

Assignment 9

DHCP

1. The DHCP Discover message is sent out using **UDP** as the underlying transport protocol.
2. Source IP address: **0.0.0.0**

The 0.0.0.0 IP address indicates that the source hasn't been allotted any IP address yet and therefore it is using the default IP address as 0.0.0.0

dhcp						
No.	Time	Source	Destination	Protocol	Length	Info
512	32.261563359	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x99a02b7e

3. Destination IP address: **255.255.255.255**

This means that just like a network broadcast IP this message will be transmitted to all network adapters on the local network segment.

4. Transaction ID: **0x99a02b7e**

Transaction ID: 0x99a02b7e

5. The pieces of information that the client is suggesting or requesting to receive from the DHCP server as part of this DHCP transaction are:

- a. **DHCP message type**
- b. **Host Name**
- c. **Parameter Request List**

- > Option: (53) DHCP Message Type (Discover)
- > Option: (50) Requested IP Address (10.250.61.42)
- > Option: (12) Host Name
- > Option: (55) Parameter Request List
- > Option: (255) End

6. The Discover and the offer message has the same transaction IDs (i.e. **0x99a02b7e**)

dhcp						
No.	Time	Source	Destination	Protocol	Length	Info
512	32.261563359	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x99a02b7e
513	32.262360757	10.250.61.250	10.250.61.60	DHCP	316	DHCP Offer - Transaction ID 0x99a02b7e
515	32.262791570	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

Transaction ID: 0x99a02b7e

0000ff ff ff ff ff ff d8 5e d3 54 2f a7

dhcp						
No.	Time	Source	Destination	Protocol	Length	Info
512	32.261563359	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x99a02b7e
513	32.262360757	10.250.61.250	10.250.61.60	DHCP	316	DHCP Offer - Transaction ID 0x99a02b7e
515	32.262791570	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

Transaction ID: 0x99a02b7e

0000d8 5e d3 54 2f a7 02 04 96 9a 82 e

7. Source IP address: **10.250.61.250**

This is the IP address of the DHCP server.

dhcp						
No.	Time	Source	Destination	Protocol	Length	Info
512	32.261563359	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x99a02b7e
513	32.262360757	10.250.61.250	10.250.61.60	DHCP	316	DHCP Offer - Transaction ID 0x99a02b7e

8. Destination IP address: **10.250.61.60**

This is the new IP address that will be allotted to the client.

9. The pieces of information that the DHCP server is providing to the DHCP client in the DHCP offer message are:

- DHCP Message Type (Offer)**
- DHCP Server Identifier (10.240.200.1)**
- IP Address Lease Time**
- Subnet Mask (255.255.248.0)**
- Domain Name server**
- Router**

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> Option: (51) IP Address Lease Time
> Option: (53) DHCP Message Type (Offer)
> Option: (1) Subnet Mask (255.255.255.0)
> Option: (54) DHCP Server Identifier (10.250.61.250)
> Option: (3) Router
> Option: (6) Domain Name Server
> Option: (255) End
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10. UDP Source Port: **68**

UDP Destination Port: **67**

515	32.262791570	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

User Datagram Protocol, Src Port: 68, Dst Port: 67				0000	ff ff ff ff ff ff d8 5e d3 54
Source Port: 68				0010	01 48 00 00 00 00 80 11 39 96
Destination Port: 67				0020	ff ff 00 44 00 43 01 34 63 8c
				0030	7b 7c aa aa aa aa aa aa aa

11. Source IP address: **0.0.0.0**

It would be 0.0.0.0 because the host doesn't have an IP address assigned to it yet.

12. Destination IP address: **255.255.255.255**

This means that just like a network broadcast IP this message will be transmitted to all network adapters on the local network segment.

13. Transaction ID: **0x99a02b7e**

515	32.262791570	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

Transaction ID: 0x99a02b7e				0000	ff ff ff ff ff ff d8 5e d3 54
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Yes, it matches the transaction ID of the earlier Discover message and Offer message.

14. There is **no difference** between the entries in the '**Parameter Request List**' option in the request message and the same list option in the earlier Discover message.

The Discover message

dhcp						
No.	Time	Source	Destination	Protocol	Length	Info
512	32.261563359	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x99a02b7e
513	32.262360757	10.250.61.250	10.250.61.60	DHCP	316	DHCP Offer - Transaction ID 0x99a02b7e
515	32.262791570	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

Server host name not given	0000	ff ff ff ff ff ff d8 5e d3 54
Boot file name not given	0010	01 48 00 00 00 00 80 11 39 96
Magic cookie: DHCP	0020	ff ff 00 44 00 43 01 34 70 0b
> Option: (53) DHCP Message Type (Discover)	0030	2b 7e 00 00 00 00 00 00 00 00
> Option: (50) Requested IP Address (10.250.61.42)	0040	00 00 00 00 00 00 d8 5e d3 54
> Option: (12) Host Name	0050	00 00 00 00 00 00 00 00 00 00
> Option: (55) Parameter Request List	0060	00 00 00 00 00 00 00 00 00 00
Length: 13	0070	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (1) Subnet Mask	0080	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (28) Broadcast Address	0090	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (2) Time Offset	00a0	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (3) Router	00b0	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (15) Domain Name	00c0	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (6) Domain Name Server	00d0	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (119) Domain Search	00e0	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (12) Host Name	00f0	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server	0100	00 00 00 00 00 00 00 00 00 00
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope	0110	00 00 00 00 00 00 63 82 53 63
Parameter Request List Item: (26) Interface MTU	0120	fa 3d 2a 0c 04 75 73 65 72 37
Parameter Request List Item: (121) Classless Static Route	0130	06 77 0c 2c 2f 1a 79 2a ff 00
Parameter Request List Item: (42) Network Time Protocol Servers	0140	00 00 00 00 00 00 00 00 00 00
	0150	00 00 00 00 00 00

The Request message

515	32.262791570	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x99a02b7e
516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK - Transaction ID 0x99a02b7e

Length: 4	0000	ff ff ff ff ff ff d8 5e d3 54 2
Requested IP Address: 10.250.61.60	0010	01 48 00 00 00 00 80 11 39 96 0
> Option: (12) Host Name	0020	ff ff 00 44 00 43 01 34 63 8c 0
Length: 4	0030	2b 7e 00 00 00 00 00 00 00 00 0
Host Name: user	0040	00 00 00 00 00 00 d8 5e d3 54 2
> Option: (55) Parameter Request List	0050	00 00 00 00 00 00 00 00 00 00 0
Length: 13	0060	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (1) Subnet Mask	0070	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (28) Broadcast Address	0080	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (2) Time Offset	0090	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (3) Router	00a0	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (15) Domain Name	00b0	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (6) Domain Name Server	00c0	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (119) Domain Search	00d0	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (12) Host Name	00e0	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server	00f0	00 00 00 00 00 00 00 00 00 00 0
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope	0100	00 00 00 00 00 00 63 82 53 63 3
Parameter Request List Item: (26) Interface MTU	0110	fa 3d fa 32 04 0a fa 3d 3c 0c 0
Parameter Request List Item: (121) Classless Static Route	0120	0d 01 1c 02 03 0f 06 77 0c 2c 2
Parameter Request List Item: (42) Network Time Protocol Servers	0130	00 00 00 00 00 00 00 00 00 00 0
	0140	00 00 00 00 00 00
	0150	00 00 00 00 00 00

15. Source IP address: 10.250.61.250

This is the IP address of the DHCP server.

16. Destination IP address: 10.250.61.60

This is the new IP address that will be allotted to the client.

516	32.263695737	10.250.61.250	10.250.61.60	DHCP	316	DHCP ACK
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Your (client) IP address: 10.250.61.60	0000
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17. The name of the field in the DHCP ACK message that contains the assigned client IP address is: **Your (client) IP address**

18. The DHCP server assigned this IP address to the client for **2 hours**.

- ✓ Option: (51) IP Address Lease Time
 - Length: 4
 - IP Address Lease Time: 2 hours (7200)

19. The IP address of the first-hop router on the default path from the client to the rest of the Internet is: **10.250.61.250**

- ✓ Option: (3) Router
 - Length: 4
 - Router: 10.250.61.250