

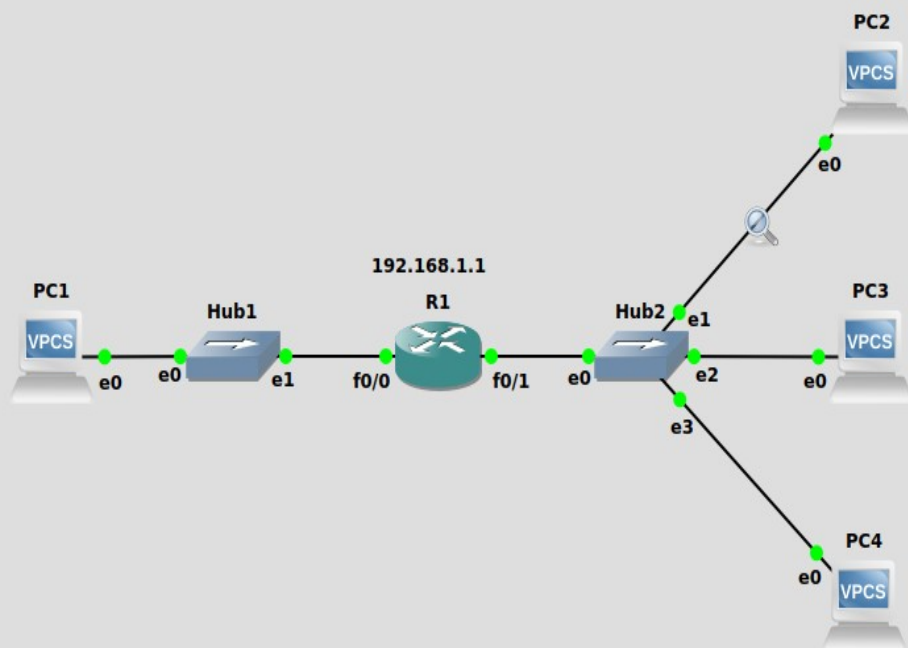
190905514
ROLLNO : 62

MOHAMMAD TOFIK
SECTION : C

BATCH : C3
SEM : 5th

-: CN-LAB-6 :-

LAB EXERCISE :



Router R1 Configuration :

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#int f0/1
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#exit
*Mar  1 00:01:33.979: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed s
tate to up
*Mar  1 00:01:34.979: %LINEPROTO-5-UPDOWN: Line protocol on Interface Fast
Ethernet0/1, changed state to up
R1(config-if)#exit
R1(config)#ip dhcp pool myWebPool1
R1(dhcp-config)#network 192.168.1.0 255.255.255.0
R1(dhcp-config)#exit
R1(config)#exit
R1#
*Mar  1 00:02:59.635: %SYS-5-CONFIG_I: Configured from console by console
R1#wr
Building configuration...
[OK]
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip dhcp excluded-address 192.168.1.1 192.168.1.10
R1(config)#ip dhcp pool myWebPool1
R1(dhcp-config)#default-router 192.168.1.1
R1(dhcp-config)#dns-server 1.1.1.1
R1(dhcp-config)#exit
R1(config)#exit
R1#
*Mar  1 00:05:10.711: %SYS-5-CONFIG_I: Configured from console by console
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#hostname DHCP-SERVER
DHCP-SERVER(config)#end
DHCP-SERVER#
*Mar  1 00:05:45.587: %SYS-5-CONFIG_I: Configured from console by console
DHCP-SERVER#wr
Building configuration...
[OK]
```

```
R1
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip dhcp excluded-address 192.168.1.1 192.168.1.10
R1(config)#ip dhcp pool myWebPool1
R1(dhcp-config)#default-router 192.168.1.1
R1(dhcp-config)#dns-server 1.1.1.1
R1(dhcp-config)#exit
R1(config)#exit
R1#
*Mar  1 00:05:10.711: %SYS-5-CONFIG_I: Configured from console by console
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#hostname DHCP-SERVER
DHCP-SERVER(config)#end
DHCP-SERVER#
*Mar  1 00:05:45.587: %SYS-5-CONFIG_I: Configured from console by console
DHCP-SERVER#wr
Building configuration...
[OK]
DHCP-SERVER#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
DHCP-SERVER(config)#int f0/0
DHCP-SERVER(config-if)#ip address 192.168.1.1
% Incomplete command.

DHCP-SERVER(config-if)#ip address 192.168.1.1 255.255.255.0
% 192.168.1.0 overlaps with FastEthernet0/1
DHCP-SERVER(config-if)#ip address 192.168.1.2 255.255.255.0
% 192.168.1.0 overlaps with FastEthernet0/1
DHCP-SERVER(config-if)#no sh
% 192.168.1.0 overlaps with FastEthernet0/1
FastEthernet0/0: incorrect IP address assignment
DHCP-SERVER(config-if)#exit
DHCP-SERVER(config)#ip dhcp pool myWebPool1
DHCP-SERVER(dhcp-config)#network 192.168.1.0 255.255.255.0
DHCP-SERVER(dhcp-config)#exit
DHCP-SERVER(config)#ip dhcp excluded-address 192.168.1.2 192.168.1.10
DHCP-SERVER(config)#ip dhcp pool myWebPool1
DHCP-SERVER(dhcp-config)#default-router 192.168.1.1
```

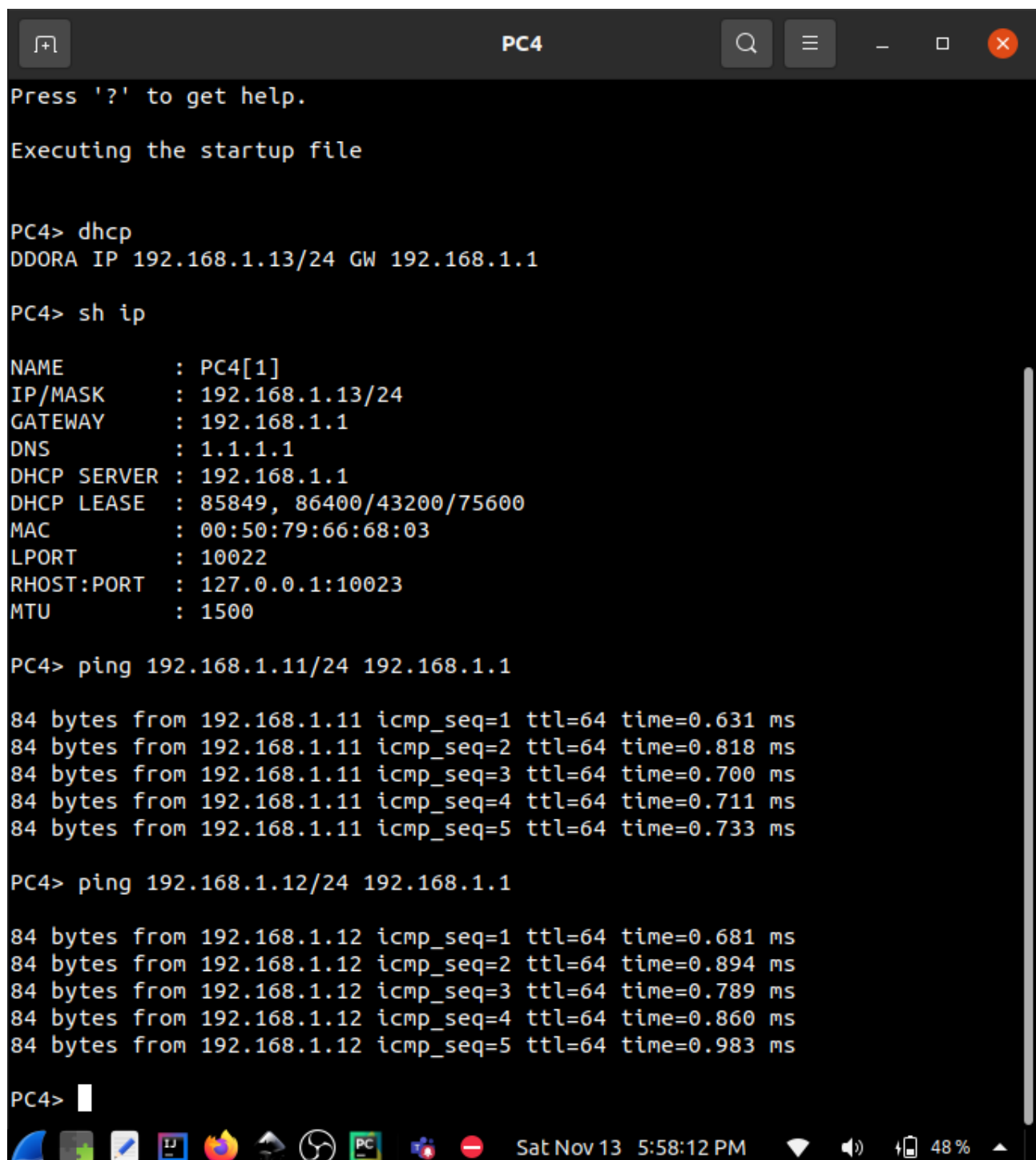
```

DHCP-SERVER#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DHCP-SERVER(config)#int f0/0
DHCP-SERVER(config-if)#ip address 192.168.1.1
% Incomplete command.

DHCP-SERVER(config-if)#ip address 192.168.1.1 255.255.255.0
% 192.168.1.0 overlaps with FastEthernet0/1
DHCP-SERVER(config-if)#ip address 192.168.1.2 255.255.255.0
% 192.168.1.0 overlaps with FastEthernet0/1
DHCP-SERVER(config-if)#no sh
% 192.168.1.0 overlaps with FastEthernet0/1
FastEthernet0/0: incorrect IP address assignment
DHCP-SERVER(config-if)#exit
DHCP-SERVER(config)#ip dhcp pool myWebPool1
DHCP-SERVER(dhcp-config)#network 192.168.1.0 255.255.255.0
DHCP-SERVER(dhcp-config)#exit
DHCP-SERVER(config)#ip dhcp excluded-address 192.168.1.2 192.168.1.10
DHCP-SERVER(config)#ip dhcp pool myWebPool1
DHCP-SERVER(dhcp-config)#default-router 192.168.1.1
DHCP-SERVER(dhcp-config)#dns-server 1.1.1.1
DHCP-SERVER(dhcp-config)#lease 1
DHCP-SERVER(dhcp-config)#exit
DHCP-SERVER(config)#exit
DHCP-SERVER#
*Mar  1 00:15:34.395: %SYS-5-CONFIG_I: Configured from console by console
DHCP-SERVER#sh ip dhcp binding
Bindings from all pools not associated with VRF:
IP address          Client-ID/
                   Hardware address/
                   User name
192.168.1.11        0100.5079.6668.01      Mar 02 2002 12:07 AM    Automa
tic
192.168.1.12        0100.5079.6668.02      Mar 02 2002 12:07 AM    Automa
tic
192.168.1.13        0100.5079.6668.03      Mar 02 2002 12:08 AM    Automa
tic
DHCP-SERVER#

```

ping pc4 to pc2 and pc3 :



The image shows a terminal window titled "PC4" with a dark background. The terminal displays the following text:

```
Press '?' to get help.
Executing the startup file

PC4> dhcp
DDORA IP 192.168.1.13/24 GW 192.168.1.1

PC4> sh ip

NAME          : PC4[1]
IP/MASK        : 192.168.1.13/24
GATEWAY        : 192.168.1.1
DNS            : 1.1.1.1
DHCP SERVER    : 192.168.1.1
DHCP LEASE     : 85849, 86400/43200/75600
MAC            : 00:50:79:66:68:03
LPORT         : 10022
RHOST:PORT     : 127.0.0.1:10023
MTU            : 1500

PC4> ping 192.168.1.11/24 192.168.1.1

84 bytes from 192.168.1.11 icmp_seq=1 ttl=64 time=0.631 ms
84 bytes from 192.168.1.11 icmp_seq=2 ttl=64 time=0.818 ms
84 bytes from 192.168.1.11 icmp_seq=3 ttl=64 time=0.700 ms
84 bytes from 192.168.1.11 icmp_seq=4 ttl=64 time=0.711 ms
84 bytes from 192.168.1.11 icmp_seq=5 ttl=64 time=0.733 ms

PC4> ping 192.168.1.12/24 192.168.1.1

84 bytes from 192.168.1.12 icmp_seq=1 ttl=64 time=0.681 ms
84 bytes from 192.168.1.12 icmp_seq=2 ttl=64 time=0.894 ms
84 bytes from 192.168.1.12 icmp_seq=3 ttl=64 time=0.789 ms
84 bytes from 192.168.1.12 icmp_seq=4 ttl=64 time=0.860 ms
84 bytes from 192.168.1.12 icmp_seq=5 ttl=64 time=0.983 ms

PC4> 
```

The terminal window has a standard Linux-style title bar with a search icon, a menu icon, and window control buttons (minimize, maximize, close). At the bottom of the window, there is a taskbar with various application icons (including a web browser, a file manager, and a terminal) and system status information: "Sat Nov 13 5:58:12 PM", a Wi-Fi signal icon, a speaker icon, a battery icon showing 48%, and a network icon.

ping pc3 to pc4 and pc2

```
PC3
Press '?' to get help.
Executing the startup file

PC3> dhcp
DDORA IP 192.168.1.12/24 GW 192.168.1.1

PC3> sh ip

NAME       : PC3[1]
IP/MASK    : 192.168.1.12/24
GATEWAY    : 192.168.1.1
DNS        : 1.1.1.1
DHCP SERVER : 192.168.1.1
DHCP LEASE  : 85809, 86400/43200/75600
MAC        : 00:50:79:66:68:02
LPORT      : 10020
RHOST:PORT  : 127.0.0.1:10021
MTU        : 1500

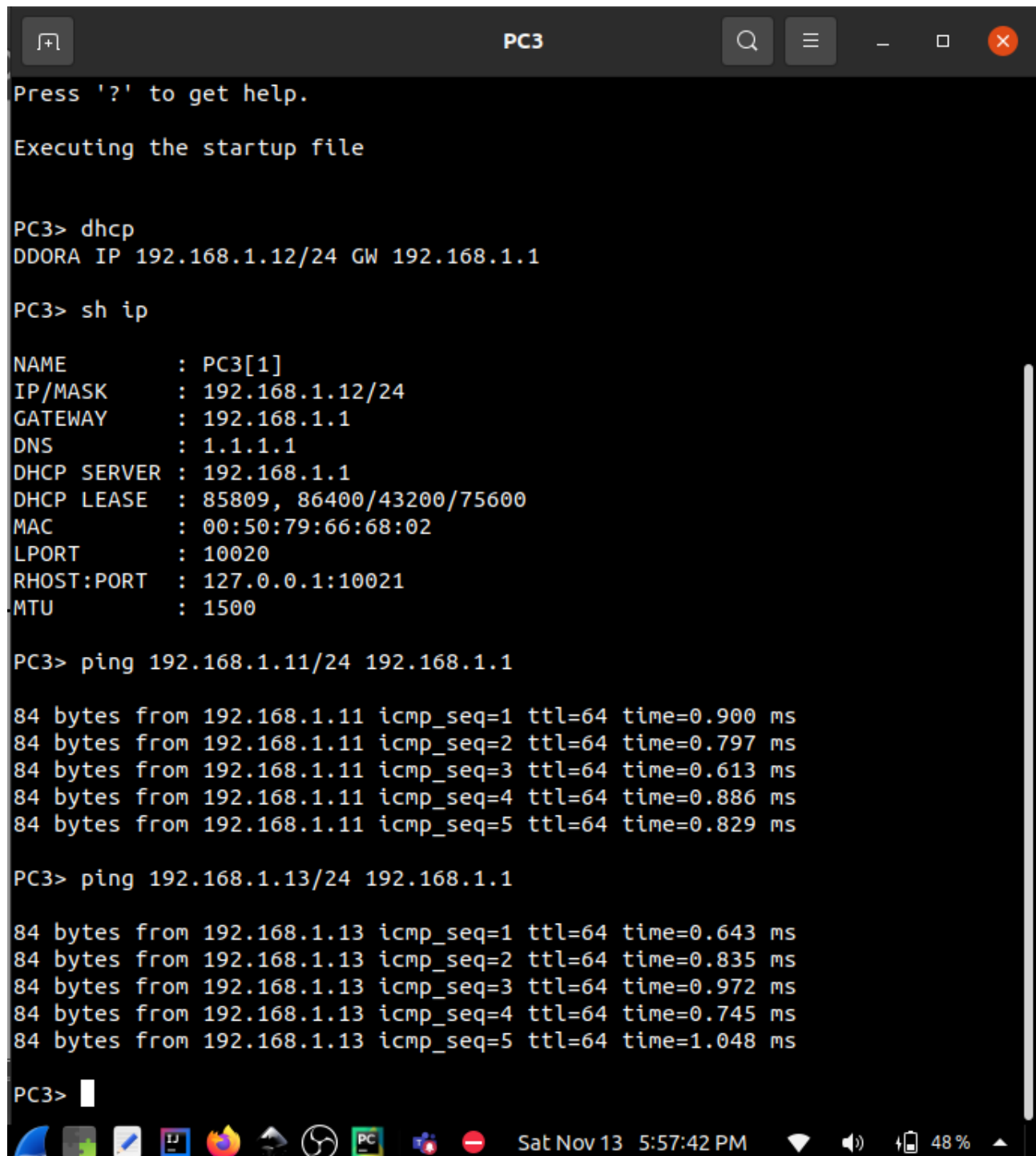
PC3> ping 192.168.1.11/24 192.168.1.1

84 bytes from 192.168.1.11 icmp_seq=1 ttl=64 time=0.900 ms
84 bytes from 192.168.1.11 icmp_seq=2 ttl=64 time=0.797 ms
84 bytes from 192.168.1.11 icmp_seq=3 ttl=64 time=0.613 ms
84 bytes from 192.168.1.11 icmp_seq=4 ttl=64 time=0.886 ms
84 bytes from 192.168.1.11 icmp_seq=5 ttl=64 time=0.829 ms

PC3> ping 192.168.1.13/24 192.168.1.1

84 bytes from 192.168.1.13 icmp_seq=1 ttl=64 time=0.643 ms
84 bytes from 192.168.1.13 icmp_seq=2 ttl=64 time=0.835 ms
84 bytes from 192.168.1.13 icmp_seq=3 ttl=64 time=0.972 ms
84 bytes from 192.168.1.13 icmp_seq=4 ttl=64 time=0.745 ms
84 bytes from 192.168.1.13 icmp_seq=5 ttl=64 time=1.048 ms

PC3> 
```

The image shows a terminal window titled "PC3" with standard window controls (search, menu, zoom, close). The terminal displays the execution of a startup file, followed by the configuration of a DHCP client (DDORA) with IP 192.168.1.12/24 and gateway 192.168.1.1. Then, the command "sh ip" is used to display the current network configuration, which includes the interface name PC3[1], IP address, gateway, DNS server, DHCP server, lease time, MAC address, local port, remote host/port, and MTU. Finally, two ping commands are executed: one to 192.168.1.11 and another to 192.168.1.13, both showing successful results with varying response times. The terminal window is overlaid on a desktop environment with various icons in the taskbar and a system tray at the bottom showing the date and time as Saturday, November 13, 5:57:42 PM, along with network, volume, and battery status.

Wireshark output for ping from PC2 to PC4

The screenshot shows a Wireshark capture on interface 0. The packet list displays several ICMP Echo (ping) requests and replies. The first request is from 192.168.3.2 to 192.168.3.4 with sequence number 1. The corresponding reply is also from 192.168.3.2 to 192.168.3.4 with sequence number 1. The packet details pane shows the Internet Protocol Version 4 header and the Internet Control Message Protocol (ICMP) header. The ICMP header indicates a Type of 0 (Echo (ping) reply) and a Code of 0. The packet bytes pane shows the raw data of the ICMP Echo (ping) reply.

No.	Time	Source	Destination	Protocol	Length	Info
14	114.496450	ca:01:13:e4:00:38	ca:01:13:e4:00:38	LOOP	60	Reply
15	121.113136	Private_66:68:01	Broadcast	ARP	64	Who has 192.168.3.4? Tell 192.168.3.2 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
16	121.113489	Private_66:68:01	Private_66:68:01	ARP	64	192.168.3.4 is at 00:50:79:66:68:03 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
17	121.114134	192.168.3.2	192.168.3.4	ICMP	98	Echo (ping) request id=0xac3b, seq=1/256, ttl=64 (reply in 18)
18	121.114134	192.168.3.4	192.168.3.2	ICMP	98	Echo (ping) reply id=0xac3b, seq=1/256, ttl=64 (request in 17)
19	122.115350	192.168.3.2	192.168.3.4	ICMP	98	Echo (ping) request id=0xad3b, seq=2/512, ttl=64 (reply in 20)
20	122.115767	192.168.3.4	192.168.3.2	ICMP	98	Echo (ping) reply id=0xad3b, seq=2/512, ttl=64 (request in 19)
21	123.116626	192.168.3.2	192.168.3.4	ICMP	98	Echo (ping) request id=0xae3b, seq=3/768, ttl=64 (reply in 22)
22	123.116925	192.168.3.4	192.168.3.2	ICMP	98	Echo (ping) reply id=0xae3b, seq=3/768, ttl=64 (request in 21)
23	124.117765	192.168.3.2	192.168.3.4	ICMP	98	Echo (ping) request id=0xaf3b, seq=4/1024, ttl=64 (reply in 24)
24	124.118101	192.168.3.4	192.168.3.2	ICMP	98	Echo (ping) reply id=0xaf3b, seq=4/1024, ttl=64 (request in 23)

Frame 18: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
Ethernet II, Src: Private_66:68:03 (00:50:79:66:68:03), Dst: Private_66:68:01 (00:50:79:66:68:01)
Internet Protocol Version 4, Src: 192.168.3.4, Dst: 192.168.3.2
..... = Version: 4
..... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 84
Identification: 0x3bac (15276)
Flags: 0x0000
Time to live: 64
Protocol: ICMP (1)
Header checksum: 0xb7a6 [validation disabled]
[Header checksum status: Unverified]
Source: 192.168.3.4
Destination: 192.168.3.2
Internet Control Message Protocol
Type: 0 (Echo (ping) reply)
Code: 0
Checksum: 0x7bcf [correct]
[Checksum Status: Good]
Identifier (BE): 44091 (0xac3b)
Identifier (LE): 15276 (0x3bac)
Sequence number (BE): 1 (0x0001)
0000 00 50 79 66 68 01 00 50 79 66 68 03 08 00 45 00 ..Pyfh..P yfh...E-
0010 00 54 3b ac 00 00 40 01 b7 a6 c0 a8 03 04 c0 a8 ..T;...@
0020 03 02 00 00 7b cf ac 3b 00 01 08 09 0a 0b 0c 0d ...{:;
0030 0e 0f 10 11 12 13 14 15 16 17 18 19 1a 1b 1c 1d
wireshark_20211109144114_qpowof.pcapng Packets: 27 · Displayed: 27 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Wireshark output for dhcp on PC2

The screenshot shows a Wireshark capture on interface 0. The packet list displays several DHCP messages. The first message is a DHCP Discover from 0.0.0.0 to 255.255.255.255. The second message is a DHCP Offer from 192.168.3.1 to 192.168.3.2. The third message is a DHCP Request from 0.0.0.0 to 255.255.255.255. The fourth message is a DHCP ACK from 192.168.3.1 to 192.168.3.2. The packet details pane shows the User Datagram Protocol (UDP) header and the Bootstrap Protocol (Discover) header. The UDP header indicates a Source Port of 68 and a Destination Port of 67. The Bootstrap Protocol (Discover) header indicates a Message type of Boot Request (1) and a Hardware type of Ethernet (0x01). The packet bytes pane shows the raw data of the DHCP Discover message.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	0.0.0.0	255.255.255.255	DHCP	406	DHCP Discover - Transaction ID 0xad1a5e47
2	0.007478	192.168.3.1	192.168.3.2	DHCP	342	DHCP Offer - Transaction ID 0xad1a5e47
3	1.000092	0.0.0.0	255.255.255.255	DHCP	406	DHCP Request - Transaction ID 0xad1a5e47
4	1.004614	192.168.3.1	192.168.3.2	DHCP	342	DHCP ACK - Transaction ID 0xad1a5e47
5	2.000266	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.2 (Request) [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
6	3.000321	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.2 (Request) [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
7	4.000573	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.2 (Request) [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
8	4.409061	ca:01:13:e4:00:38	ca:01:13:e4:00:38	LOOP	60	Reply
9	14.066657	ca:01:13:e4:00:38	ca:01:13:e4:00:38	LOOP	60	Reply
10	25.274229	ca:01:13:e4:00:38	ca:01:13:e4:00:38	LOOP	60	Reply

Frame 1: 406 bytes on wire (3248 bits), 406 bytes captured (3248 bits) on interface 0
Ethernet II, Src: Private_66:68:01 (00:50:79:66:68:01), 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
Source Port: 68
Destination Port: 67
Length: 372
Checksum: 0xa9db [unverified]
[Checksum Status: Unverified]
[Stream index: 0]
Bootstrap Protocol (Discover)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0xad1a5e47
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: Private_66:68:01 (00:50:79:66:68:01)
0000 ff ff ff ff ff ff 00 50 79 66 68 01 08 00 45 10P yfh...E-
0010 01 00 00 00 00 10 11 a9 50 00 00 00 00 ff ffV
0020 ff ff 00 44 00 43 01 74 a9 db 01 01 06 00 ad 1a ...D.C.T
0030 5e 47 00 00 00 00 00 00 00 00 00 00 00 00 00 ..AG
Ready to load or capture Packets: 10 · Displayed: 10 (100.0%) Profile: Default