

LAB 7>Study of Domain Name Server

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

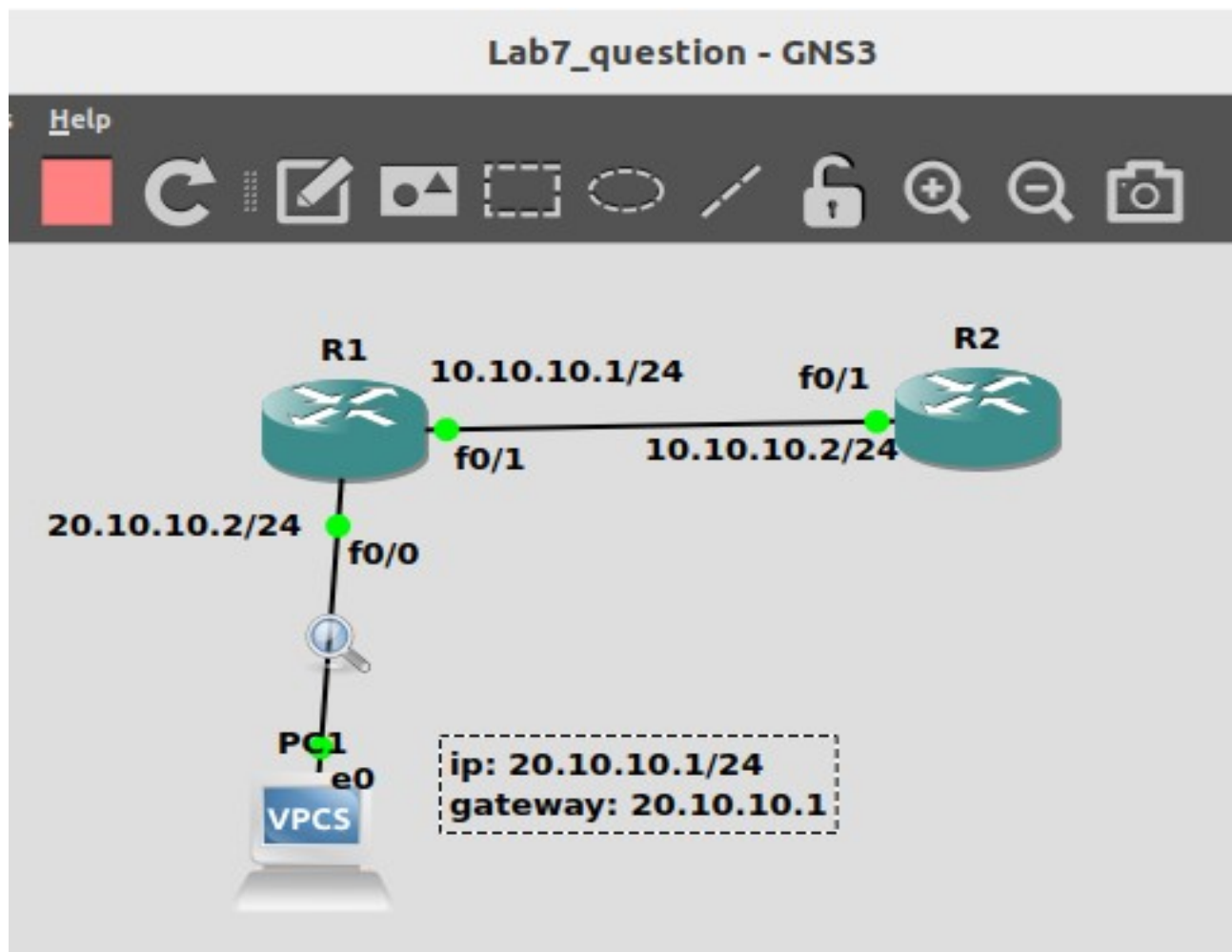
Wireshark · Packet 6 · -

Destination Port: 56470
Length: 57
Checksum: 0x6501 [unverified]
[Checksum Status: Unverified]
[Stream index: 0]
[Timestamps]
UDP payload (40 bytes)
Domain Name System (response)
Transaction ID: 0x77ab
Flags: 0x0180 Standard query response, No error
Questions: 1
Answer RRs: 1
Authority RRs: 0
Additional RRs: 0
Queries
 > loopback.R2.com: type A, class IN
Answers
 > loopback.R2.com: type A, class IN, addr 2.2.2.2
[Request in: 5]
[Time: 0.010326000 seconds]

0000 c4 01 0a bc 00 00 c4 02 0a da 00 00 08 00 45 00E-
0010 00 4d 00 00 00 00 ff 11 93 09 0a 0a 02 0a 0aM.....
0020 0a 01 00 35 dc 06 00 39 65 01 77 ab 01 00 00 015...g e w.....
0030 00 01 00 00 00 00 08 6c 6f 6f 70 62 61 63 6b 02l oopback-
0040 52 32 03 63 6f 6d 00 00 01 00 01 c0 9c 00 01 00R2.com.....
0050 01 00 00 00 0a 00 04 02 02 02 02
.....

Time	Source	Destination	Protocol	Length	Info
1 0.000000	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
2 4.971076	c4:01:0a:bc:00:00	Broadcast	ARP	60	Who has
3 4.981568	c4:02:0a:da:00:00	c4:01:0a:bc:00:00	ARP	60	10.10.10.1
4 6.157912	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
5 12.077594	10.10.10.1	10.10.10.2	DNS	75	Standard
6 12.087920	10.10.10.2	10.10.10.1	DNS	91	Standard
7 12.098992	10.10.10.1	2.2.2.2	ICMP	114	Echo (p
8 12.100342	2.2.2.2	10.10.10.1	ICMP	114	Echo (p
9 12.118527	10.10.10.1	2.2.2.2	ICMP	114	Echo (p
10 12.128737	2.2.2.2	10.10.10.1	ICMP	114	Echo (p
11 12.138783	10.10.10.1	2.2.2.2	ICMP	114	Echo (p
12 12.149928	2.2.2.2	10.10.10.1	ICMP	114	Echo (p
13 13.986709	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
14 16.279256	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
15 24.081265	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
16 26.588156	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
17 34.431516	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
18 36.665139	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
19 38.956895	c4:01:0a:bc:00:00	CDP/VTP/DTP/PagP/UDLD	CDP	350	Device
20 41.464775	c4:02:0a:da:00:00	CDP/VTP/DTP/PagP/UDLD	CDP	350	Device
21 44.481090	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
22 46.907723	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
23 54.715455	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
24 57.220195	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
25 65.858051	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
26 67.534411	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
27 75.403246	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
28 77.879741	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
29 85.509230	c4:01:0a:bc:00:00	c4:01:0a:bc:00:00	LOOP	60	Reply
30 88.199364	c4:02:0a:da:00:00	c4:02:0a:da:00:00	LOOP	60	Reply
31 90.766178	c4:01:0a:bc:00:00	DEC-MOP-Remote-Console	0x6002	77	DEC MOP

QUESTION>



COMMANDS:>

PC1> ip 20.10.10.1 255.255.255.0 20.10.10.2

```
R1#config t
R1(config)#interface f0/1
R1(config-if)#ip address 10.10.10.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#do wr
R1(config-if)#end
```

```
R2#config t
R2(config)#interface f0/1
R2(config-if)#ip address 10.10.10.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#do wr
R2(config-if)#end
```

```
R2#config t
R2(config)#ip dns server
R2(config)#ip host server.R2.com 10.10.10.2
R2(config)#no shut
R2(config)#end
```

```
R1#config t
R1(config)#ip route 0.0.0.0 0.0.0.0 10.10.10.2
R1(config)#end
```

```
R2#config t
R2(config)#ip route 20.10.10.0 255.255.255.0 10.10.10.1
R2(config)#end
```

PC1> ping 10.10.10.2

PC1> ip dns 10.10.10.2

PC1> ping server.R2.com

```

▶ Frame 3: 89 bytes on wire (712 bits), 89 bytes captured (712 bits) on interface -, id 0
▶ Ethernet II, Src: c4:01:0f:49:00:00 (c4:01:0f:49:00:00), Dst: Private_66:68:00 (00:50:79:66:68:00)
▶ Internet Protocol Version 4, Src: 10.10.10.2, Dst: 20.10.10.1
▶ User Datagram Protocol, Src Port: 53, Dst Port: 52222
▼ Domain Name System (response)
  Transaction ID: 0xd639
  ▶ Flags: 0x8180 Standard query response, No error
  Questions: 1
  Answer RRs: 1
  Authority RRs: 0
  Additional RRs: 0
  ▼ Queries
    ▼ server.R2.com: type A, class IN
      Name: server.R2.com
      [Name Length: 13]
      [Label Count: 3]
      Type: A (Host Address) (1)
      Class: IN (0x0001)
  ▼ Answers
    ▼ server.R2.com: type A, class IN, addr 10.10.10.2
      Name: server.R2.com
      Type: A (Host Address) (1)
      Class: IN (0x0001)
      Time to live: 10 (10 seconds)
      Data length: 4
      Address: 10.10.10.2
[Request In: 2]
[Time: 0.022630000 seconds]

```

```

PC1
PC1> ping server.R2.com
Cannot resolve server.R2.com

PC1> ip dns 10.10.10.2

PC1> ping server.R2.com
server.R2.com resolved to 10.10.10.2

84 bytes from 10.10.10.2 icmp_seq=1 ttl=254 time=29.305 ms
84 bytes from 10.10.10.2 icmp_seq=2 ttl=254 time=21.568 ms
84 bytes from 10.10.10.2 icmp_seq=3 ttl=254 time=22.791 ms
84 bytes from 10.10.10.2 icmp_seq=4 ttl=254 time=10.937 ms
84 bytes from 10.10.10.2 icmp_seq=5 ttl=254 time=21.410 ms

PC1> ping server.R2.com
server.R2.com resolved to 10.10.10.2

84 bytes from 10.10.10.2 icmp_seq=1 ttl=254 time=29.305 ms
84 bytes from 10.10.10.2 icmp_seq=2 ttl=254 time=20.904 ms
84 bytes from 10.10.10.2 icmp_seq=3 ttl=254 time=21.472 ms
84 bytes from 10.10.10.2 icmp_seq=4 ttl=254 time=10.937 ms

```

```

Wireshark - Packet 3 - question.pcapng
▶ Frame 3: 89 bytes on wire (712 bits), 89 bytes captured (712 bits) on interface -, id 0
▶ Ethernet II, Src: c4:01:0f:49:00:00 (c4:01:0f:49:00:00), Dst: Private_66:68:00 (00:50:79:66:68:00)
▶ Internet Protocol Version 4, Src: 10.10.10.2, Dst: 20.10.10.1
▶ User Datagram Protocol, Src Port: 53, Dst Port: 52222
▼ Domain Name System (response)
  Transaction ID: 0xd639
  ▶ Flags: 0x8180 Standard query response, No error
  Questions: 1
  Answer RRs: 1
  Authority RRs: 0
  Additional RRs: 0
  ▼ Queries
    ▼ server.R2.com: type A, class IN
  ▼ Answers
    ▼ server.R2.com: type A, class IN, addr 10.10.10.2
      [Request In: 2]
      [Time: 0.022630000 seconds]

```

question.pcapng [PC1 Ethernet0 to R1 FastEthernet0/0]

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	c4:01:0f:49:00:00	c4:01:0f:49:00:00	LOOP	60	Reply
2	1.045002	20.10.10.1	10.10.10.2	DNS	73	Standard query
3	2.217132	10.10.10.2	20.10.10.1	DNS	89	Standard query response
4	2.218105	20.10.10.1	10.10.10.2	ICMP	98	Echo (ping) request
5	2.247347	10.10.10.2	20.10.10.1	ICMP	98	Echo (ping) reply
6	3.248565	20.10.10.1	10.10.10.2	ICMP	98	Echo (ping) request
7	3.269285	10.10.10.2	20.10.10.1	ICMP	98	Echo (ping) reply
8	4.269957	20.10.10.1	10.10.10.2	ICMP	98	Echo (ping) request
9	4.291244	10.10.10.2	20.10.10.1	ICMP	98	Echo (ping) reply
10	5.106169	c4:01:0f:49:00:00	c4:01:0f:49:00:00	CDP/VTP/OTAP/PagP/UDLD	350	Device
11	5.292517	20.10.10.1	10.10.10.2	ICMP	98	Echo (ping) request
12	5.322745	10.10.10.2	20.10.10.1	ICMP	98	Echo (ping) reply
13	6.323754	20.10.10.1	10.10.10.2	ICMP	98	Echo (ping) request
14	6.344237	10.10.10.2	20.10.10.1	ICMP	98	Echo (ping) reply
15	9.651014	c4:01:0f:49:00:00	c4:01:0f:49:00:00	LOOP	60	Reply

```

Frame 3: 89 bytes on wire (712 bits), 89 bytes captured (712 bits) on interface -, id 0
Ethernet II, Src: c4:01:0f:49:00:00 (c4:01:0f:49:00:00), Dst: Private_66:68:00 (00:50:79:66:68:00)
Internet Protocol Version 4, Src: 10.10.10.2, Dst: 20.10.10.1
User Datagram Protocol, Src Port: 53, Dst Port: 52222
Domain Name System (response)
  Transaction ID: 0xd639
  ▶ Flags: 0x8180 Standard query response, No error
  Questions: 1
  Answer RRs: 1
  Authority RRs: 0
  Additional RRs: 0
  ▼ Queries
    ▼ server.R2.com: type A, class IN
  ▼ Answers
    ▼ server.R2.com: type A, class IN, addr 10.10.10.2
      [Request In: 2]
      [Time: 0.022630000 seconds]

```