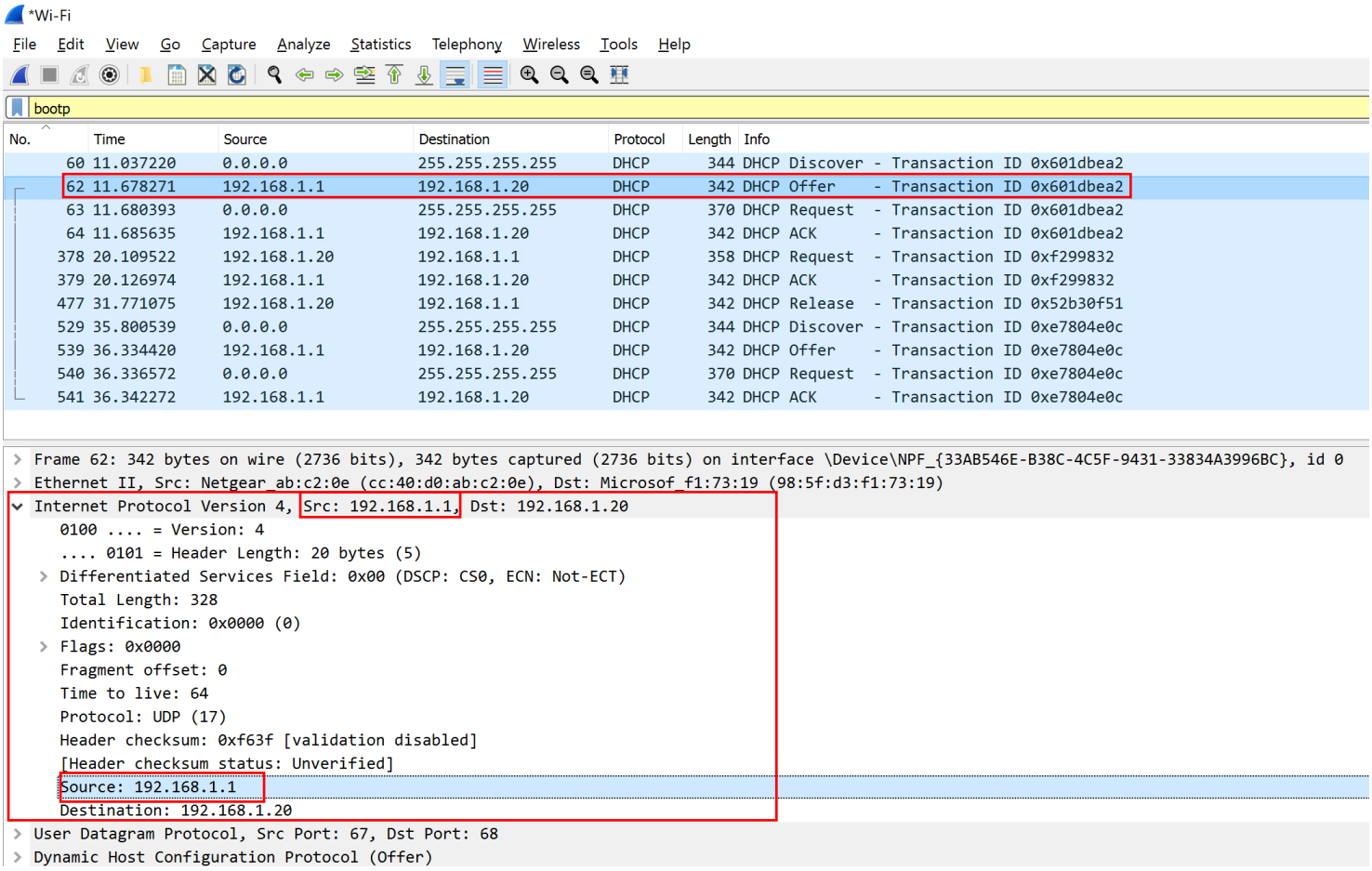
Destination : 192.168.1.20



7. What is the IP address of your DHCP server?

Answer :

The value of IP address of DHCP Server is : 192.168.1.1.

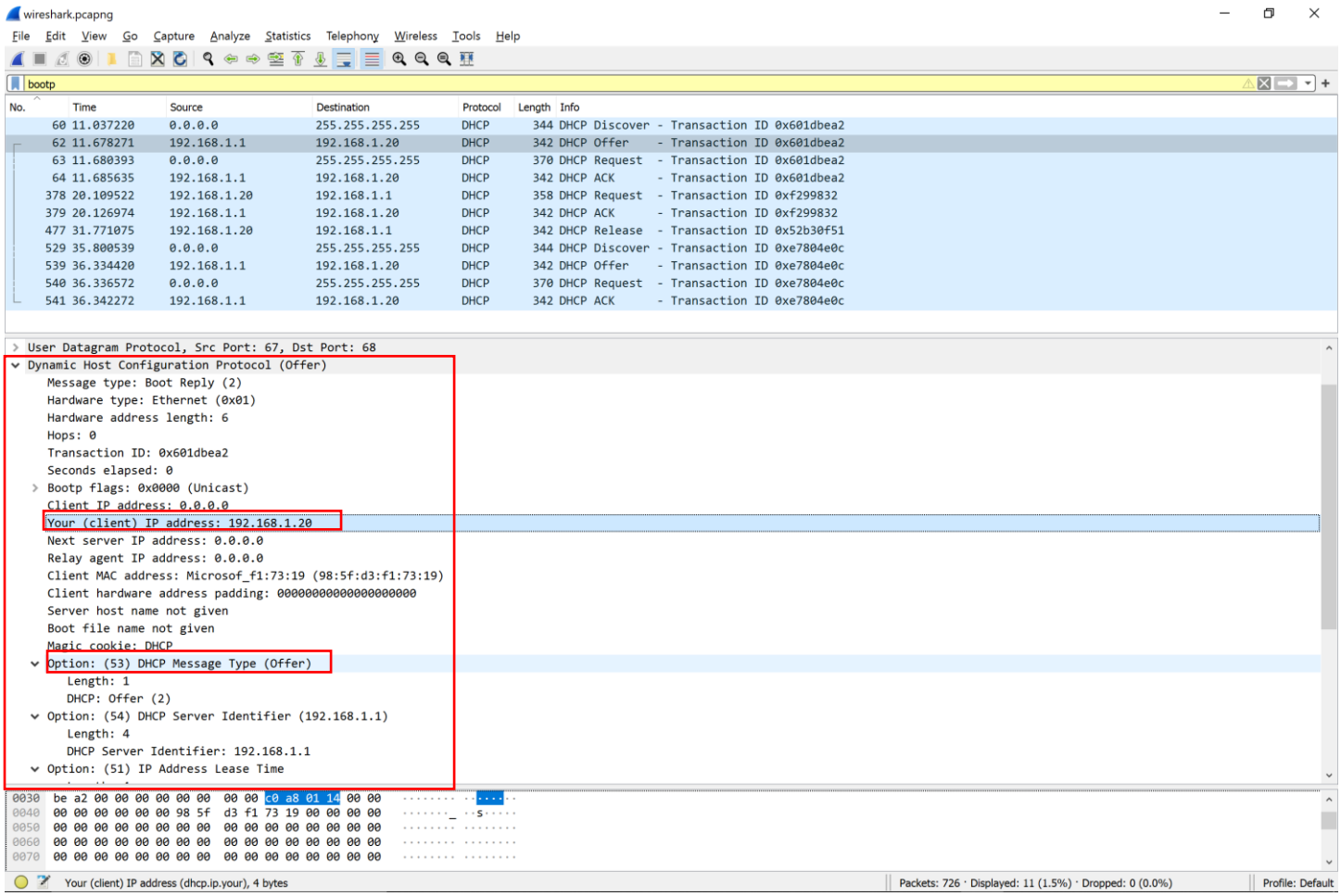


8. What IP address is the DHCP server offering to your host in the DHCP Offer message? Indicate which DHCP message contains the offered DHCP address.

Answer :

DHCP server offered host the IP address: 192.168.1.20.

DHCP Offer message type contained the DHCP address.



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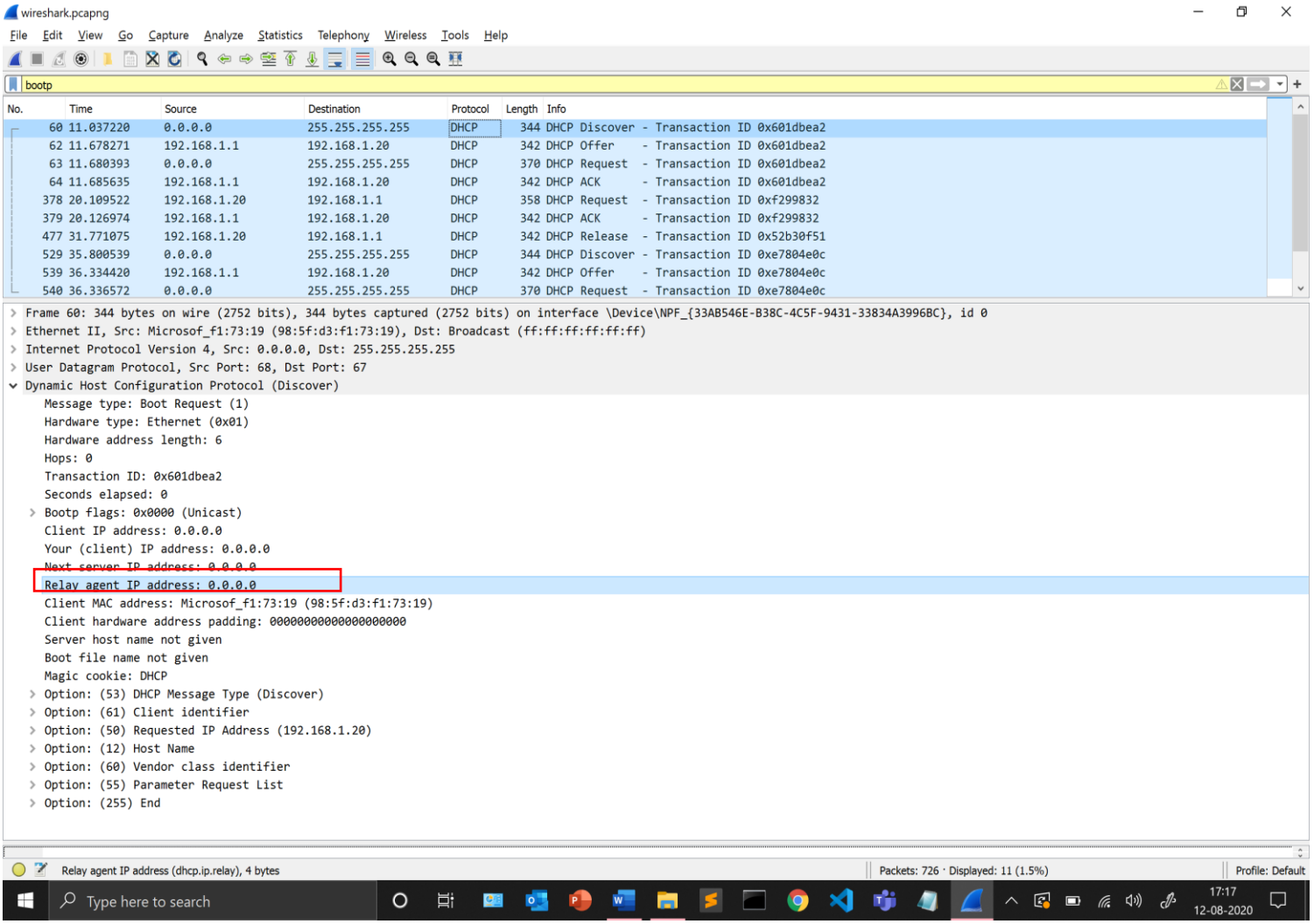
9. In the example screenshot in this assignment, there is no relay agent between the host and the DHCP server. What values in the trace indicate the absence of a relay agent? Is there a relay agent in your experiment? If so what is the IP address of the agent?

Answer : The Ip address in the trace is 0.0.0.0 indicating no DHCP relay.

so there is no relay.

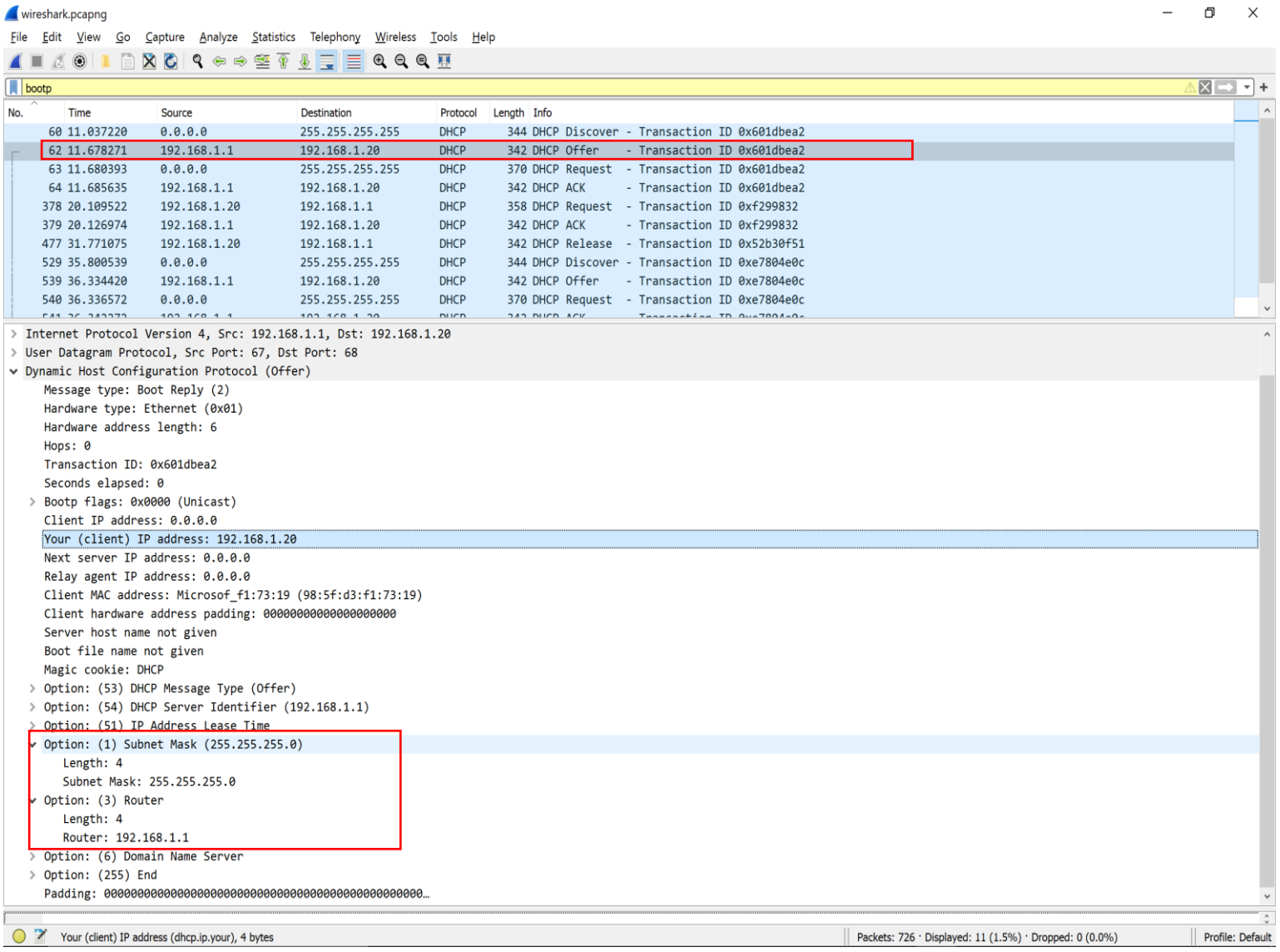


10. Explain the purpose of the router and subnet mask lines in the DHCP offer message.

Answer :

Subnet Mask tells which subnet mask to be used.

Router tells which default gateway to be used.

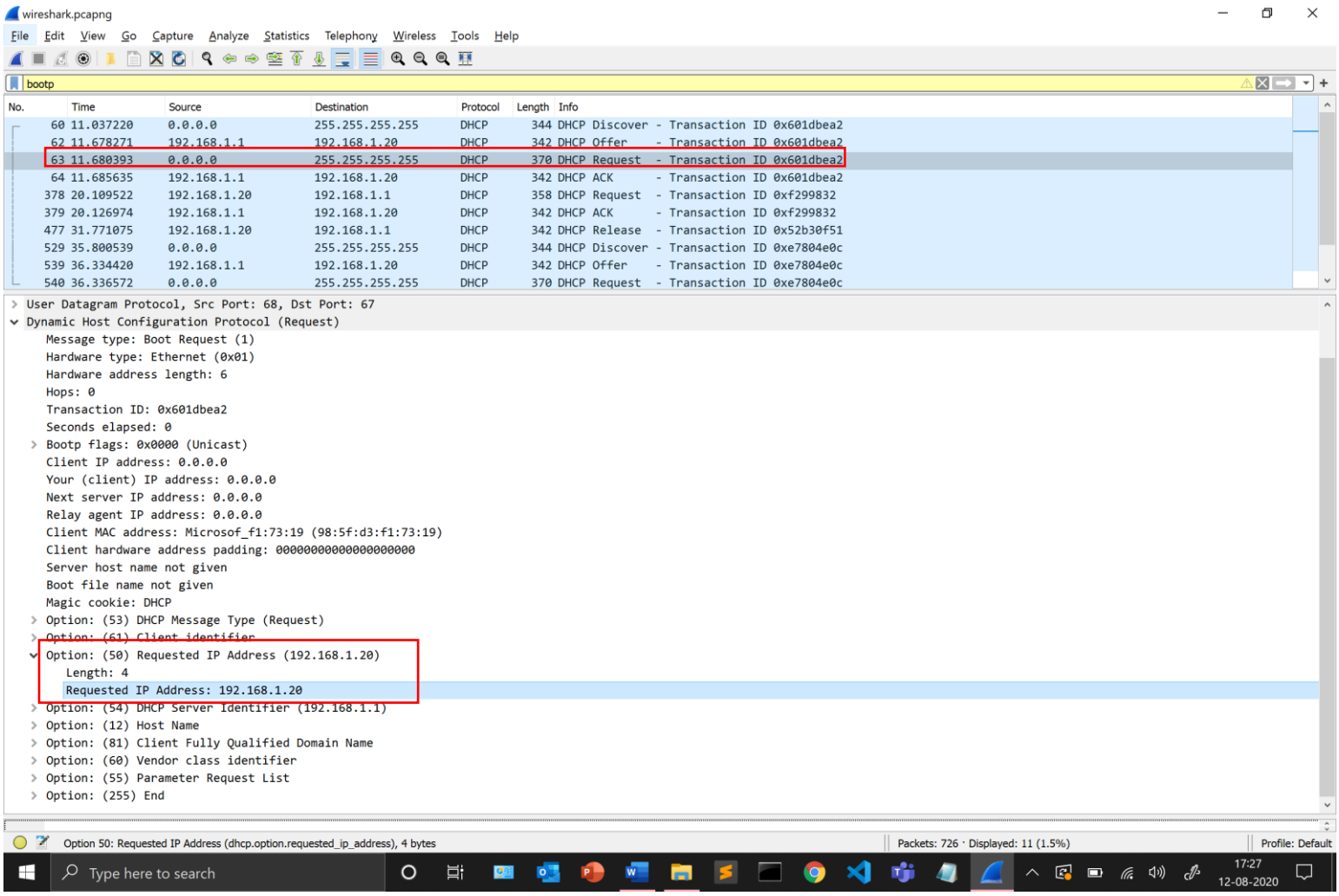


11. In the DHCP trace file noted in footnote 2, the DHCP server offers a specific IP address to the client (see also question 8. above). In the client's response to the first server OFFER message, does the client accept this IP address? Where in the client's RESPONSE is the client's requested address?

Answer :

Yes, The Client Accept the offer message.

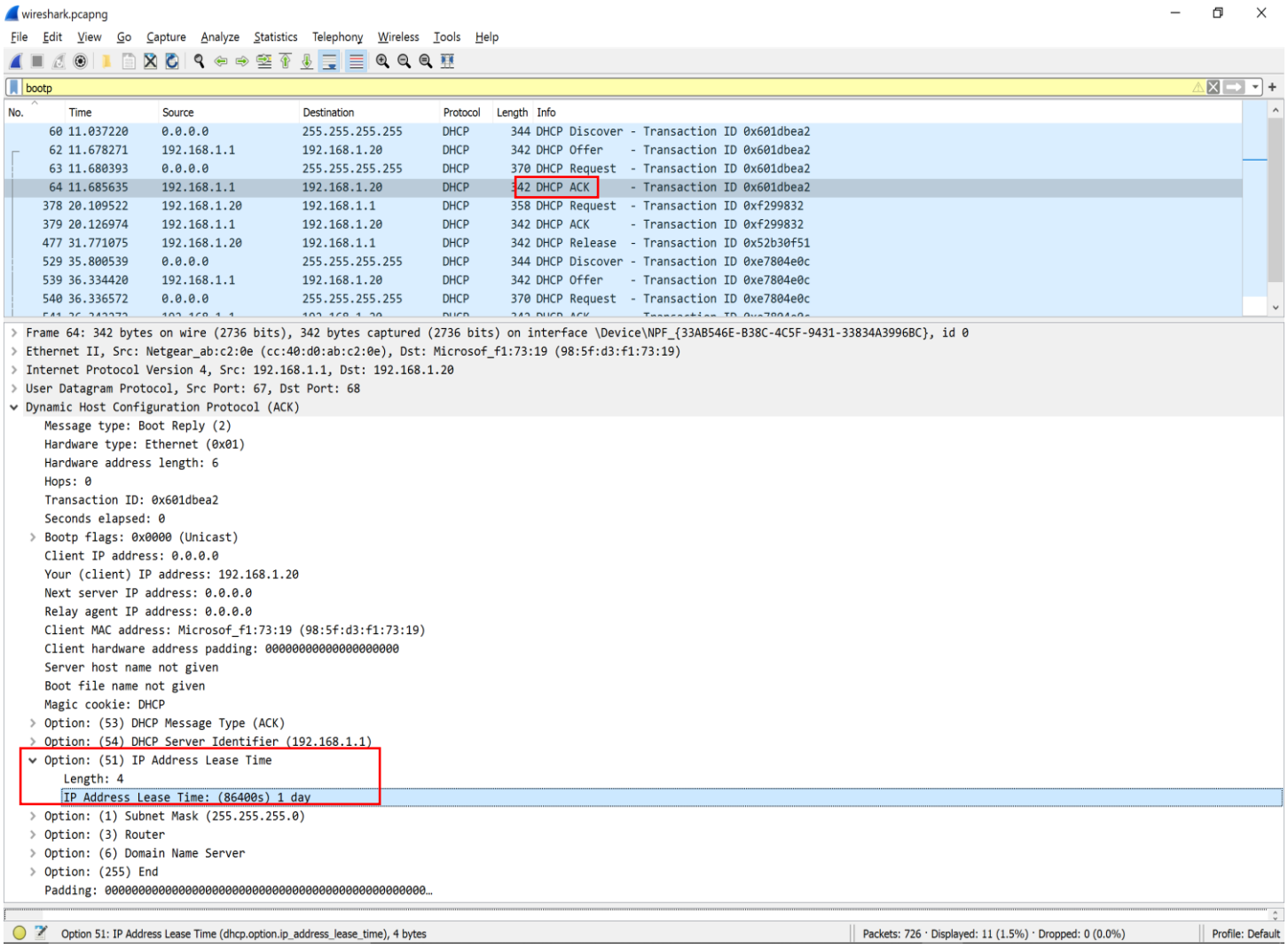
It is seen in option number 50.



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

Answer : Lease time is the duration of time in which the DHCP server assigns an IP address to a client. During the lease time, the DHCP server will not assign the given IP address given any other client. Once the lease time expires the IP address can be reused by the DHCP server.

IP Address Lease Time: (86400s) 1 day



13. 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 : DHCP release message is to cancel the lease so that IP address can be reused by the DHCP server.

DHCP server does not acknowledge the receipt of the clients DHCP request.

If the client's DHCP release message is lost, the DHCP server will have to wait until the lease period is over.

14. 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, There are ARP packets in the DHCP packet exchange period.

ARP is used to gather all the IP address and make sure the IP address is not used by others.