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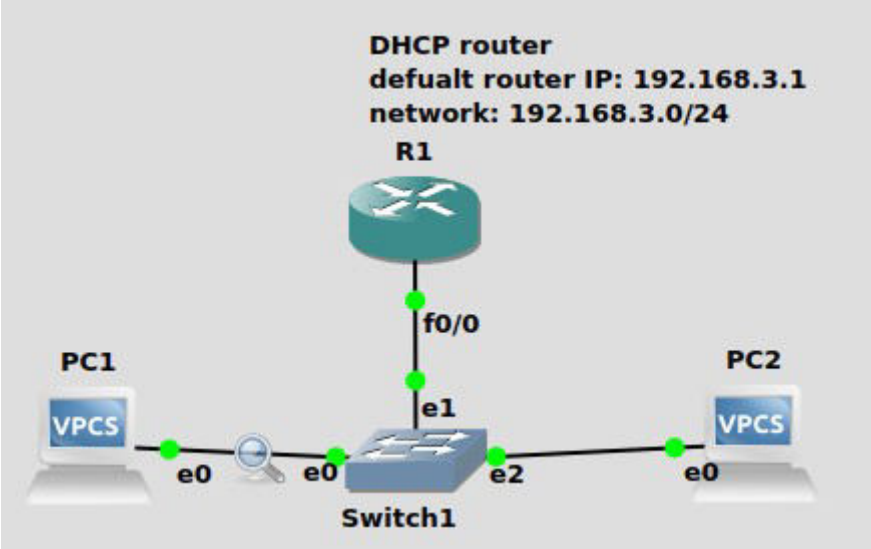
CSE B

CN LAB 8
STUDY OF DHCP PROTOCOL

1.



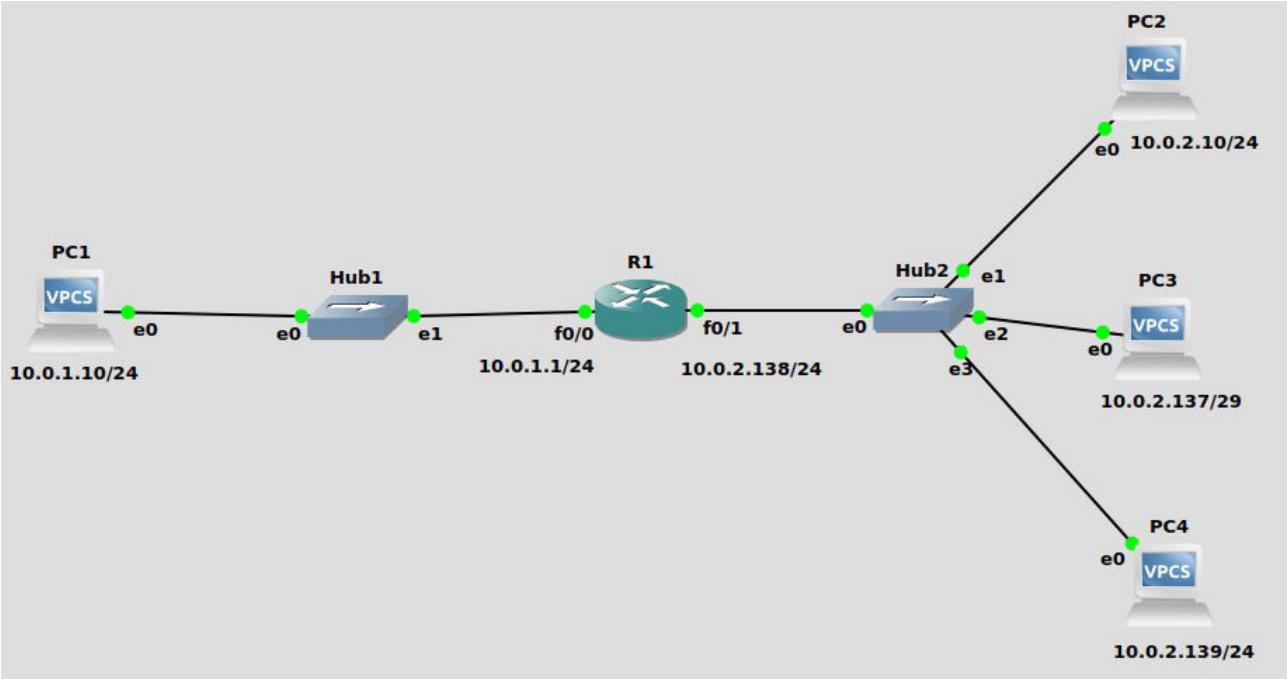

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#IP dhcp pool NAME
R1(dhcp-config)#Network 192.168.3.0 255.255.255.0
R1(dhcp-config)#Default-router 192.168.3.1
R1(dhcp-config)#exit
R1(config)#inter f0/0
R1(config-if)#no shutdown
R1(config-if)#u
*Mar  1 00:02:26.991: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:02:27.991: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#ip address 192.168.3.1 255.255.255.0
R1(config-if)#exit
```

```
PC1> dhcp
DORA IP 192.168.3.2/24 GW 192.168.3.1
```

```
PC2> dhcp
DORA IP 192.168.3.3/24 GW 192.168.3.1
```

```
29 507.830490    0.0.0.0          255.255.255.255    DHCP     406 DHCP Discover - Transaction ID 0xc9c4746b
30 507.837748    192.168.3.1      192.168.3.2        DHCP     342 DHCP Offer    - Transaction ID 0xc9c4746b
31 508.830660    0.0.0.0          255.255.255.255    DHCP     406 DHCP Request  - Transaction ID 0xc9c4746b
32 508.837677    192.168.3.1      192.168.3.2        DHCP     342 DHCP ACK      - Transaction ID 0xc9c4746b
```

2.




```
PC1> ip 10.0.1.10/24 10.0.1.1/24
Checking for duplicate address...
PC1 : 10.0.1.10 255.255.255.0 gateway 10.0.1.1
```

```
PC2> ip 10.0.2.10/24 10.0.2.138
Checking for duplicate address...
PC2 : 10.0.2.10 255.255.255.0 gateway 10.0.2.138
```

```
PC3> ip 10.0.2.137/29 10.0.2.138
Checking for duplicate address...
PC3 : 10.0.2.137 255.255.255.248 gateway 10.0.2.138
```

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#inter f0/0
R1(config-if)#ip address 10.0.1.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#in
*Mar  1 00:07:00.459: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:07:01.459: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config)#inter f0/1
R1(config-if)#ip address 10.0.2.138 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
```

c.

ping from pc1 to pc3

```
PC1> ping 10.0.2.10/24

10.0.2.10 icmp_seq=1 timeout
84 bytes from 10.0.2.10 icmp_seq=2 ttl=63 time=18.554 ms
84 bytes from 10.0.2.10 icmp_seq=3 ttl=63 time=20.101 ms
84 bytes from 10.0.2.10 icmp_seq=4 ttl=63 time=19.819 ms
84 bytes from 10.0.2.10 icmp_seq=5 ttl=63 time=18.696 ms

PC1> show arp

c4:01:40:12:00:00  10.0.1.1 expires in 111 seconds
```

wireshark pc1

arp or icmp

No.	Time	Source	Destination	Protocol	Length	Info
12	96.768117	Private_66:68:00	Broadcast	ARP	64	Who has 10.0.1.1? Tell 10.0.1.10
13	96.774878	c4:01:40:12:00:00	Private_66:68:00	ARP	60	10.0.1.1 is at c4:01:40:12:00:00
14	96.775704	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x5d84, seq=1/256, ttl=64 (no response found!)
15	98.776229	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x5f84, seq=2/512, ttl=64 (reply in 16)
16	98.794512	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x5f84, seq=2/512, ttl=63 (request in 15)
17	99.794976	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x6084, seq=3/768, ttl=64 (reply in 18)
18	99.814707	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x6084, seq=3/768, ttl=63 (request in 17)
19	100.815488	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x6184, seq=4/1024, ttl=64 (reply in 20)
20	100.834949	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x6184, seq=4/1024, ttl=63 (request in 19)
21	101.836330	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x6284, seq=5/1280, ttl=64 (reply in 22)
22	101.854697	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x6284, seq=5/1280, ttl=63 (request in 21)

wireshark pc3

arp or icmp

No.	Time	Source	Destination	Protocol	Length	Info
9	65.717403	c4:01:40:12:00:01	Broadcast	ARP	60	Who has 10.0.2.10? Tell 10.0.2.138
10	65.717523	Private_66:68:01	c4:01:40:12:00:01	ARP	60	10.0.2.10 is at 00:50:79:66:68:01
11	67.716801	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x5f84, seq=2/512, ttl=63 (reply in 12)
12	67.717013	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x5f84, seq=2/512, ttl=64 (request in 11)
13	68.736927	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x6084, seq=3/768, ttl=63 (reply in 14)
14	68.737295	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x6084, seq=3/768, ttl=64 (request in 13)
15	69.757270	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x6184, seq=4/1024, ttl=63 (reply in 16)
16	69.757460	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x6184, seq=4/1024, ttl=64 (request in 15)
17	70.777051	10.0.1.10	10.0.2.10	ICMP	98	Echo (ping) request id=0x6284, seq=5/1280, ttl=63 (reply in 18)
18	70.777231	10.0.2.10	10.0.1.10	ICMP	98	Echo (ping) reply id=0x6284, seq=5/1280, ttl=64 (request in 17)

d.

ping from pc3 to pc4

```
PC3> ping 10.0.2.139

84 bytes from 10.0.2.139 icmp_seq=1 ttl=64 time=0.582 ms
84 bytes from 10.0.2.139 icmp_seq=2 ttl=64 time=0.512 ms
84 bytes from 10.0.2.139 icmp_seq=3 ttl=64 time=0.626 ms
84 bytes from 10.0.2.139 icmp_seq=4 ttl=64 time=0.536 ms
84 bytes from 10.0.2.139 icmp_seq=5 ttl=64 time=0.545 ms

PC3> show arp

00:50:79:66:68:03  10.0.2.139 expires in 112 seconds
```

wireshark pc3 to pc4

arp or icmp

No.	Time	Source	Destination	Protocol	Length	Info
11	91.214461	Private_66:68:02	Broadcast	ARP	64	Who has 10.0.2.139? Tell 10.0.2.137
12	91.214675	Private_66:68:03	Private_66:68:02	ARP	64	10.0.2.139 is at 00:50:79:66:68:03
13	91.215527	10.0.2.137	10.0.2.139	ICMP	98	Echo (ping) request id=0x2686, seq=1/256, ttl=64 (reply in 14)
14	91.215763	10.0.2.139	10.0.2.137	ICMP	98	Echo (ping) reply id=0x2686, seq=1/256, ttl=64 (request in 13)
15	92.216754	10.0.2.137	10.0.2.139	ICMP	98	Echo (ping) request id=0x2786, seq=2/512, ttl=64 (reply in 16)
16	92.217050	10.0.2.139	10.0.2.137	ICMP	98	Echo (ping) reply id=0x2786, seq=2/512, ttl=64 (request in 15)
18	93.218044	10.0.2.137	10.0.2.139	ICMP	98	Echo (ping) request id=0x2886, seq=3/768, ttl=64 (reply in 19)
19	93.218370	10.0.2.139	10.0.2.137	ICMP	98	Echo (ping) reply id=0x2886, seq=3/768, ttl=64 (request in 18)
20	94.219229	10.0.2.137	10.0.2.139	ICMP	98	Echo (ping) request id=0x2986, seq=4/1024, ttl=64 (reply in 21)
21	94.219507	10.0.2.139	10.0.2.137	ICMP	98	Echo (ping) reply id=0x2986, seq=4/1024, ttl=64 (request in 20)
22	95.220485	10.0.2.137	10.0.2.139	ICMP	98	Echo (ping) request id=0x2a86, seq=5/1280, ttl=64 (reply in 23)
23	95.220746	10.0.2.139	10.0.2.137	ICMP	98	Echo (ping) reply id=0x2a86, seq=5/1280, ttl=64 (request in 22)

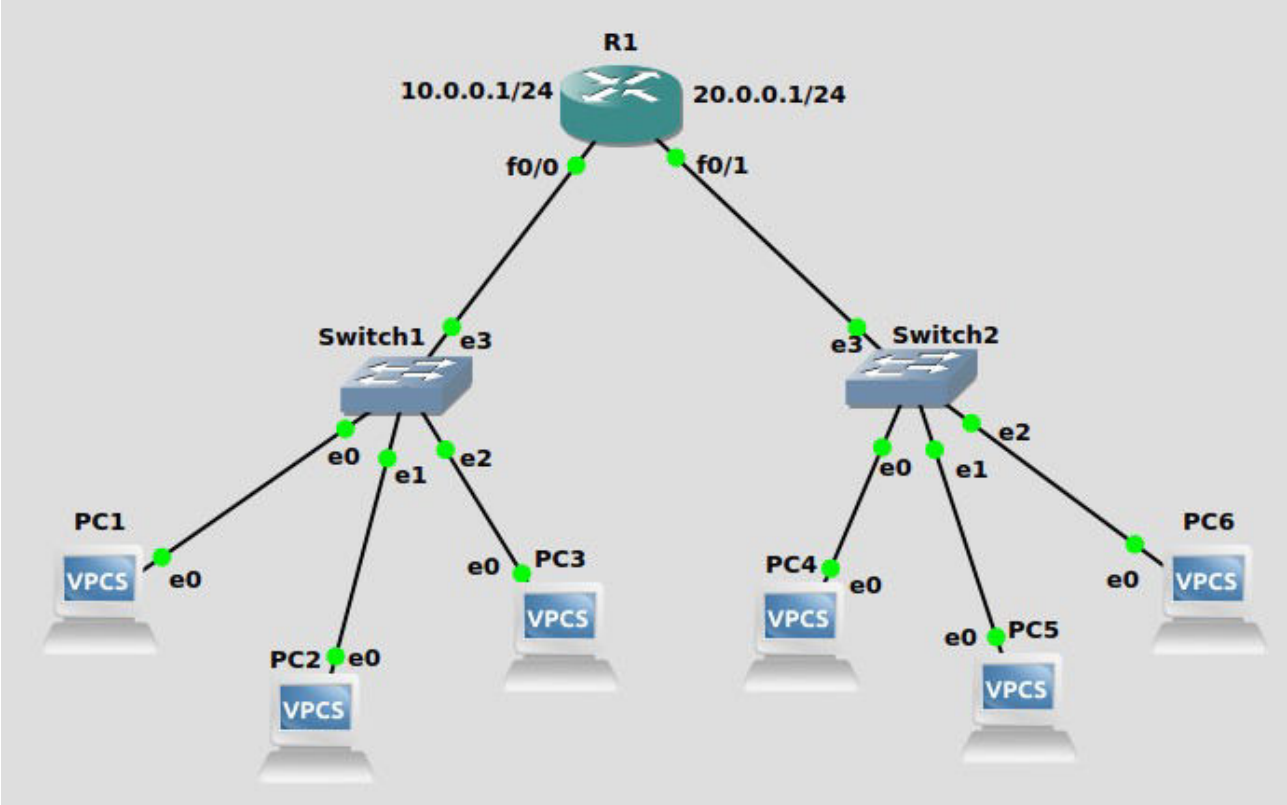
ping from pc3 to pc2

```
PC3> ping 10.0.2.10

84 bytes from 10.0.2.10 icmp_seq=1 ttl=63 time=29.355 ms
84 bytes from 10.0.2.10 icmp_seq=2 ttl=63 time=29.784 ms
84 bytes from 10.0.2.10 icmp_seq=3 ttl=63 time=29.522 ms
84 bytes from 10.0.2.10 icmp_seq=4 ttl=63 time=29.809 ms
84 bytes from 10.0.2.10 icmp_seq=5 ttl=63 time=30.213 ms

PC3> show arp

c4:01:40:12:00:01  10.0.2.138 expires in 111 seconds
```

wireshark pc3 to pc2

41	243.266401	Private_66:68:02	Broadcast	ARP	64	Who has 10.0.2.138? Tell 10.0.2.137
42	243.274944	c4:01:40:12:00:01	Private_66:68:02	ARP	60	10.0.2.138 is at c4:01:40:12:00:01
43	243.276278	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xbe86, seq=1/256, ttl=64 (no response found!)
44	243.285082	10.0.2.138	10.0.2.137	ICMP	70	Redirect (Redirect for host)
45	243.295195	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xbe86, seq=1/256, ttl=63 (reply in 46)
46	243.295435	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xbe86, seq=1/256, ttl=64 (request in 45)
47	243.305306	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xbe86, seq=1/256, ttl=63
48	244.305736	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xbf86, seq=2/512, ttl=64 (no response found!)
49	244.315048	10.0.2.138	10.0.2.137	ICMP	70	Redirect (Redirect for host)
50	244.325198	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xbf86, seq=2/512, ttl=63 (reply in 51)
51	244.325451	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xbf86, seq=2/512, ttl=64 (request in 50)
52	244.335287	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xbf86, seq=2/512, ttl=63
53	245.335734	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xc086, seq=3/768, ttl=64 (no response found!)
54	245.344597	10.0.2.138	10.0.2.137	ICMP	70	Redirect (Redirect for host)
55	245.354778	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xc086, seq=3/768, ttl=63 (reply in 56)
56	245.355019	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xc086, seq=3/768, ttl=64 (request in 55)
57	245.364921	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xc086, seq=3/768, ttl=63
58	246.365643	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xc186, seq=4/1024, ttl=64 (no response found…
59	246.374864	10.0.2.138	10.0.2.137	ICMP	70	Redirect (Redirect for host)
60	246.385004	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xc186, seq=4/1024, ttl=63 (reply in 61)
61	246.385206	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xc186, seq=4/1024, ttl=64 (request in 60)
62	246.395178	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xc186, seq=4/1024, ttl=63
64	247.395635	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xc286, seq=5/1280, ttl=64 (no response found…
65	247.405214	10.0.2.138	10.0.2.137	ICMP	70	Redirect (Redirect for host)
66	247.415349	10.0.2.137	10.0.2.10	ICMP	98	Echo (ping) request id=0xc286, seq=5/1280, ttl=63 (reply in 67)
67	247.415545	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xc286, seq=5/1280, ttl=64 (request in 66)
68	247.425488	10.0.2.10	10.0.2.137	ICMP	98	Echo (ping) reply id=0xc286, seq=5/1280, ttl=63

3.




```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#IP dhcp pool pool1
R1(dhcp-config)#Network 10.0.0.0 255.255.255.0
R1(dhcp-config)#Default-router 10.0.0.1
R1(dhcp-config)#exit
R1(config)#inter f0/0
R1(config-if)#no shutdown
R1(config-if)#ip add
*Mar  1 00:01:52.283: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:01:53.283: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#ip address 10.0.0.1 255.255.255.0
R1(config-if)#exit
R1(config)#IP dhcp pool pool2
R1(dhcp-config)#Network 20.0.0.0 255.255.255.0
R1(dhcp-config)#Default-router 20.0.0.1
R1(dhcp-config)#exit
R1(config)#inter f0/1
R1(config-if)#no shutdown
R1(config-if)#ip address
*Mar  1 00:03:29.579: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar  1 00:03:30.579: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R1(config-if)#ip address 20.0.0.1 255.255.255.0
R1(config-if)#exit
```

```
PC1> dhcp
DDORA IP 10.0.0.2/24 GW 10.0.0.1
```

```
PC2> dhcp
DDORA IP 10.0.0.3/24 GW 10.0.0.1
```

```
PC3> dhcp
DDORA IP 10.0.0.4/24 GW 10.0.0.1
```

```
PC4> dhcp
DDORA IP 20.0.0.2/24 GW 20.0.0.1
```

```
PC5> dhcp
DDORA IP 20.0.0.3/24 GW 20.0.0.1
```

```
PC6> dhcp
DDORA IP 20.0.0.4/24 GW 20.0.0.1
```