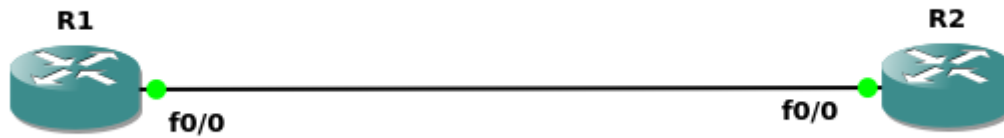


CN Session 4: DNS

Name: PAAWAN KOHLI
Reg No: 180905416

7.4



R1 IP configurations:

```
R1#enable
R1#conf t

R1(config)#hostname R1
R1(config)#interface f0/0

R1(config-if)#ip address 10.10.10.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#do
R1(config-if)#do wr
R1(config-if)#end
```

R2 IP and Hostname Configurations:

```
R2#enable
R2#conf t
R2(config)#hostname R2
R2(config)#int f0/0
R2(config-if)#ip address 10.10.10.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#do wr
R2(config-if)#end
```

Setting up R2 as DNS Server

```
R2#conf t

R2(config)#ip dns server
R2(config)#ip host loopback.R2.com 2.2.2.2
```

create loopback interface on R2

```
R2(config)#interface loopback1
R2(config-if)#ip address 2.2.2.2 255.255.255.255
R2(config-if)#end
```

try pinging to check loopback

```
R2#ping loopback.R2.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2#
```

Setup R1 to resolve hostnames

```
R1#conf t
R1(config)#ip domain lookup
R1(config)#ip name-server 10.10.10.2
R1(config)#ip route 0.0.0.0 0.0.0.0 10.10.10.2
R1(config)#end
```

ping from R1 to R2

```
R1#ping loopback.R2.com
```

```
Translating "loopback.R2.com"...domain server (10.10.10.2) [OK]
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2 seconds:
```

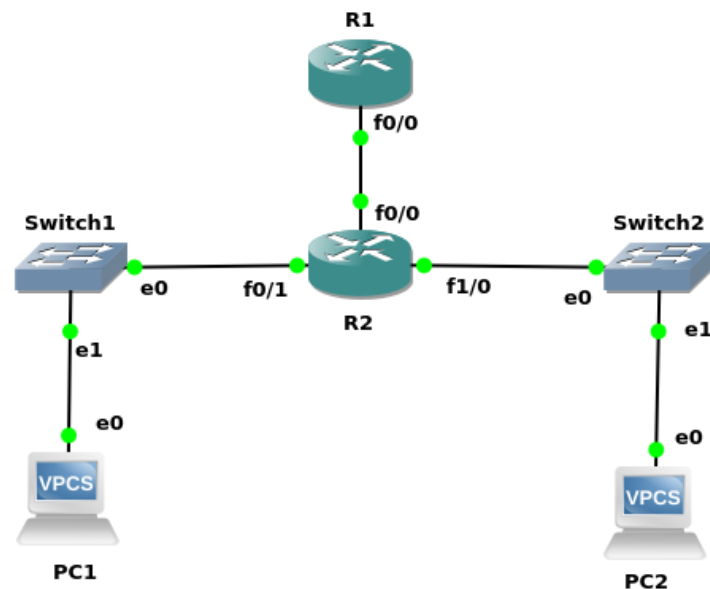
```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/67/72 ms
```

Wireshark packet capture showing ICMP ping requests and replies between R1 and R2. The capture is on interface 0. The packet list shows 25 packets, including CDP, DNS, and ICMP. The packet details pane shows the selected packet (Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0). The packet bytes pane shows the raw data (40 bytes).

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	c4:01:11:80:00:00	c4:01:11:80:00:00	LOOP	60	Reply
2	0.000169	c4:02:11:b4:00:00	c4:02:11:b4:00:00	LOOP	60	Reply
3	5.205064	c4:01:11:80:00:00	c4:01:11:80:00:00	CDP	354	Device ID: R1 Port ID: FastEthernet0/0
4	9.973319	c4:01:11:80:00:00	c4:01:11:80:00:00	LOOP	60	Reply
5	10.004025	c4:02:11:b4:00:00	c4:02:11:b4:00:00	LOOP	60	Reply
6	19.995014	c4:02:11:b4:00:00	c4:02:11:b4:00:00	LOOP	60	Reply
7	19.999807	c4:01:11:80:00:00	c4:01:11:80:00:00	LOOP	60	Reply
8	24.428485	c4:02:11:b4:00:00	c4:02:11:b4:00:00	CDP	363	Device ID: R2 Port ID: FastEthernet0/0
9	28.560054	10.10.10.1	10.10.10.2	DNS	75	Standard query 0xfa8b A loopback.R2.com
10	28.576566	10.10.10.2	10.10.10.1	DNS	91	Standard query response 0xfa8b A loopback.R2.com A 2.2.2.2
11	28.578859	10.10.10.1	2.2.2.2	ICMP	114	Echo (ping) request id=0x0001, seq=0/0, ttl=255 (request in 12)
12	28.586923	2.2.2.2	10.10.10.1	ICMP	114	Echo (ping) reply id=0x0001, seq=0/0, ttl=255 (request in 11)
13	28.589042	10.10.10.1	2.2.2.2	ICMP	114	Echo (ping) request id=0x0001, seq=1/256, ttl=255 (reply in 14)
14	28.597136	2.2.2.2	10.10.10.1	ICMP	114	Echo (ping) reply id=0x0001, seq=1/256, ttl=255 (request in 13)
15	28.599228	10.10.10.1	2.2.2.2	ICMP	114	Echo (ping) request id=0x0001, seq=2/512, ttl=255 (reply in 16)
16	28.607303	2.2.2.2	10.10.10.1	ICMP	114	Echo (ping) reply id=0x0001, seq=2/512, ttl=255 (request in 15)
17	28.609415	10.10.10.1	2.2.2.2	ICMP	114	Echo (ping) request id=0x0001, seq=3/768, ttl=255 (reply in 18)
18	28.617427	2.2.2.2	10.10.10.1	ICMP	114	Echo (ping) reply id=0x0001, seq=3/768, ttl=255 (request in 17)
19	28.619579	10.10.10.1	2.2.2.2	ICMP	114	Echo (ping) request id=0x0001, seq=4/1024, ttl=255 (reply in 20)
20	28.627518	2.2.2.2	10.10.10.1	ICMP	114	Echo (ping) reply id=0x0001, seq=4/1024, ttl=255 (request in 19)
21	29.999937	c4:02:11:b4:00:00	c4:02:11:b4:00:00	LOOP	60	Reply
22	30.003625	c4:01:11:80:00:00	c4:01:11:80:00:00	LOOP	60	Reply
23	31.755088	c4:01:11:80:00:00	DEC-MOP-Remote-Cons...	0x0002	77	DEC DNA Remote Console
24	39.994339	c4:01:11:80:00:00	c4:01:11:80:00:00	LOOP	60	Reply
25	40.000102	c4:02:11:b4:00:00	c4:02:11:b4:00:00	LOOP	60	Reply

7.5



```

R1
File Edit View Search Terminal Help
[OK]
R1(config-if)#end
R1#
*Mar 1 00:04:29.835: %SYS-5-CONFIG_I: Configured from console by console
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int f2/0
R1(config-if)#ip address 30.30.30.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#
*Mar 1 00:05:26.703: %LINK-3-UPDOWN: Interface FastEthernet2/0, changed state to up
*Mar 1 00:05:27.703: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to up
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#end
R1#
R1#c
*Mar 1 00:05:32.487: %SYS-5-CONFIG_I: Configured from console by console
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int f0/0
R1(config-if)#ip address 40.40.40.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#
*Mar 1 00:12:17.039: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:12:18.039: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#exit
R1(config)#ip domain lookup
R1(config)#ip name-server 40.40.40.2
R1(config)#ip route 0.0.0.0 0.0.0.0 40.40.40.2
R1(config)#end
R1#ping
*Mar 1 00:21:26.735: %SYS-5-CONFIG_I: Configured from console by console
R1#ping pccone.PCONE.com

Translating "pccone.PCONE.com"...domain server (40.40.40.2) [OK]

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/8/16 ms
R1#

```

```

File Edit View Search Terminal Help
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.30.30.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 16/20/28 ms
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip dns server
R2(config)#ip host pccone.PCONE.com 10.10.10.2
R2(config)#end
R2#ping
*Mar 1 00:16:30.439: %SYS-5-CONFIG_I: Configured from console by console
R2#ping pccone.PCONE.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 24/276/1024 ms
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip host pctwo.PCTWO.com
% Incomplete command.

R2(config)#ip host pctwo.PCTWO.com 30.30.30.2
R2(config)#end
R2#ping
*Mar 1 00:17:38.879: %SYS-5-CONFIG_I: Configured from console by console
R2#ping pctwo.PCTWO.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.30.30.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 24/275/1020 ms
R2#ping pccone.PCONE.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 24/30/36 ms
R2#ping pctwo.PCTWO.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.30.30.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 24/28/36 ms
R2#

```

```
PC1> ip 10.10.10.2/24 10.10.10.1
Checking for duplicate address...
PC1 : 10.10.10.2 255.255.255.0 gateway 10.10.10.1

PC1> ping pctwo.PCTWO.com
Cannot resolve pctwo.PCTWO.com

PC1> ping pcONE.PCONE.com
Cannot resolve pcONE.PCONE.com

PC1> ip dns 40.40.40.2

PC1> ping pcONE.PCONE.com
pcONE.PCONE.com resolved to 10.10.10.2
10.10.10.2 icmp_seq=1 ttl=64 time=0.001 ms
10.10.10.2 icmp_seq=2 ttl=64 time=0.001 ms
10.10.10.2 icmp_seq=3 ttl=64 time=0.001 ms
10.10.10.2 icmp_seq=4 ttl=64 time=0.001 ms
10.10.10.2 icmp_seq=5 ttl=64 time=0.001 ms

PC1> ping pctwo.PCTWO.com
pctwo.PCTWO.com resolved to 30.30.30.2
pctwo.PCTWO.com icmp_seq=1 timeout
pctwo.PCTWO.com icmp_seq=2 timeout
84 bytes from 30.30.30.2 icmp_seq=3 ttl=63 time=18.708 ms
84 bytes from 30.30.30.2 icmp_seq=4 ttl=63 time=16.909 ms
84 bytes from 30.30.30.2 icmp_seq=5 ttl=63 time=17.423 ms

PC1> □
```

```
PC2> ip address 30.30.30.2/24
Invalid address

PC2> ip 30.30.30.2/24 30.30.30.1
Checking for duplicate address...
PC1 : 30.30.30.2 255.255.255.0 gateway 30.30.30.1

PC2> ip dns 40.40.40.2

PC2> ping pctwo.pctwo.com
pctwo.pctwo.com resolved to 30.30.30.2
30.30.30.2 icmp_seq=1 ttl=64 time=0.001 ms
30.30.30.2 icmp_seq=2 ttl=64 time=0.001 ms
30.30.30.2 icmp_seq=3 ttl=64 time=0.001 ms
30.30.30.2 icmp_seq=4 ttl=64 time=0.001 ms
30.30.30.2 icmp_seq=5 ttl=64 time=0.001 ms

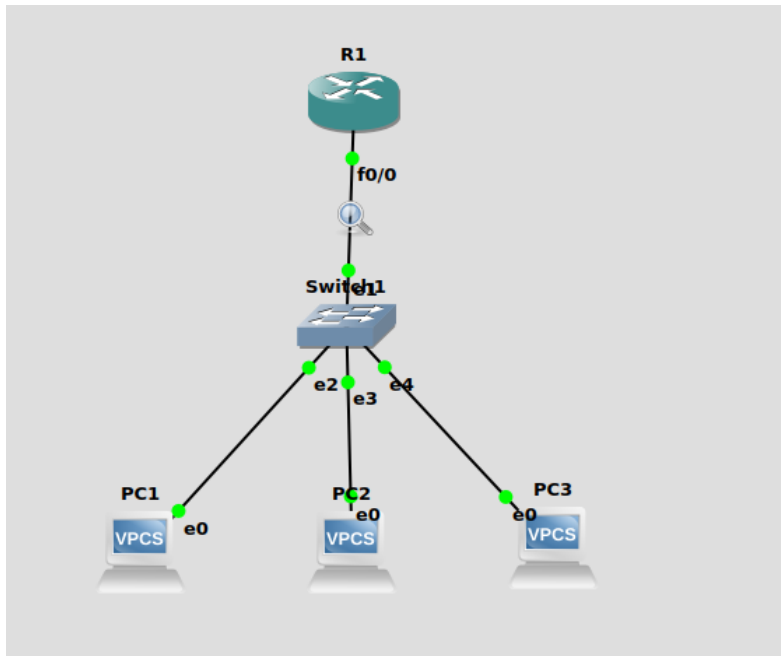
PC2> ping pcone.pcone.com
pcone.pcone.com resolved to 10.10.10.2
pcone.pcone.com icmp_seq=1 timeout
pcone.pcone.com icmp_seq=2 timeout
84 bytes from 10.10.10.2 icmp_seq=3 ttl=63 time=17.407 ms
84 bytes from 10.10.10.2 icmp_seq=4 ttl=63 time=16.407 ms
84 bytes from 10.10.10.2 icmp_seq=5 ttl=63 time=16.238 ms

PC2> □
```

No.	Time	Source	Destination	Protocol	Length	Info
4	10.098927	c4:02:1e:b6:00:00	CDP/VTP/DTp/PagP/UD...	CDP	354	Device ID: R2 Port ID: FastEthernet0/0
5	15.51065	c4:02:1e:b6:00:00	c4:02:1e:b6:00:00	LOOP	60	Reply
6	15.531334	c4:01:1e:a1:00:00	c4:01:1e:a1:00:00	LOOP	60	Reply
7	24.912883	30.30.30.2	40.40.40.2	DNS	75	Standard query 0x68e1 A pctlwo.pctlwo.com
8	24.922078	40.40.40.2	30.30.30.2	DNS	91	Standard query response 0x68e1 A pctlwo.pctlwo.com A 30.30.30.2
9	25.517237	c4:01:1e:a1:00:00	c4:01:1e:a1:00:00	LOOP	60	Reply
10	25.526533	c4:02:1e:b6:00:00	c4:02:1e:b6:00:00	LOOP	60	Reply
11	35.525661	c4:02:1e:b6:00:00	c4:02:1e:b6:00:00	LOOP	60	Reply
12	35.537955	c4:01:1e:a1:00:00	c4:01:1e:a1:00:00	LOOP	60	Reply
13	45.515761	c4:02:1e:b6:00:00	c4:02:1e:b6:00:00	LOOP	60	Reply
14	45.527939	c4:01:1e:a1:00:00	c4:01:1e:a1:00:00	LOOP	60	Reply

Ethernet II, Src: c4:01:1e:a1:00:00 (c4:01:1e:a1:00:00), Dst: c4:02:1e:b6:00:00 (c4:02:1e:b6:00:00)
 Internet Protocol Version 4, Src: 30.30.30.2, Dst: 40.40.40.2
 User Datagram Protocol, Src Port: 33963, Dst Port: 53
 Domain Name System (query)
 Transaction ID: 0x68e1
 Flags: 0x0100 Standard query
 Questions: 1
 Answer RRs: 0
 Authority RRs: 0
 Additional RRs: 0
 Queries
 pctlwo.pctlwo.com: type A, class IN
 [Response In: 8]

8.1



```
PC3> ip 20.20.20.2/24 20.20.20.1
Checking for duplicate address...
PC1 : 20.20.20.2 255.255.255.0 gateway 20.20.20.1

PC3> ping 10.10.10.2
84 bytes from 10.10.10.2 icmp_seq=1 ttl=63 time=12.097 ms
84 bytes from 10.10.10.2 icmp_seq=2 ttl=63 time=14.985 ms
84 bytes from 10.10.10.2 icmp_seq=3 ttl=63 time=14.745 ms
84 bytes from 10.10.10.2 icmp_seq=4 ttl=63 time=19.167 ms
84 bytes from 10.10.10.2 icmp_seq=5 ttl=63 time=14.995 ms

PC3> □
```

```
PC1> ip 10.10.10.2/24
Checking for duplicate address...
PC1 : 10.10.10.2 255.255.255.0

PC1> ip 10.10.10.2/24 10.10.10.1
Checking for duplicate address...
PC1 : 10.10.10.2 255.255.255.0 gateway 10.10.10.1

PC1> save
Saving startup configuration to startup.vpc
. done

PC1> ping 20.20.20.2
20.20.20.2 icmp_seq=1 timeout
84 bytes from 20.20.20.2 icmp_seq=2 ttl=63 time=19.339 ms
84 bytes from 20.20.20.2 icmp_seq=3 ttl=63 time=14.953 ms
84 bytes from 20.20.20.2 icmp_seq=4 ttl=63 time=14.847 ms
84 bytes from 20.20.20.2 icmp_seq=5 ttl=63 time=14.894 ms

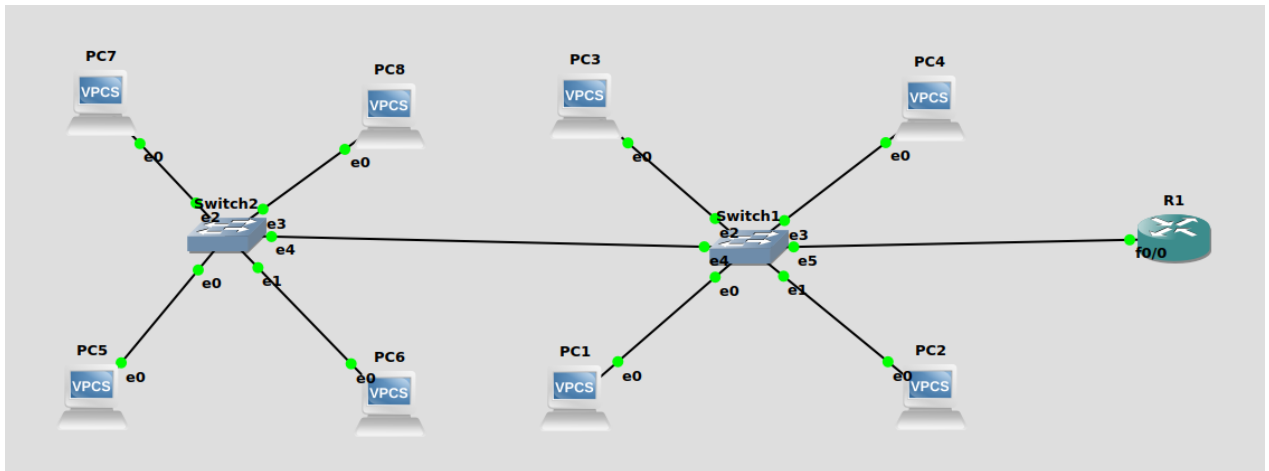
PC1> 
```

```
*Mar 1 00:00:03.027: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/5, changed state to down
R1#enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int f0/0
R1(config-if)#ip address 30.30.30.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#
*Mar 1 00:03:28.579: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:03:29.579: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#exit
R1(config)#interface f0/0.2
R1(config-subif)#ip address 10.10.10.1 255.255.255.0

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

R1(config-subif)#encapsulatio
R1(config-subif)#encapsulation dot1q 2
R1(config-subif)#
*Mar 1 00:06:41.187: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
R1(config-subif)#ip address 10.10.10.1 255.255.255.0
R1(config-subif)#no shutdown
R1(config-subif)#exit
R1(config)#interface f0/0.10
R1(config-subif)#encap
R1(config-subif)#encapsulation dot1q 10
R1(config-subif)#ip address 20.20.20.1 255.255.255.0
R1(config-subif)#no shutdown
R1(config-subif)#
```

8.2



```
PC6> ip 10.10.10.5/25 10.10.10.1
Checking for duplicate address...
PC1 : 10.10.10.5 255.255.255.128 gateway 10.10.10.1

PC6> show ip

NAME       : PC6[1]
IP/MASK    : 10.10.10.5/25
GATEWAY    : 10.10.10.1
DNS        :
MAC        : 00:50:79:66:68:05
LPORT     : 10014
RHOST:PORT : 127.0.0.1:10015
MTU        : 1500

PC6> ping 20.20.20.3
20.20.20.3 icmp_seq=1 timeout
84 bytes from 20.20.20.3 icmp_seq=2 ttl=63 time=21.976 ms
84 bytes from 20.20.20.3 icmp_seq=3 ttl=63 time=16.651 ms
84 bytes from 20.20.20.3 icmp_seq=4 ttl=63 time=16.507 ms
84 bytes from 20.20.20.3 icmp_seq=5 ttl=63 time=16.471 ms

PC6> 
```