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CN LAB – 7 : DNS and VLAN

PART 1: STUDY OF DNS SERVER

Q7.4) Configure the below topology to setup DNS server. R1 will use R2 as DNS server to make DNS resolutions.

First, let's begin with R1. We will setup hostname and IP related information.

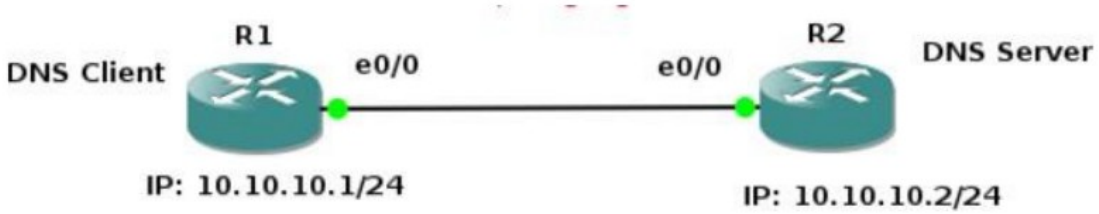


Figure 7.3 : Network Topology for DNS Configuration

R1 IP configurations:

#Enable

#configure terminal

#hostname R1

#interface e0/0

#ip address 10.10.10.1 255.255.255.0

#no shut

#do wr

#end

R2 IP and Hostname Configurations:

#enable

#config t

#hostname R2

#int e0/0

#ip address 10.10.10.2 255.255.255.0

#no shut

#do wr

#end

Setting up R2 as DNS Server

#config t

#ip dns server

#ip host loopback.R2.com 2.2.2.2

We mapped loopback.R2.com to ip address 2.2.2.2. Currently, we don't have 2.2.2.2, we could create loopback interface on R2 and assign ip 2.2.2.2.

#interface loopback 1

#ip address 2.2.2.2 255.255.255.255

#end

Let us verify that loop-back interface we just created is working. This will show us that the host name correctly setup locally on R2.

#ping loopback.R2.com

Now it's time to setup R1 to resolve hostnames using R2.On R1 type:

#config terminal

#ip domain lookup

#ip name-server 10.10.10.2

Set R1 to use R2 as default gateway to get to loopback interface on R2. So that after R1

resolve loopback.R2.com, it can reach 2.2.2.2 through its default route (R2).

on R1 type:

#config t

#ip route 0.0.0.0 0.0.0.0 10.10.10.2

#end

This tells our router that to get to any network not in its routing table, it is next hop is 10.10.10.2 which is our router R2.

Now on R1, do a ping to loopback.R2.com and you should get a success message.

#ping loopback.R2.com repeat 3

If you captured the traffic, you will see DNS query and Answer as shown in Wireshark capture screen shot below.

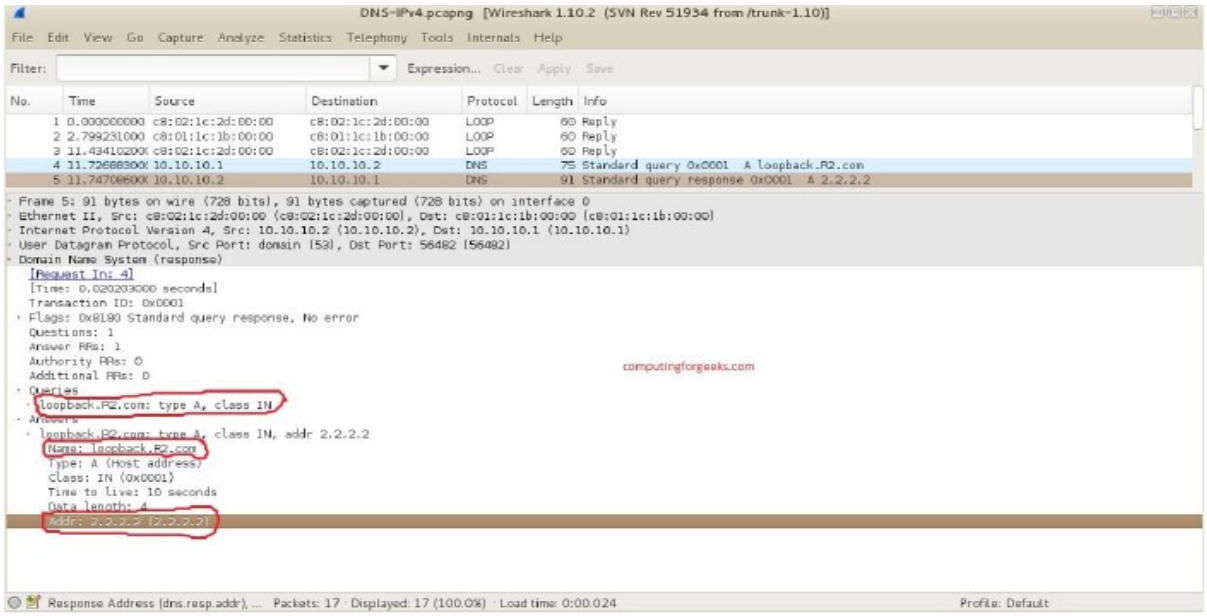
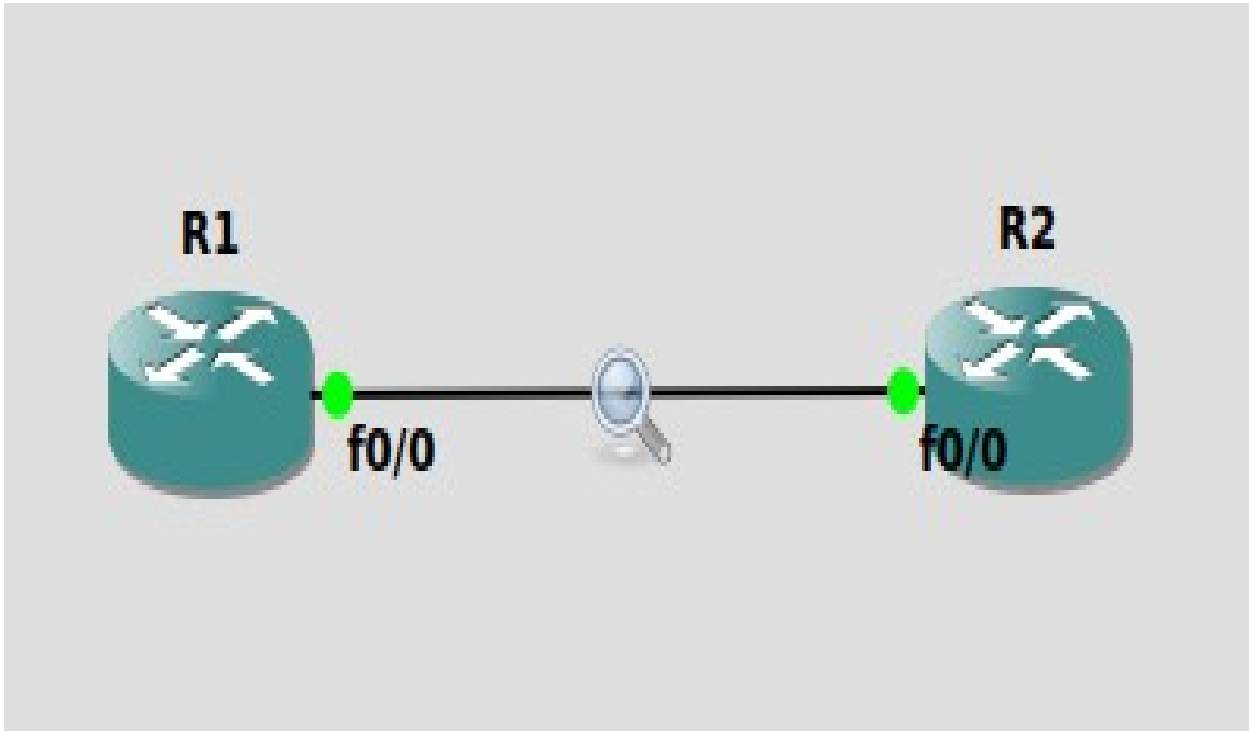
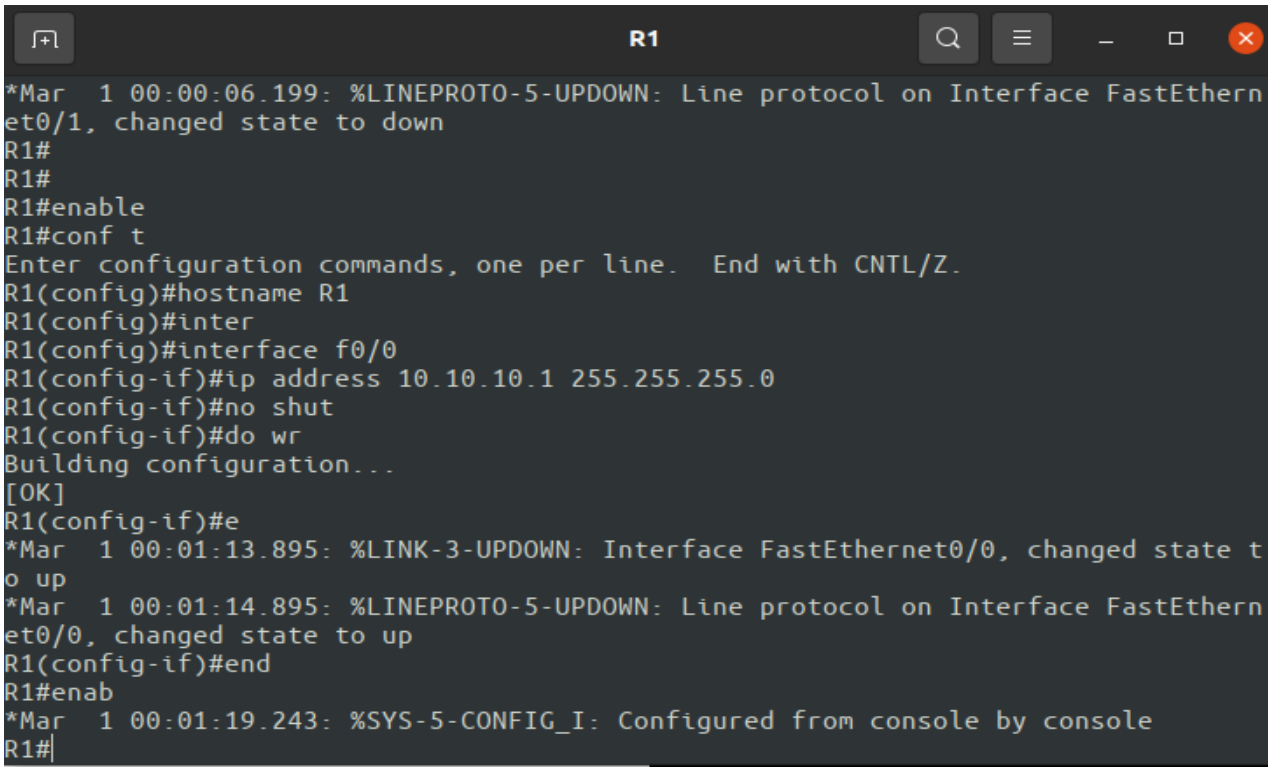
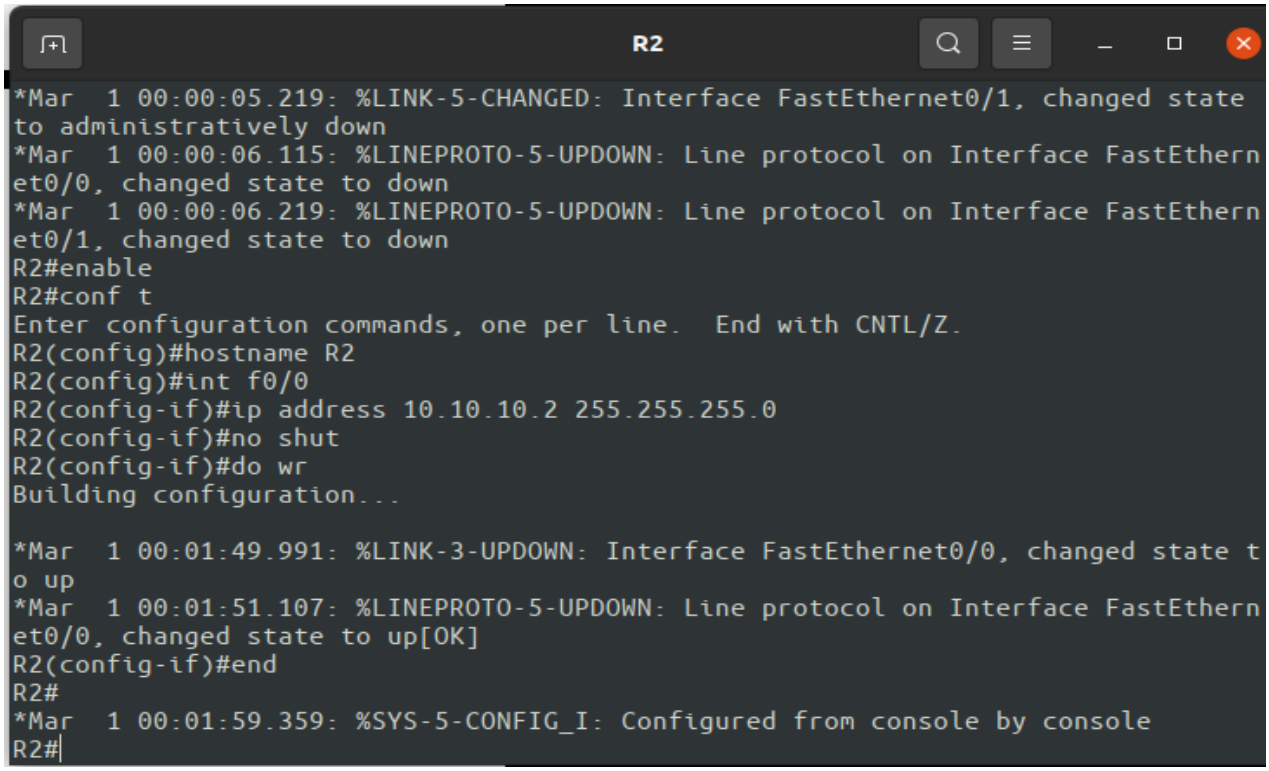


Figure 7.4 : Observation in WIRESHARK

Solution :

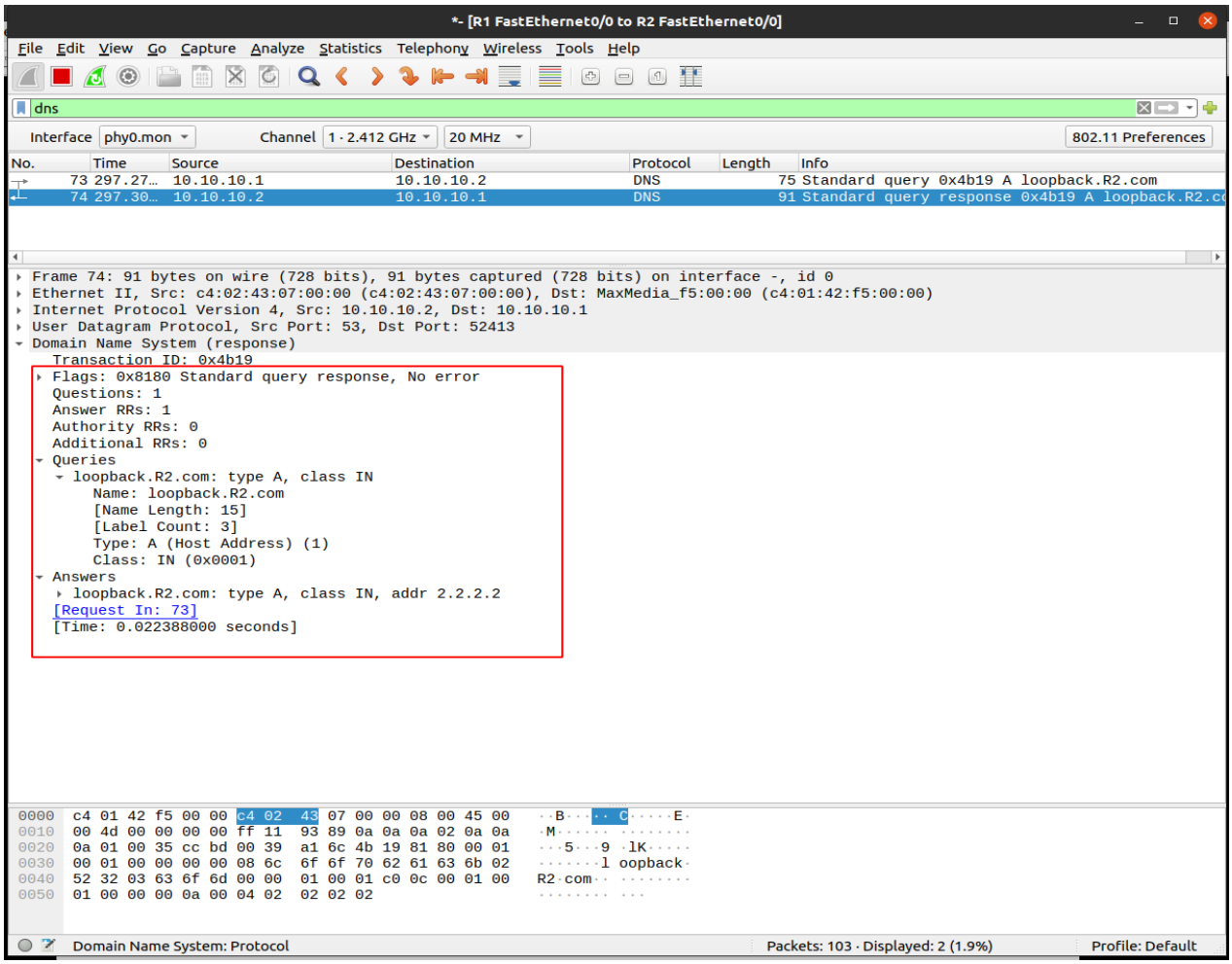



R1
*Mar 1 00:00:06.199: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
R1#
R1#
R1#enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname R1
R1(config)#inter
R1(config)#interface f0/0
R1(config-if)#ip address 10.10.10.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#e
*Mar 1 00:01:13.895: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar 1 00:01:14.895: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R1(config-if)#end
R1#enab
*Mar 1 00:01:19.243: %SYS-5-CONFIG_I: Configured from console by console
R1#

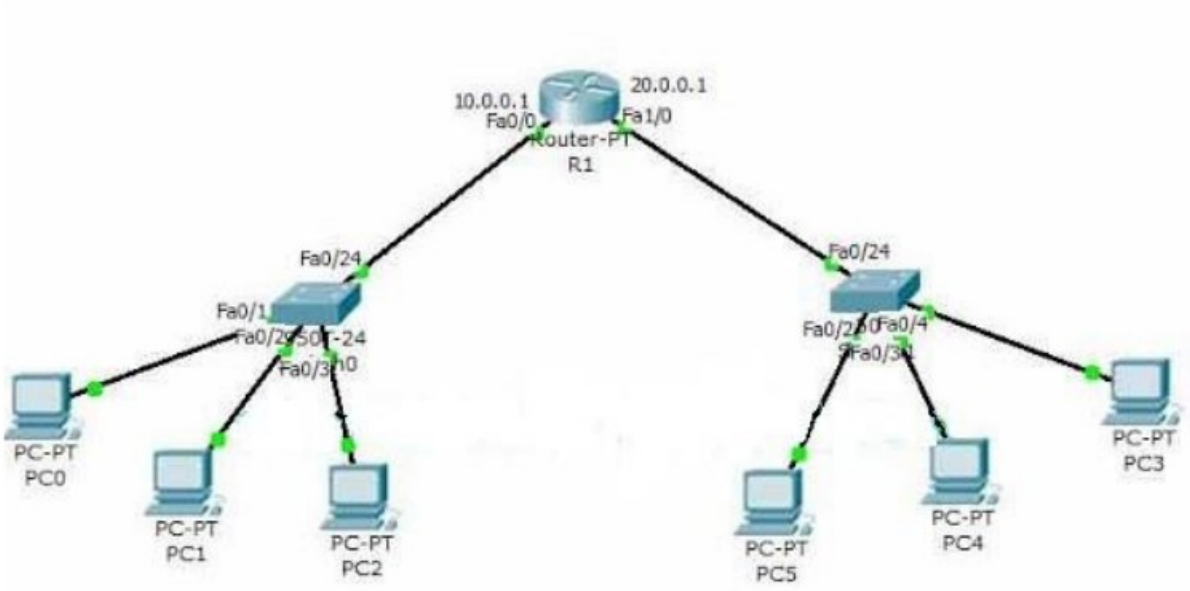

R2
*Mar 1 00:00:05.219: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state
to administratively down
*Mar 1 00:00:06.115: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
*Mar 1 00:00:06.219: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
R2#enable
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
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 shut
R2(config-if)#do wr
Building configuration...
*Mar 1 00:01:49.991: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar 1 00:01:51.107: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up[OK]
R2(config-if)#end
R2#
*Mar 1 00:01:59.359: %SYS-5-CONFIG_I: Configured from console by console
R2#

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ip dns server
R2(config)#ip host loopback.R2.com 2.2.2.2
R2(config)#interface loopb
R2(config)#interface loopback 1
R2(config-if)#
*Mar  1 00:03:27.899: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1,
 changed state to up
R2(config-if)#ip address 2.2.2.2 255.255.255.255
R2(config-if)#end
R2#
*Mar  1 00:03:46.099: %SYS-5-CONFIG_I: Configured from console by console
R2#
```

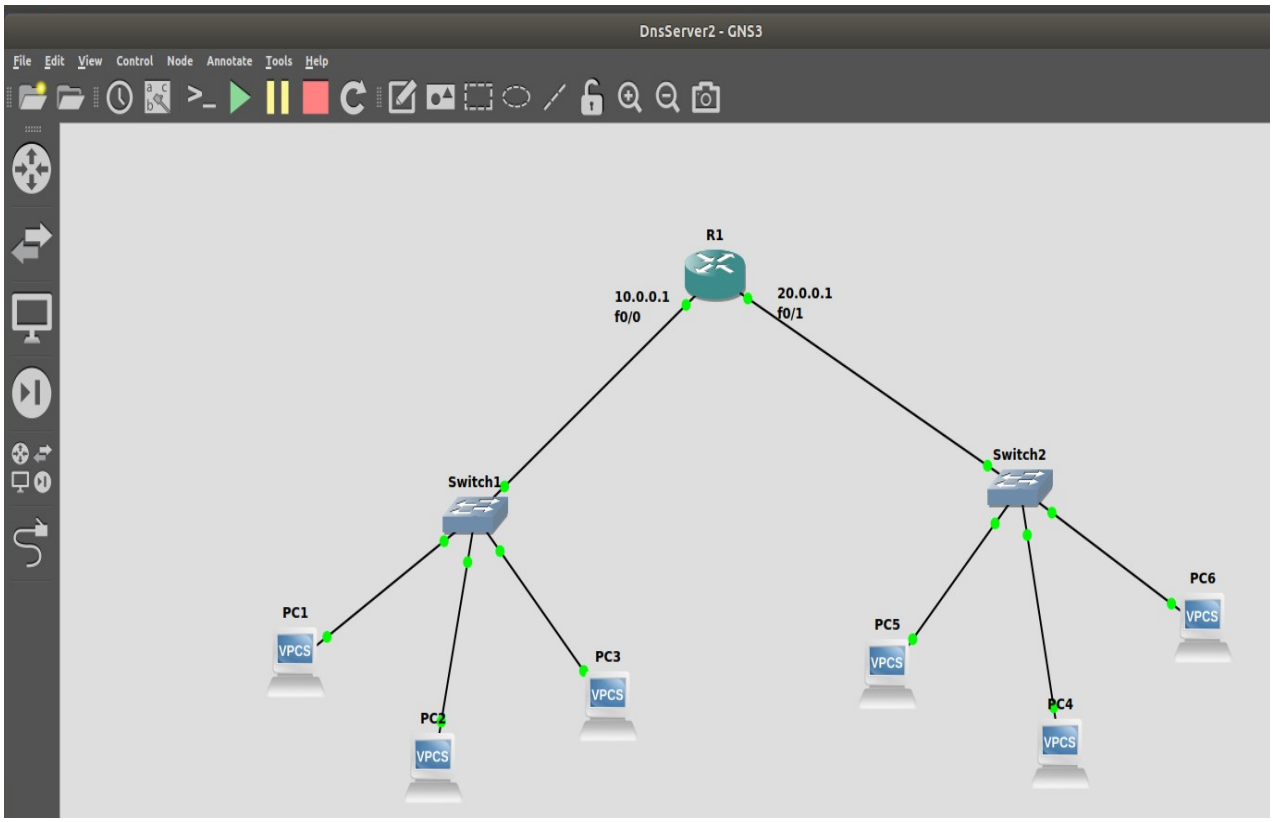
```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip domain lookup
R1(config)#ip name-server 10.10.10.2
R1(config)#end
R1#reso
*Mar  1 00:09:46.907: %SYS-5-CONFIG_I: Configured from console by console
R1#resolve loopback.R2.com
      ^
% Invalid input detected at '^' marker.

R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip route 0.0.0.0 0.0.0.0 10.10.10.2
R1(config)#end
R1#
*Mar  1 00:10:18.959: %SYS-5-CONFIG_I: Configured from console by console
R1#ping loopback.R2.com repeat 3

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

Type escape sequence to abort.
Sending 3, 100-byte ICMP Echos to 2.2.2.2, timeout is 2 seconds:
!!!
Success rate is 100 percent (3/3), round-trip min/avg/max = 60/61/64 ms
R1#
```

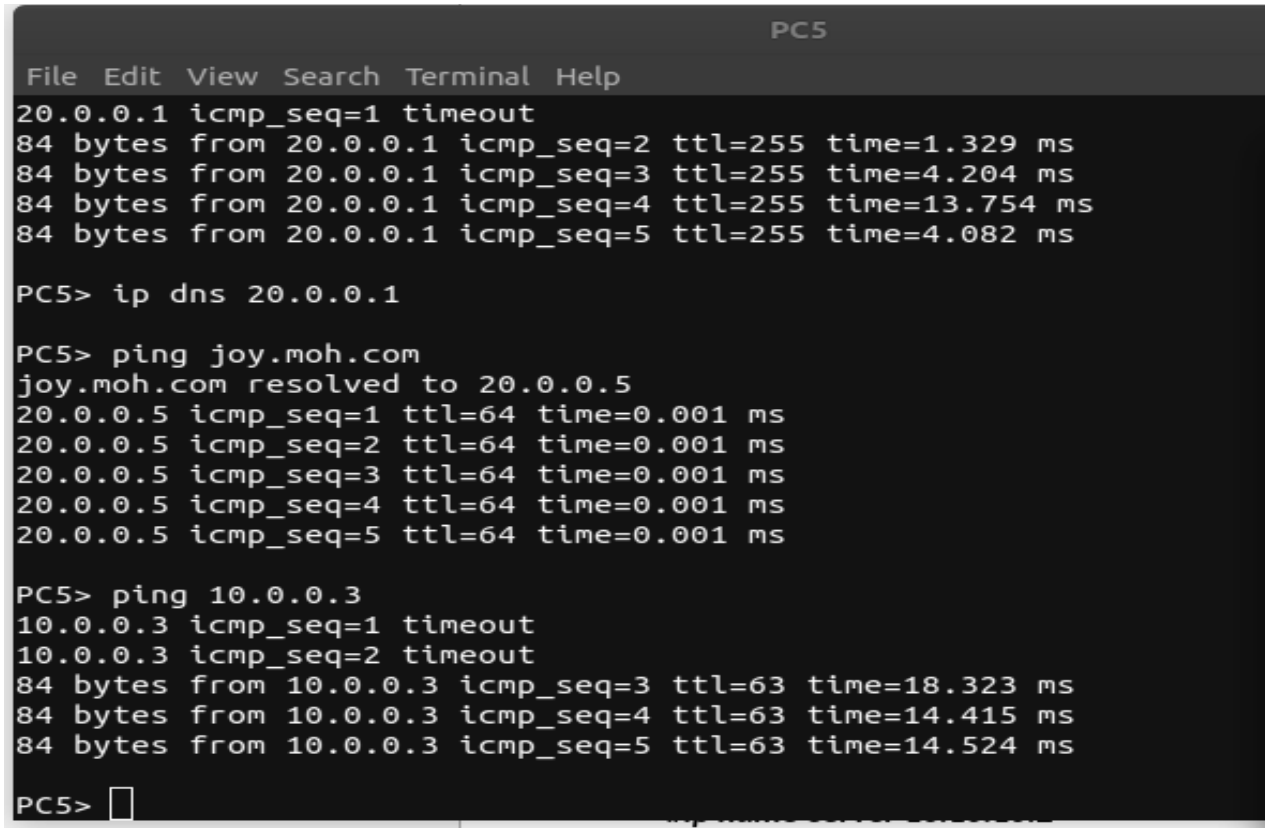


Q7.5) Configure the topology shown below DNS Server and DNS Client. Test the setup. Analyse the Interaction.



Solution :


DnsServer2 - GNS3
File Edit View Control Node Annotate Tools Help
R1
10.0.0.1
f0/0
20.0.0.1
f0/1
Switch1
Switch2
PC1
PC2
PC3
PC4
PC5
PC6
VPCS


PC5
File Edit View Search Terminal Help
20.0.0.1 icmp_seq=1 timeout
84 bytes from 20.0.0.1 icmp_seq=2 ttl=255 time=1.329 ms
84 bytes from 20.0.0.1 icmp_seq=3 ttl=255 time=4.204 ms
84 bytes from 20.0.0.1 icmp_seq=4 ttl=255 time=13.754 ms
84 bytes from 20.0.0.1 icmp_seq=5 ttl=255 time=4.082 ms
PC5> ip dns 20.0.0.1
PC5> ping joy.moh.com
joy.moh.com resolved to 20.0.0.5
20.0.0.5 icmp_seq=1 ttl=64 time=0.001 ms
20.0.0.5 icmp_seq=2 ttl=64 time=0.001 ms
20.0.0.5 icmp_seq=3 ttl=64 time=0.001 ms
20.0.0.5 icmp_seq=4 ttl=64 time=0.001 ms
20.0.0.5 icmp_seq=5 ttl=64 time=0.001 ms
PC5> ping 10.0.0.3
10.0.0.3 icmp_seq=1 timeout
10.0.0.3 icmp_seq=2 timeout
84 bytes from 10.0.0.3 icmp_seq=3 ttl=63 time=18.323 ms
84 bytes from 10.0.0.3 icmp_seq=4 ttl=63 time=14.415 ms
84 bytes from 10.0.0.3 icmp_seq=5 ttl=63 time=14.524 ms
PC5>

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip dns server
R1(config)#ip host loopback.R1.com 2.2.2.2
R1(config)#interface loopback 1
R1(config-if)#ip address 2.2.2.2 255.255.255.255
R1(config-if)#end
```

```
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 = 1/2/4 ms
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip host pp.PC2.com 10.0.0.4
R1(config)#end
```

PC2

File Edit View Search Terminal Help

```
PC2> ip dns 10.0.0.1

PC2> ping loopback.R1.com
host (96.105.114.0) not reachable
Cannot resolve loopback.R1.com

PC2> ip 10.0.0.4
Checking for duplicate address...
PC1 : 10.0.0.4 255.255.255.0

PC2> ip 10.0.0.4 255.255.255.0 10.0.0.1
Checking for duplicate address...
PC1 : 10.0.0.4 255.255.255.0 gateway 10.0.0.1

PC2> ip dns

PC2> ping loopback.R1.com
loopback.R1.com resolved to 2.2.2.2
84 bytes from 2.2.2.2 icmp_seq=1 ttl=255 time=9.271 ms
84 bytes from 2.2.2.2 icmp_seq=2 ttl=255 time=4.729 ms
84 bytes from 2.2.2.2 icmp_seq=3 ttl=255 time=4.469 ms
84 bytes from 2.2.2.2 icmp_seq=4 ttl=255 time=4.144 ms
84 bytes from 2.2.2.2 icmp_seq=5 ttl=255 time=3.950 ms
```

```
R1#ping joy.moh.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 20.0.0.5, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/13/20 ms
R1#
```

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip host pp.PC2.com 10.0.0.4
R1(config)#interface pp 1
                       ^
% Invalid input detected at '^' marker.

R1(config)#end
R1#pp
```

```
R1#ping pp.PC2.com

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.4, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/13/28 ms
R1#sh ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            10.0.0.1        YES NVRAM  up                    up
```

PC1

File Edit View Search Terminal Help

```
GATEWAY      : 10.0.0.1
DNS          : 10.0.0.1
DOMAIN NAME  : lookup
MAC          : 00:50:79:66:68:00
LPORT        : 10024
RHOST:PORT   : 127.0.0.1:10025
MTU:         : 1500

PC1> ping 10.0.0.4
84 bytes from 10.0.0.4 icmp_seq=1 ttl=64 time=0.159 ms
84 bytes from 10.0.0.4 icmp_seq=2 ttl=64 time=0.243 ms
84 bytes from 10.0.0.4 icmp_seq=3 ttl=64 time=0.171 ms
84 bytes from 10.0.0.4 icmp_seq=4 ttl=64 time=0.144 ms
84 bytes from 10.0.0.4 icmp_seq=5 ttl=64 time=0.177 ms

PC1> ping pp.PC2.com
pp.PC2.com resolved to 10.0.0.4
84 bytes from 10.0.0.4 icmp_seq=1 ttl=64 time=0.113 ms
84 bytes from 10.0.0.4 icmp_seq=2 ttl=64 time=0.187 ms
84 bytes from 10.0.0.4 icmp_seq=3 ttl=64 time=0.172 ms
84 bytes from 10.0.0.4 icmp_seq=4 ttl=64 time=0.150 ms
84 bytes from 10.0.0.4 icmp_seq=5 ttl=64 time=0.182 ms

PC1>
```