

# EE450

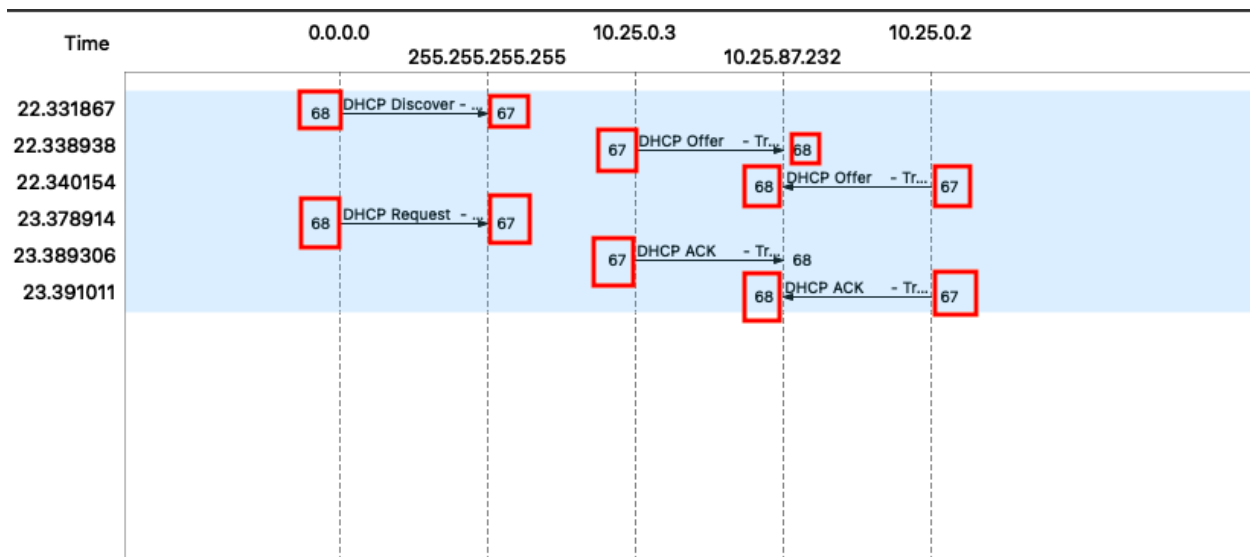
## Lab2 Report

Yuhang Xiao

1.  
DHCP is sent over UDP as shown in the figure.

```
> Frame 21: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface en0, id 0
> Ethernet II, Src: Apple_cd:74:12 (08:6d:41:cd:74:12), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Discover)
```

2.  
Discover DHCP: src port: 68 dst port: 67  
Offer DHCP: src port: 67 dst port: 68  
Request DHCP: src port: 68 dst port: 67  
ACK DHCP: src port: 67 dst port: 68  
The port number is the same as examples.



3.  
The link-layer address of my host is 08:6d:41:cd:74:12.

```
> Frame 21: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface en0, id 0
> Ethernet II, Src: Apple_cd:74:12 (08:6d:41:cd:74:12), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Destination: Broadcast (ff:ff:ff:ff:ff:ff)
> Source: Apple_cd:74:12 (08:6d:41:cd:74:12)
  Address: Apple_cd:74:12 (08:6d:41:cd:74:12)
  .... ..0. .... = LG bit: Globally unique address (factory default)
  .... ..0. .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
```

4.

The value 'Option: (53) DHCP Message Type' differentiates the Discover and Request message.

No.	Time	Source	Destination	Protocol	Length	Info
21	17.025005	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66ccd
24	18.064758	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66ccd
26	19.070766	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccd
27	20.072054	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccd
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce

Transaction ID: 0x19b66ccd  
Seconds elapsed: 0

- > Bootp flags: 0x0000 (Unicast)
- Client IP address: 0.0.0.0
- Your (client) IP address: 0.0.0.0
- Next server IP address: 0.0.0.0
- Relay agent IP address: 0.0.0.0
- Client MAC address: Apple\_cd:74:12 (08:6d:41:cd:74:12)
- Client hardware address padding: 00000000000000000000
- Server host name not given
- Boot file name not given
- Magic cookie: DHCP
- Option: (53) DHCP Message Type (Discover)**
- > Option: (55) Parameter Request List
- > Option: (57) Maximum DHCP Message Size
- > Option: (61) Client identifier
- > Option: (51) IP Address Lease Time

No.	Time	Source	Destination	Protocol	Length	Info
21	17.025005	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66ccd
24	18.064758	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66ccd
26	19.070766	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccd
27	20.072054	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccd
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce

Transaction ID: 0x19b66ccd  
Seconds elapsed: 2

- > Bootp flags: 0x0000 (Unicast)
- Client IP address: 0.0.0.0
- Your (client) IP address: 0.0.0.0
- Next server IP address: 0.0.0.0
- Relay agent IP address: 0.0.0.0
- Client MAC address: Apple\_cd:74:12 (08:6d:41:cd:74:12)
- Client hardware address padding: 00000000000000000000
- Server host name not given
- Boot file name not given
- Magic cookie: DHCP
- > Option: (53) DHCP Message Type (Request)**
- > Option: (55) Parameter Request List
- > Option: (57) Maximum DHCP Message Size
- > Option: (61) Client identifier
- > Option: (50) Requested IP Address (10.25.87.232)

5.

First set transaction ID: 0x19b66cce

Second set transaction ID: 0x19b66ccf

The purpose is to differentiate among groups of DHCP messages.

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1286	28.430509	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
1287	28.430511	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
1307	28.953588	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
1308	28.953596	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
2079	42.720196	10.25.87.232	10.17.14.12	DHCP	342	DHCP Release - Transaction ID 0x19b66cd0
2094	53.211128	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0xa72fd663
2095	53.218858	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0xa72fd663
2096	53.224989	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0xa72fd663

6.

Discover DHCP: SIP: 0.0.0.0 DIP: 255.255.255.255

Offer DHCP: SIP: 10.25.0.3 DIP: 10.25.87.232 and SIP: 10.25.0.2 DIP: 10.25.87.232

Request DHCP: SIP: 0.0.0.0 DIP: 255.255.255.255

ACK DHCP: SIP: 10.25.0.3 DIP: 10.25.87.232 and SIP: 10.25.0.2 DIP: 10.25.87.232

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1286	28.430509	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
1287	28.430511	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
1307	28.953588	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf
1308	28.953596	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

7.

The IP address of DHCP server is 10.17.14.11

> Bootp flags: 0x0000 (Unicast)
Client IP address: 0.0.0.0
Your (client) IP address: 10.25.87.232
Next server IP address: 0.0.0.0
Relay agent IP address: 10.25.0.3
Client MAC address: Apple_cd:74:12 (08:6d:41:cd:74:12)
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
> Option: (53) DHCP Message Type (Offer)
> Option: (54) DHCP Server Identifier (10.17.14.11)
> Option: (51) IP Address Lease Time

8.

The offered IP address is 10.25.87.232

Offer, Request and ACK DHCP messages contains the offered IP address as shown below.

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1206	28.120500	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

Hardware address length: 6  
Hops: 2  
Transaction ID: 0x19b66cce  
Seconds elapsed: 0  
> Bootp flags: 0x0000 (Unicast)  
Client IP address: 0.0.0.0  
**Your (client) IP address: 10.25.87.232**

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1206	28.120500	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

Client IP address: 0.0.0.0  
Your (client) IP address: 0.0.0.0  
Next server IP address: 0.0.0.0  
Relay agent IP address: 0.0.0.0  
Client MAC address: Apple\_cd:74:12 (08:6d:41:cd:74:12)  
Client hardware address padding: 00000000000000000000  
Server host name not given  
Boot file name not given  
Magic cookie: DHCP  
> Option: (53) DHCP Message Type (Request)  
> Option: (55) Parameter Request List  
> Option: (57) Maximum DHCP Message Size  
> Option: (61) Client identifier  
**> Option: (50) Requested IP Address (10.25.87.232)**  
> Option: (54) DHCP Server Identifier (10.17.14.11)  
> Option: (255) End  
Padding: 00

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1206	28.120500	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

Transaction ID: 0x19b66cce  
Seconds elapsed: 1  
> Bootp flags: 0x0000 (Unicast)  
Client IP address: 0.0.0.0  
**Your (client) IP address: 10.25.87.232**

9.

In the example screenshot, the 'Relay agent IP address: 0.0.0.0 (0.0.0.0)' indicates that there is no relay agent. In my experiment, I have relay agent and the IP addresses are 10.25.0.3 and 10.25.0.2

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1206	28.170500	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

Transaction ID: 0x19b66cce	
Seconds elapsed: 0	
> Bootp flags: 0x0000 (Unicast)	
Client IP address: 0.0.0.0	
Your (client) IP address: 10.25.87.232	
Next server IP address: 0.0.0.0	
Relay agent IP address: 10.25.0.3	
Client MAC address: Apple_cd:74:12 (08:6d:41:cd:74:12)	
Client hardware address padding: 00000000000000000000	

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1206	28.170500	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

Transaction ID: 0x19b66cce	
Seconds elapsed: 0	
> Bootp flags: 0x0000 (Unicast)	
Client IP address: 0.0.0.0	
Your (client) IP address: 10.25.87.232	
Next server IP address: 0.0.0.0	
Relay agent IP address: 10.25.0.2	
Client MAC address: Apple_cd:74:12 (08:6d:41:cd:74:12)	
Client hardware address padding: 00000000000000000000	

10.

Tell the client the default gateway to send messages and which subnet mask to use.

✓ Option: (1) Subnet Mask (255.255.0.0)
Length: 4
Subnet Mask: 255.255.0.0
✓ Option: (3) Router
Length: 4
Router: 10.25.0.1

11.

The client accepted the offered IP address and requested the IP address in the Request DHCP message located in 'Option: (50) Requested IP Address (10.25.87.232)'.

No.	Time	Source	Destination	Protocol	Length	Info
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer - Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66cce
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf
1206	28.420500	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK - Transaction ID 0x19b66ccf

```

Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 0.0.0.0
Client MAC address: Apple_cd:74:12 (08:6d:41:cd:74:12)
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
> Option: (53) DHCP Message Type (Request)
> Option: (55) Parameter Request List
> Option: (57) Maximum DHCP Message Size
> Option: (61) Client identifier
> Option: (50) Requested IP Address (10.25.87.232)
> Option: (54) DHCP Server Identifier (10.17.14.11)
> Option: (255) End
Padding: 0000000000000000000000000000000000000000

```

12.

The purpose of lease time is to tell the client how long can it use this offered IP address. In my experiment, the lease time is 30 minutes.

```

Your (client) IP address: 10.25.87.232
Next server IP address: 0.0.0.0
Relay agent IP address: 10.25.0.3
Client MAC address: Apple_cd:74:12 (08:6d:41:cd:74:12)
Client hardware address padding: 000000000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
> Option: (53) DHCP Message Type (ACK)
> Option: (54) DHCP Server Identifier (10.17.14.11)
> Option: (51) IP Address Lease Time
  Length: 4
  IP Address Lease Time: (1800s) 30 minutes
> Option: (1) Subnet Mask (255.255.0.0)
> Option: (3) Router
> Option: (6) Domain Name Server
> Option: (15) Domain Name

```



13.

The purpose of DHCP Release message is to tell the server to end the lease of the offered IP address. There is no ACK sent for the DHCP Release message as shown in the picture. If the release message is lost, the DHCP server will not reuse the offered IP address until the lease time is over.

2079	42.720196	10.25.87.232	10.17.14.12	DHCP	342	DHCP Release	- Transaction ID 0x19b66cd0
2094	53.211128	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover	- Transaction ID 0xa72fd663
2095	53.218858	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer	- Transaction ID 0xa72fd663
2096	53.224989	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer	- Transaction ID 0xa72fd663
2102	54.260373	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request	- Transaction ID 0xa72fd663
2103	54.285084	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK	- Transaction ID 0xa72fd663
2104	54.285091	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK	- Transaction ID 0xa72fd663

14.

There are many ARP packets sent or received during the period of exchanging DHCP packets as shown in the below picture.

Purpose:

--ARP Probe: ensure that the offered IP address is not assigned to other hosts.

--ARP Announcement: tell other hosts in the same network the associated MAC address with the offered IP address.

--Other ARP: help the host with newly-assigned IP address to find the MAC address of the router.

(dhcp)    (arp)							
No.	Time	Source	Destination	Protocol	Length	Info	
28	22.331867	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover	- Transaction ID 0x19b66cce
31	22.338938	10.25.0.3	10.25.87.232	DHCP	344	DHCP Offer	- Transaction ID 0x19b66cce
32	22.340154	10.25.0.2	10.25.87.232	DHCP	344	DHCP Offer	- Transaction ID 0x19b66cce
39	23.378914	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request	- Transaction ID 0x19b66cce
40	23.389306	10.25.0.3	10.25.87.232	DHCP	344	DHCP ACK	- Transaction ID 0x19b66cce
41	23.390093	Apple_cd:74:12	Broadcast	ARP	42	Who has 10.25.87.232? (ARP Probe)	
42	23.391011	10.25.0.2	10.25.87.232	DHCP	344	DHCP ACK	- Transaction ID 0x19b66cce
44	23.394253	Apple_cd:74:12	Apple_cd:74:12	ARP	56	Who has 10.25.87.232? (ARP Probe)	
46	23.773984	Apple_cd:74:12	Broadcast	ARP	42	Who has 10.25.87.232? (ARP Probe)	
47	23.781744	Apple_cd:74:12	Apple_cd:74:12	ARP	56	Who has 10.25.87.232? (ARP Probe)	
48	24.040175	Apple_cd:74:12	Broadcast	ARP	42	Who has 10.25.87.232? (ARP Probe)	
49	24.043697	Apple_cd:74:12	Apple_cd:74:12	ARP	56	Who has 10.25.87.232? (ARP Probe)	
50	24.363466	Apple_cd:74:12	Broadcast	ARP	42	ARP Announcement for 10.25.87.232	
52	24.756813	Apple_cd:74:12	Broadcast	ARP	42	ARP Announcement for 10.25.87.232	
53	25.104017	Apple_cd:74:12	Broadcast	ARP	42	ARP Announcement for 10.25.87.232	
54	25.113864	Apple_cd:74:12	Broadcast	ARP	42	Who has 10.25.0.1? Tell 10.25.87.232	
55	25.116248	0a:bb:cc:dd:ee:ff	Apple_cd:74:12	ARP	56	10.25.0.1 is at 0a:bb:cc:dd:ee:ff	
56	25.116572	0a:bb:cc:dd:ee:ff	Apple_cd:74:12	ARP	56	10.25.0.1 is at 0a:bb:cc:dd:ee:ff	
61	25.638577	Apple_cd:74:12	Broadcast	ARP	42	Who has 10.25.0.1? Tell 10.25.87.232	
62	25.642474	0a:bb:cc:dd:ee:ff	Apple_cd:74:12	ARP	56	10.25.0.1 is at 0a:bb:cc:dd:ee:ff	
63	25.642480	0a:bb:cc:dd:ee:ff	Apple_cd:74:12	ARP	56	10.25.0.1 is at 0a:bb:cc:dd:ee:ff	
1202	28.163466	Apple_cd:74:12	0a:bb:cc:dd:ee:ff	ARP	42	Who has 10.25.0.1? Tell 10.25.87.232	
1203	28.164195	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x19b66ccf	
1209	28.165646	0a:bb:cc:dd:ee:ff	Apple_cd:74:12	ARP	56	10.25.0.1 is at 0a:bb:cc:dd:ee:ff	