Name: Maoshun Shang
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CMPT 371 Lab 1 Report

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Microsoft Windows [Version 10.0.14393]
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C:\Users\Maoshun>ipconfig/release

Windows IP Configuration

No operation can be performed on VPN - VPN Client while it has its media disconnected.
No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 2 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter VPN - VPN Client:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter VMware Network Adapter VMnet1:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::e0c3:31e2:7622:3cdd%22
   Default Gateway . . . . . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::8ed:2ed8:e6c:59e0%4
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   IPv6 Address. . . . . . . . . . . : 2001:569:7163:4d00:a43f:2fc2:1bae:b93d
   Temporary IPv6 Address. . . . . . : 2001:569:7163:4d00:193:b873:46c0:6d3f
   Link-local IPv6 Address . . . . . : fe80::a43f:2fc2:1bae:b93d%18
   Default Gateway . . . . . . . . . : fe80::4e8b:30ff:fe4b:a630%18

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
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C:\Users\Maoshun>ipconfig/renew

Windows IP Configuration

No operation can be performed on VPN - VPN Client while it has its media disconnected.
No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 2 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter VPN - VPN Client:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter VMware Network Adapter VMnet1:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::e0c3:31e2:7622:3cdd%22
   IPv4 Address. . . . . . . . . . . : 192.168.40.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::8ed:2ed8:e6c:59e0%4
   IPv4 Address. . . . . . . . . . . : 192.168.235.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : telus
   IPv6 Address. . . . . . . . . . . : 2001:569:7163:4d00:a43f:2fc2:1bae:b93d
   Temporary IPv6 Address. . . . . . : 2001:569:7163:4d00:193:b873:46c0:6d3f
   Link-local IPv6 Address . . . . . : fe80::a43f:2fc2:1bae:b93d%18
   IPv4 Address. . . . . . . . . . . : 192.168.1.64
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::4e8b:30ff:fe4b:a630%18
                                       192.168.1.254

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
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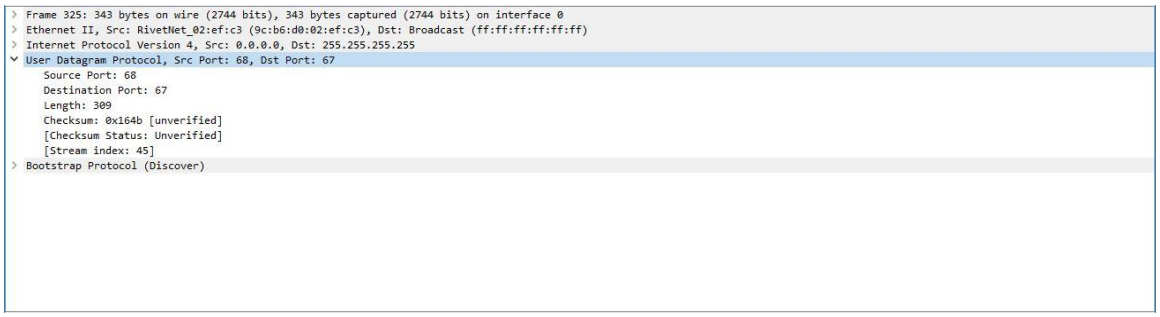
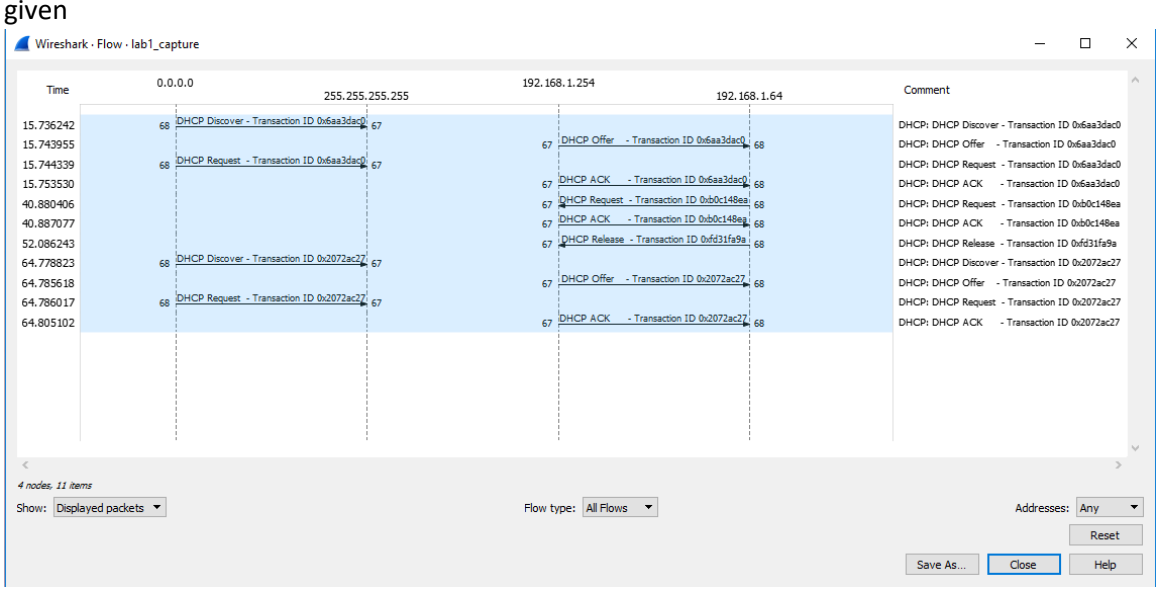
Answers:

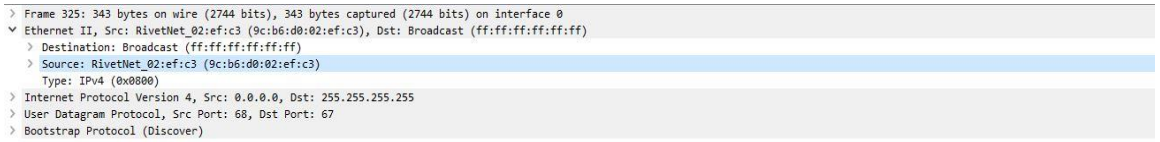
1. DHCP is sent over UDP



2. The time datagram is shown below, and the ports number are the same as the example given



3. The Ethernet address of my host is 9c:b6:d0:02:ef:c3



4. The DHCP message types indicate the difference between discover message and request message. Discover message shows ’35 01 01’ but request message shows ’35 01 03’.

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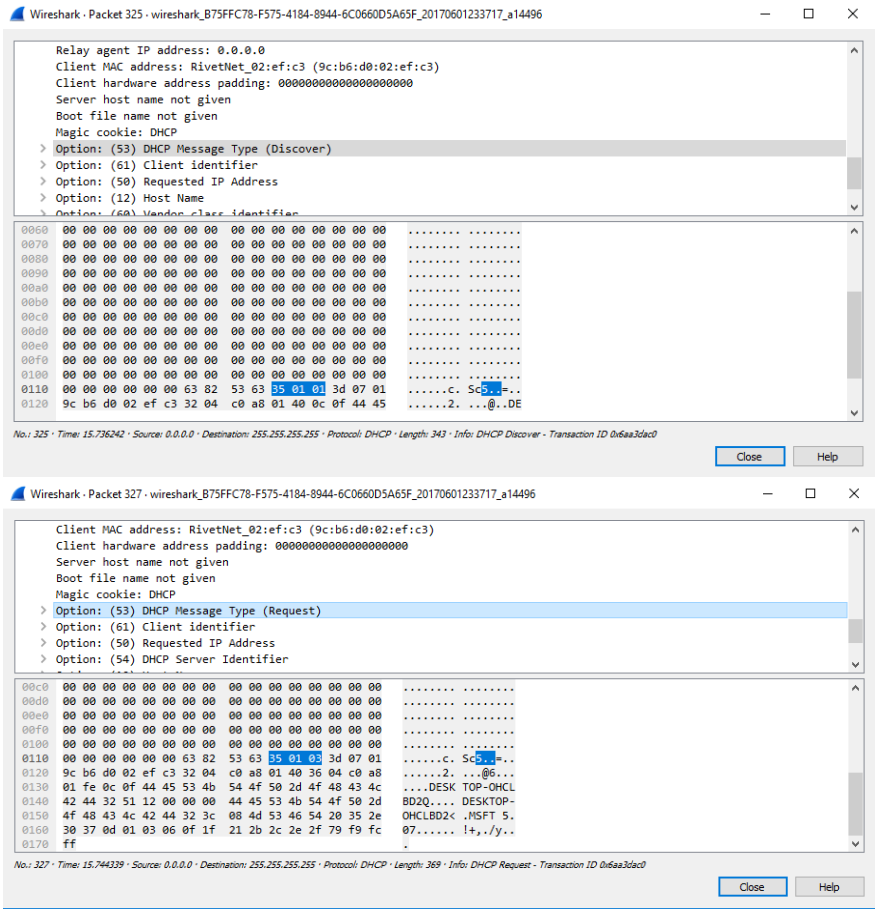
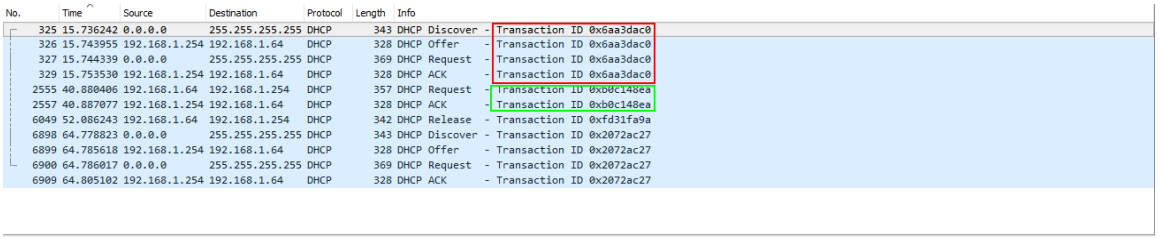


5. The transaction ID for the first four DHCP messages are “0x6aa3dac0” and the transaction ID for the next two DHCP messages are “0xb0c148ea”. The purpose of transaction ID is to relate several messages to one network event.



6. The source and destination IP address of the first four packets are shown below. If the IP address is not set during the first four message exchange, the client uses 0.0.0.0 as the IP address

7. The IP address of DHCP server is 192.168.1.254

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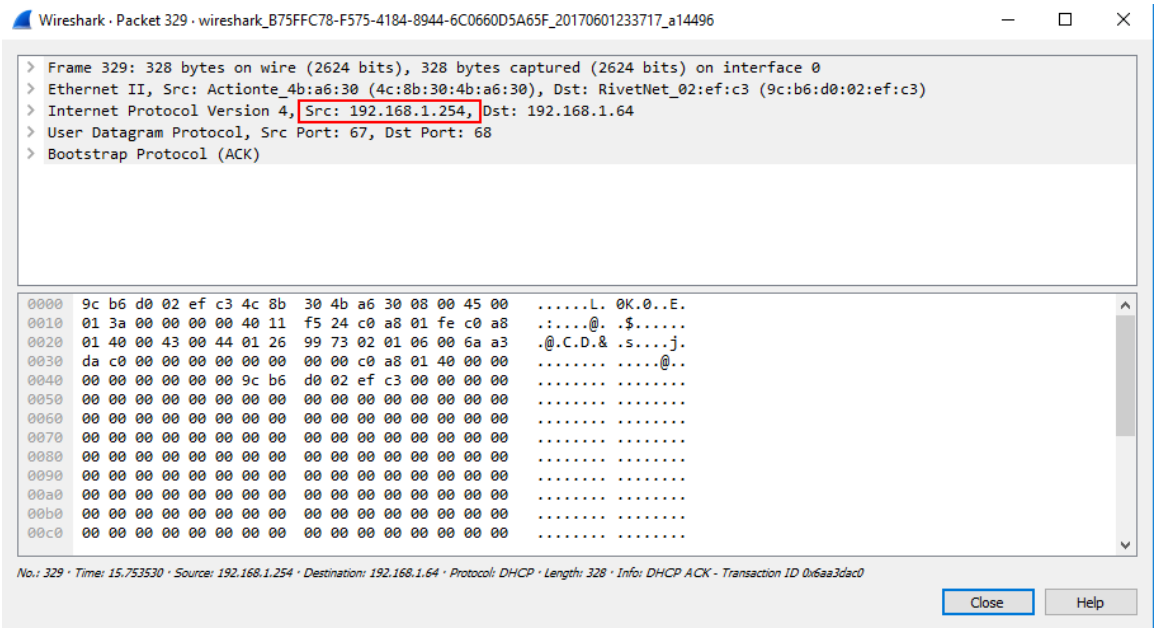
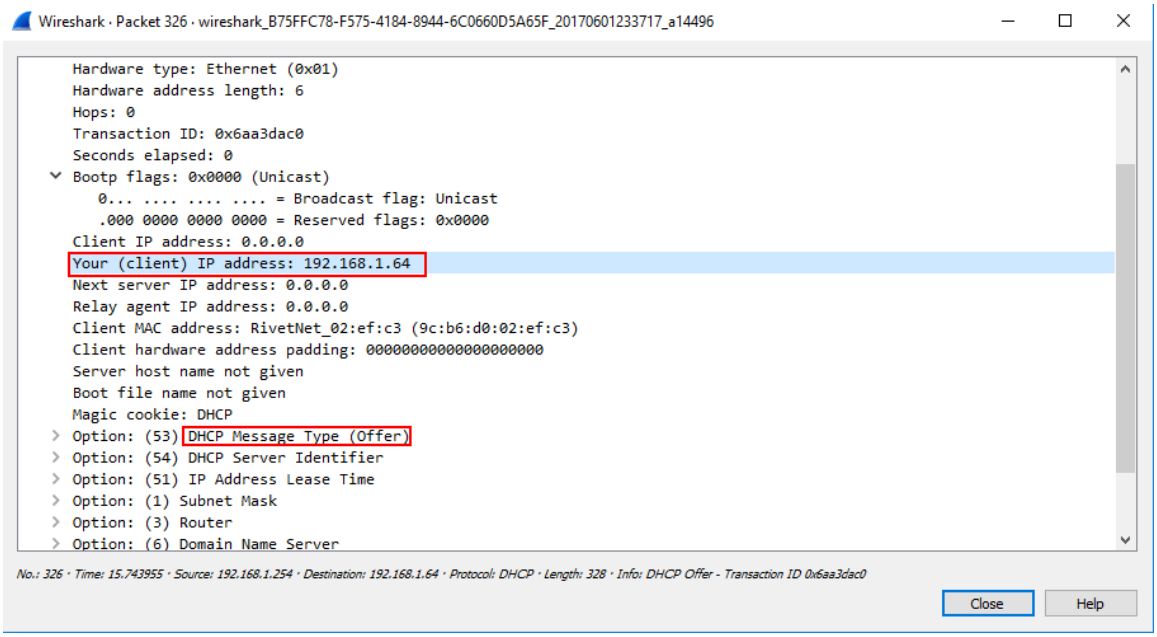


8. The IP address that DHCP server offered is 192.168.1.64. The offered IP is contained in the message which the type of DHCP Message is “Offer”



9. According to the message, the Relay agent IP address is 0.0.0.0, which indicates the absence of relay agent. Therefore, there is no relay agent in my experiment.

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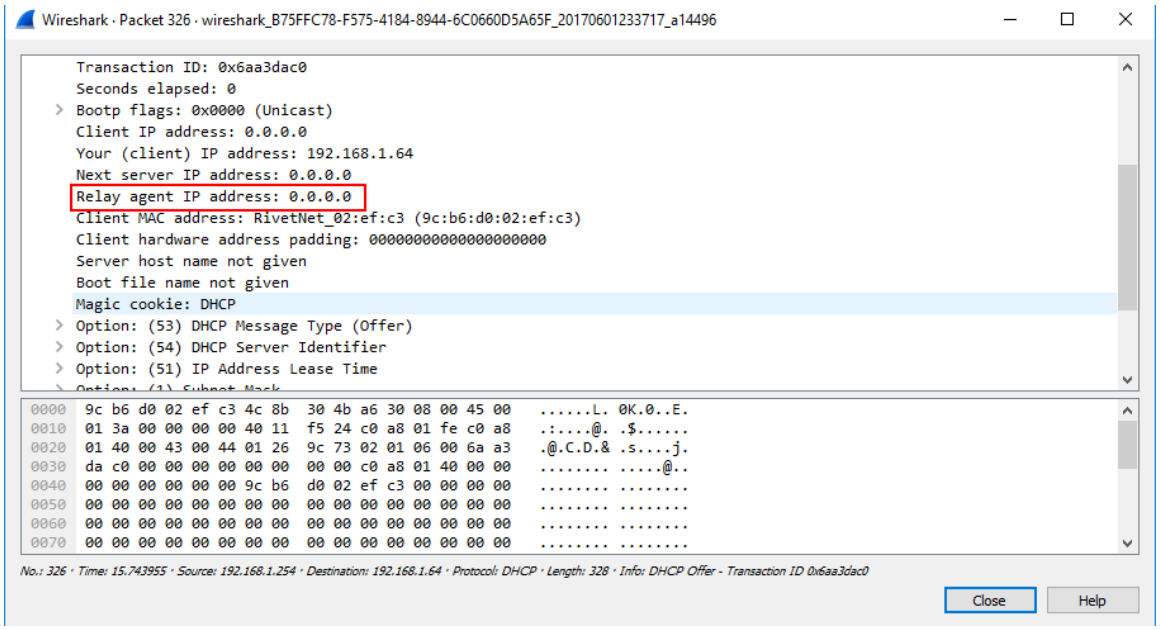
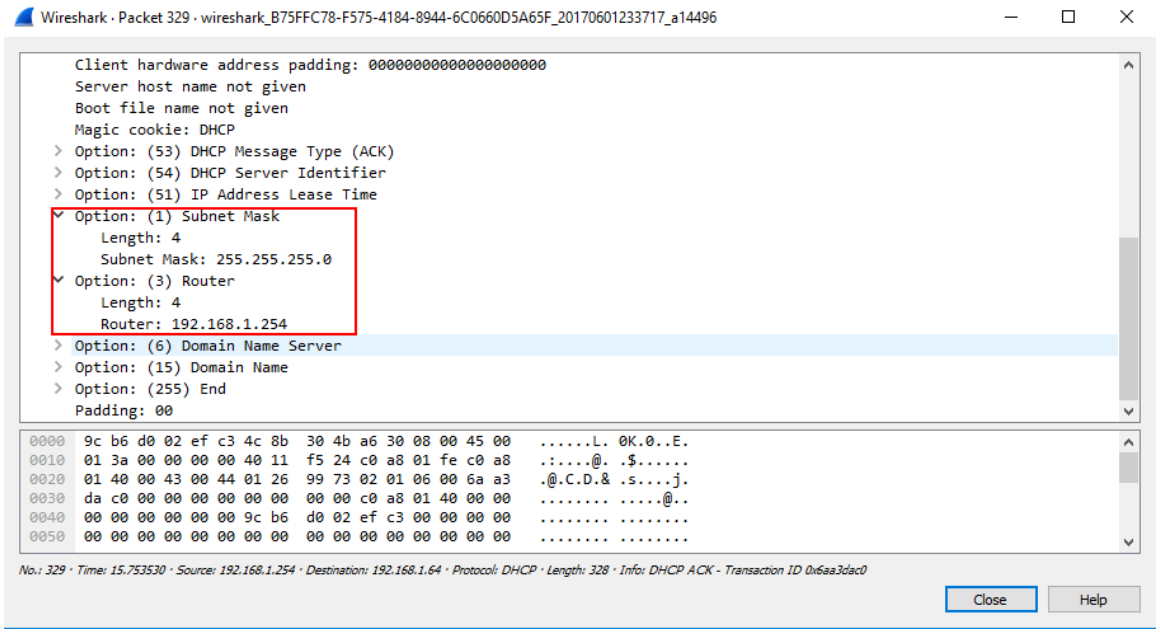


10. Router line tells the client the internet gateway of the router. Subnet mask line indicate the subnet mask of client.



11. In the response message from client, the IP address is 192.168.1.64

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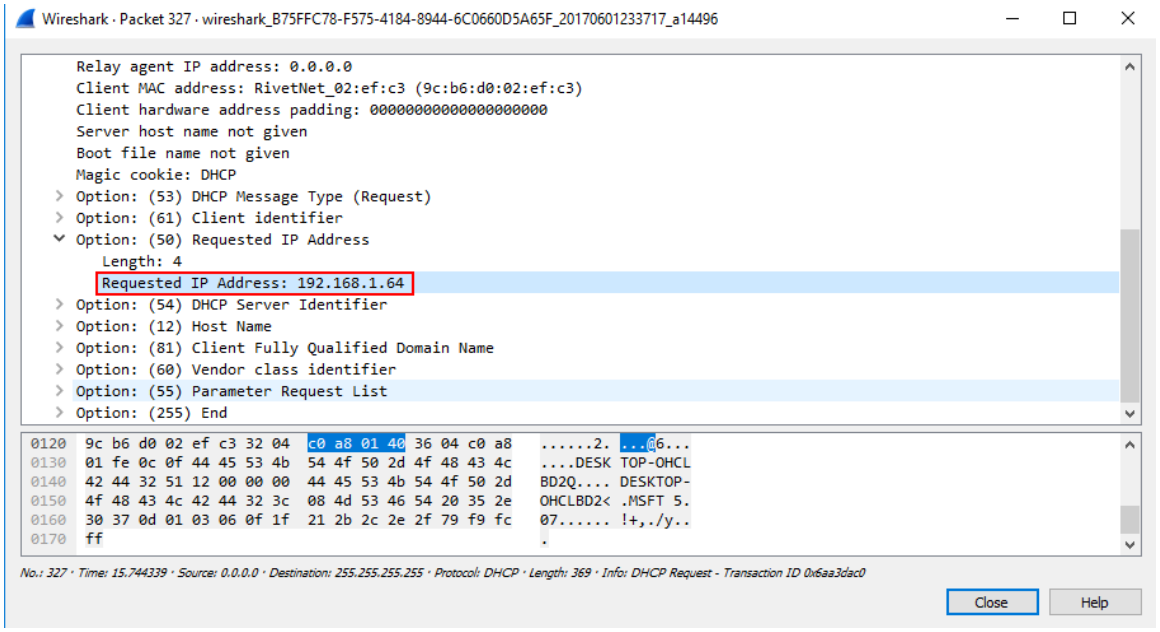
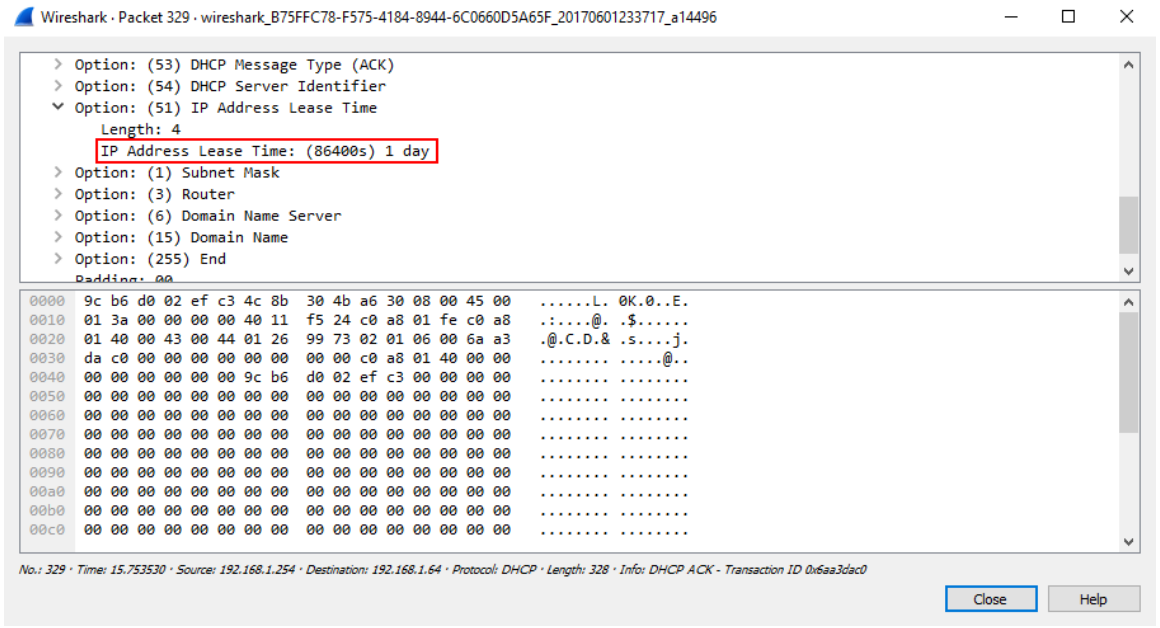


12. In the ACK Message, the lease time for this client in my experiment is 1 day. The purpose of lease time is to make sure this IP address is not wasted. Because this specific IP address can either be occupied temporarily or recycled. After the lease time, the server will take this IP address back and possibly assign it to another client if no renew action is done by the client.



13. The purpose of DHCP release message is a message that indicates the IP address is released to the DHCP server so that the current IP address is 0.0.0.0. The change of IP address of client is confirmed by the source IP address of packet No.6898 in my experiment. In addition, there is no acknowledgment of receipt sent by server. If this release message is lost, the IP address for this client at the server side is remain the same. Therefore, without renewing the IP address, the server will take this IP back after the lease time, which is 1 day in my experiment.

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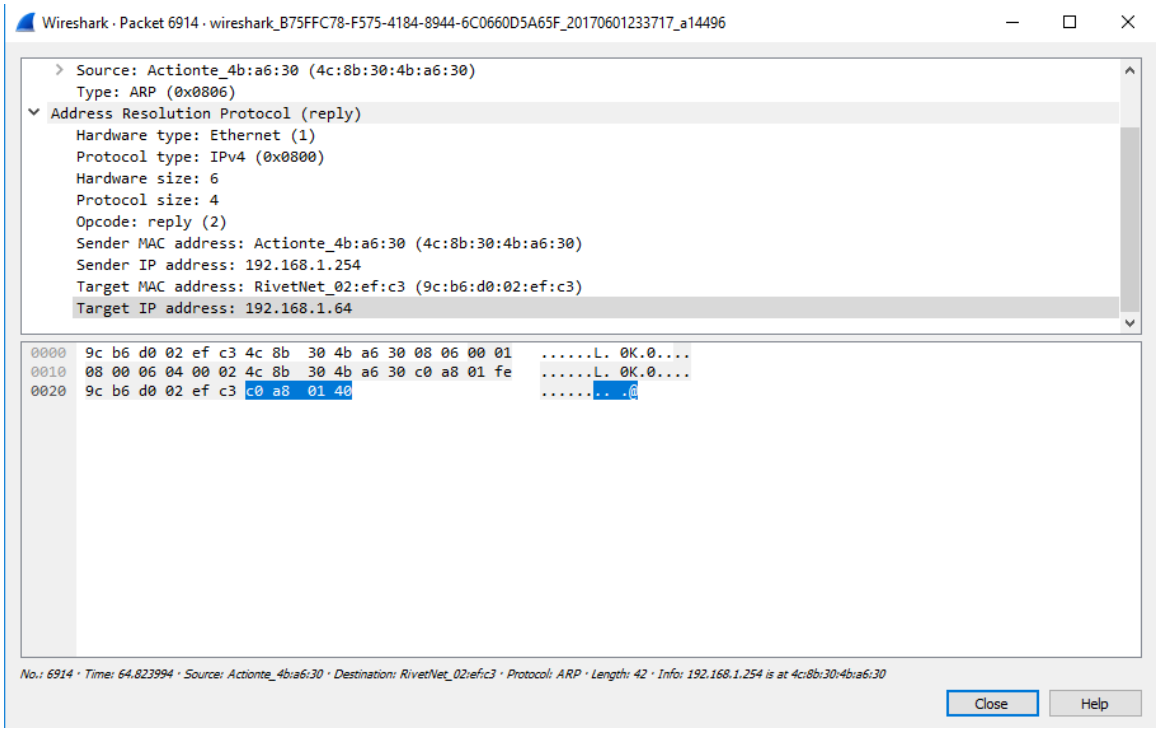
No.	Time	Source	Destination	Protocol	Length	Info
325	15.736242	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x6aa3dac0
326	15.743955	192.168.1.254	192.168.1.64	DHCP	328	DHCP Offer - Transaction ID 0x6aa3dac0
327	15.744339	0.0.0.0	255.255.255.255	DHCP	369	DHCP Request - Transaction ID 0x6aa3dac0
329	15.753530	192.168.1.254	192.168.1.64	DHCP	328	DHCP ACK - Transaction ID 0x6aa3dac0
2555	40.880406	192.168.1.64	192.168.1.254	DHCP	357	DHCP Request - Transaction ID 0xb0c148ea
2557	40.887077	192.168.1.254	192.168.1.64	DHCP	328	DHCP ACK - Transaction ID 0xb0c148ea
6049	52.086243	192.168.1.64	192.168.1.254	DHCP	342	DHCP Release - Transaction ID 0xfd31fa9a
6898	64.778823	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x2072ac27
6899	64.785618	192.168.1.254	192.168.1.64	DHCP	328	DHCP Offer - Transaction ID 0x2072ac27
6900	64.786017	0.0.0.0	255.255.255.255	DHCP	369	DHCP Request - Transaction ID 0x2072ac27
6909	64.805102	192.168.1.254	192.168.1.64	DHCP	328	DHCP ACK - Transaction ID 0x2072ac27

14. Yes, there are ARP packets. The first screenshot below is an ARP packet received by client from DHCP server. The packets 6913 and 6914 (the second screenshot) is to make a connection between the local IP address with corresponding mac address.



6913	64.821137	RivetNet_02…	Broadcast	ARP	42	Who has 192.168.1.254? Tell 192.168.1.64
6914	64.823994	Actionte_4b…	RivetNet_02:e…	ARP	42	192.168.1.254 is at 4c:8b:30:4b:a6:30