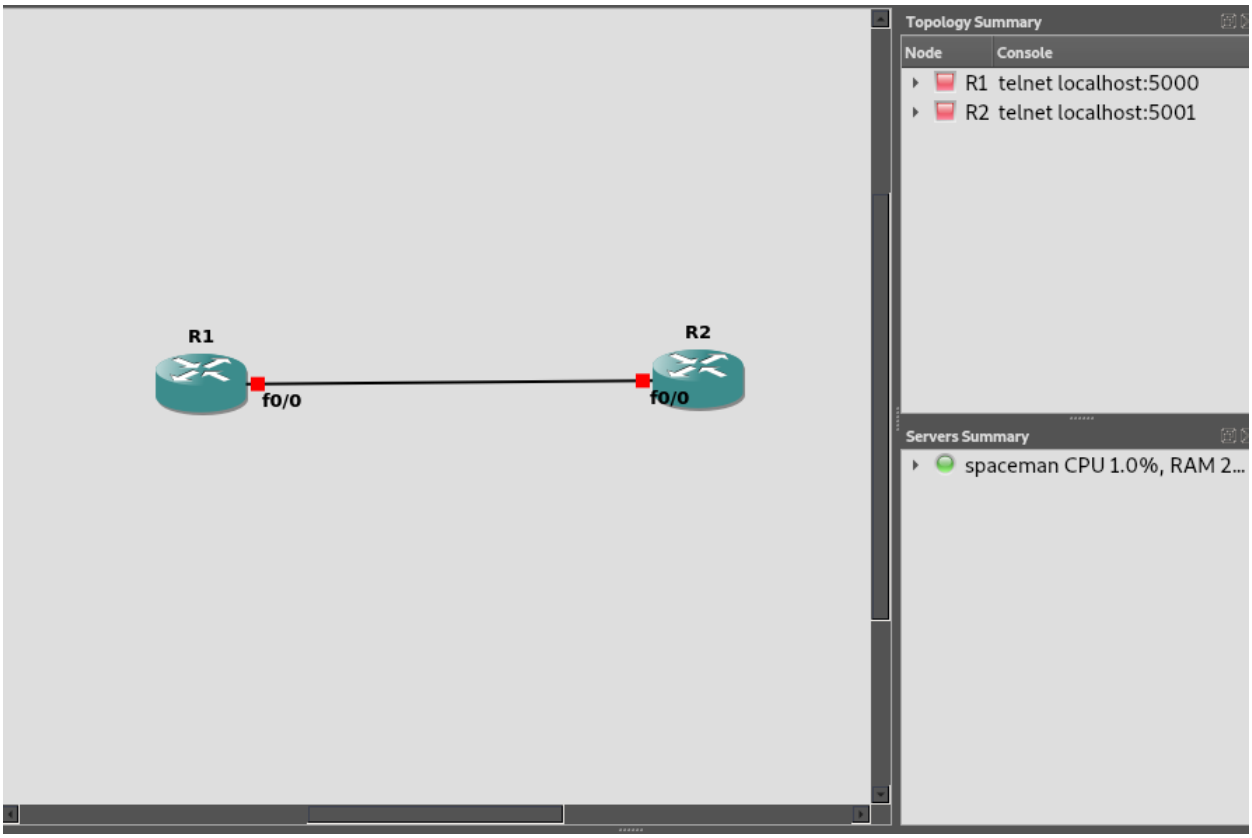
Q1. Configure the below topology to setup DNS server. R1 will use R2 as DNS server to make DNS resolutions. First, let's begin with R1. We will setup hostname and IP related information.



R1 configuration:

```
R1#enable
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
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 shutdown
R1(config-if)#
*Mar  1 00:03:07.679: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:03:08.679: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#write
             ^
% Invalid input detected at '^' marker.

R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#end
R1#
*Mar  1 00:03:35.907: %SYS-5-CONFIG_I: Configured from console by console
R1#
```

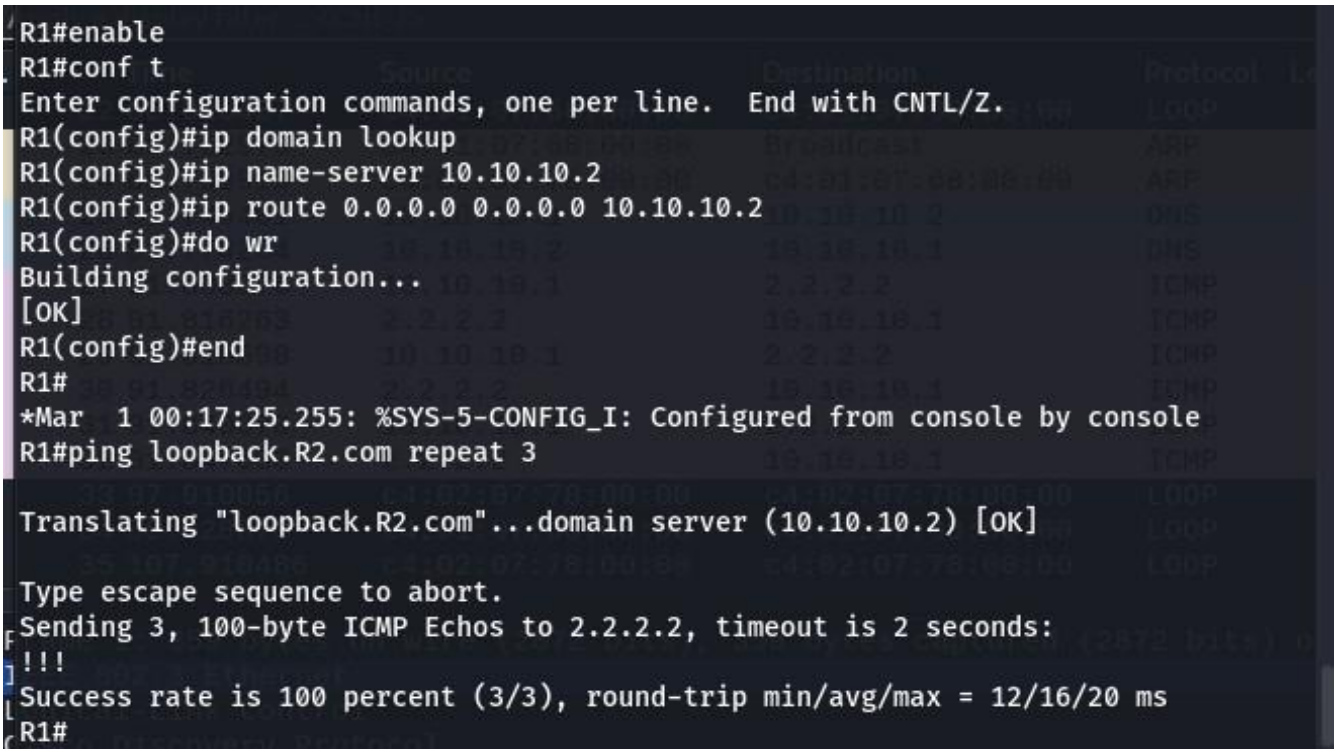
R2 configuration:

```
R2#enable
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#hostname R2
R2(config)#interface f0/0
R2(config-if)#ip address 10.10.10.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Mar  1 00:05:14.295: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:05:15.295: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#end
R2#
*Mar  1 00:05:41.255: %SYS-5-CONFIG_I: Configured from console by console
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 loopback 1
R2(config-if)#
*Mar  1 00:07:48.271: %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 00:08:10.971: %SYS-5-CONFIG_I: Configured from console by console
R2#
```

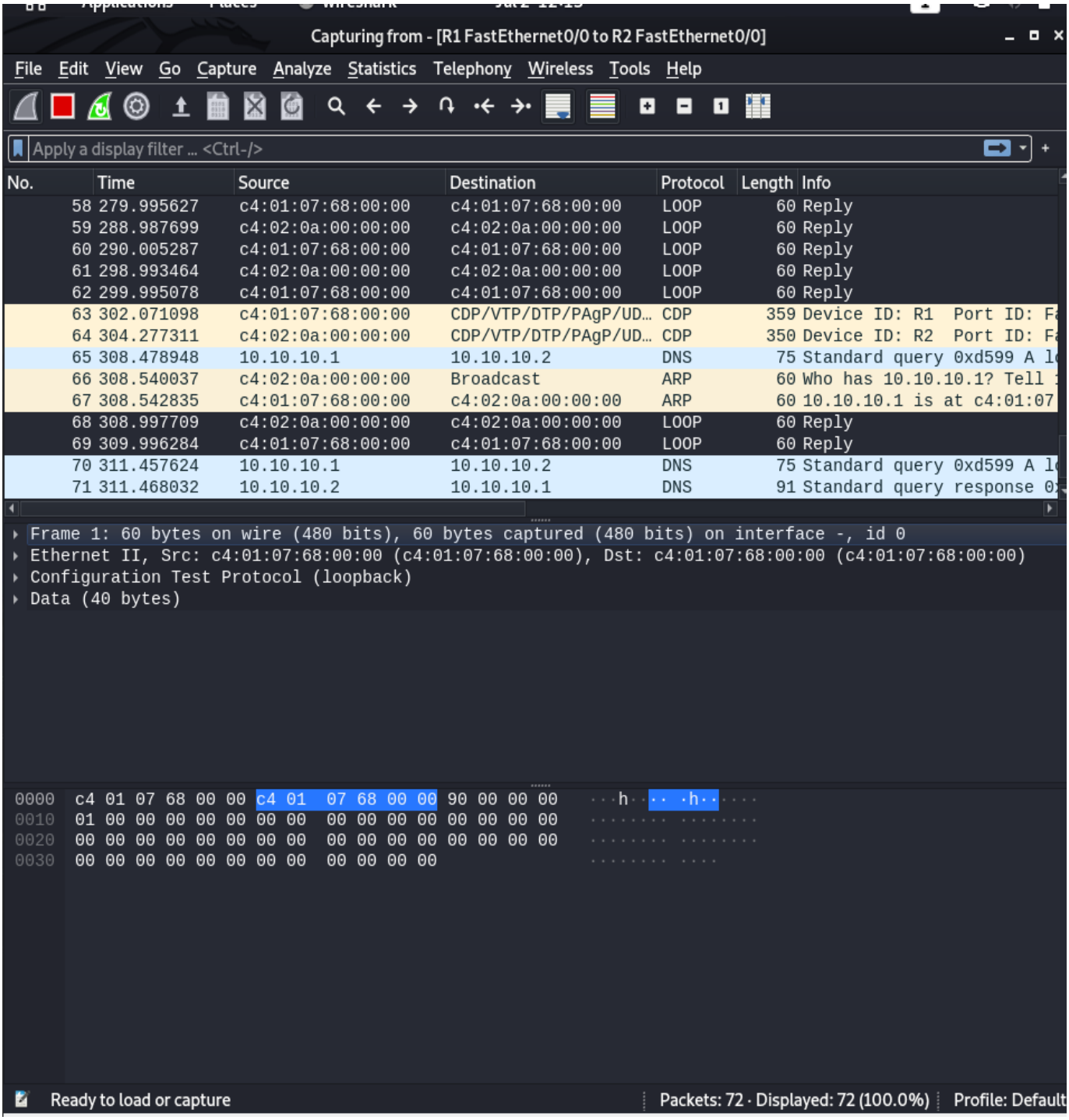
```
R2(config-if)#ip address 2.2.2.2 255.255.255.255
R2(config-if)#end
R2#
*Mar  1 00:15:29.791: %SYS-5-CONFIG_I: Configured from console by console
R2#ping loopback.R2.com

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 = 1/2/4 ms
R2#
```

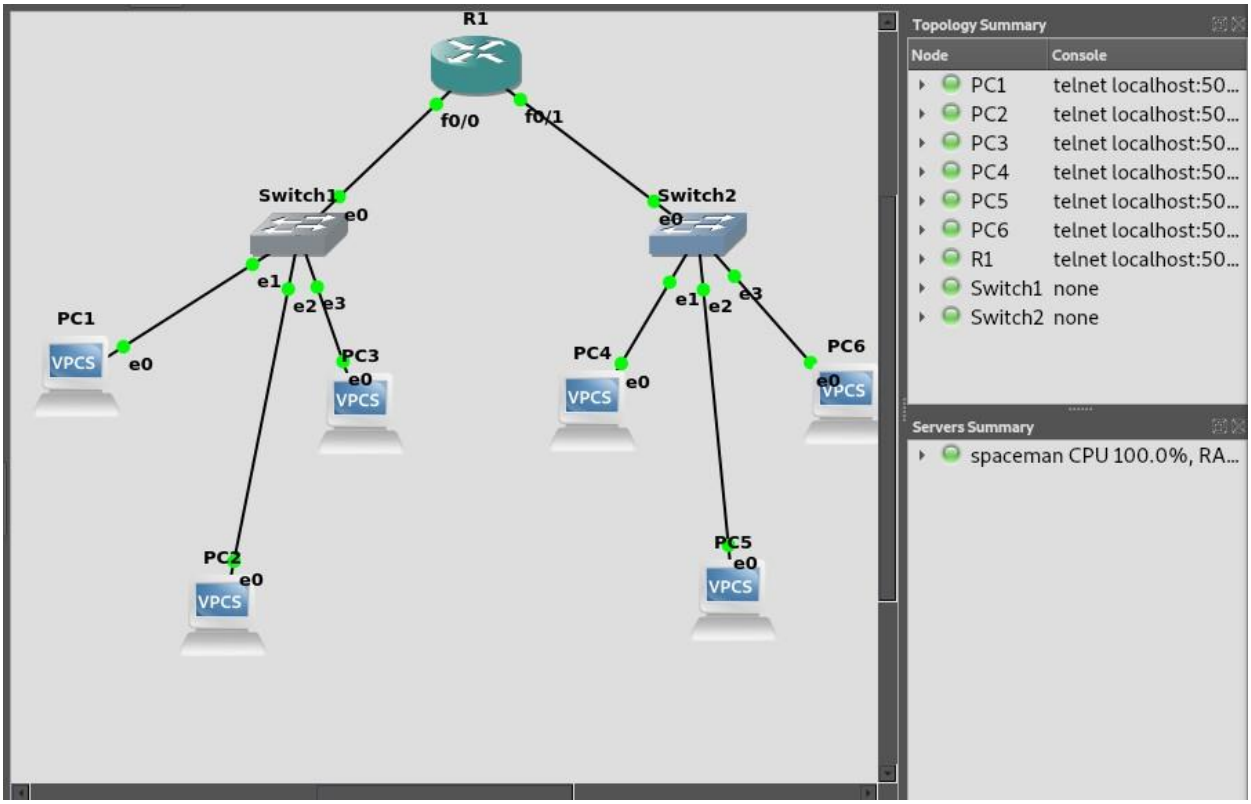
R1 configuration again



Wireshark output



Ques 2. Configure the topology shown below DNS Server and DNS Client. Test the setup. Analyse the Interaction.



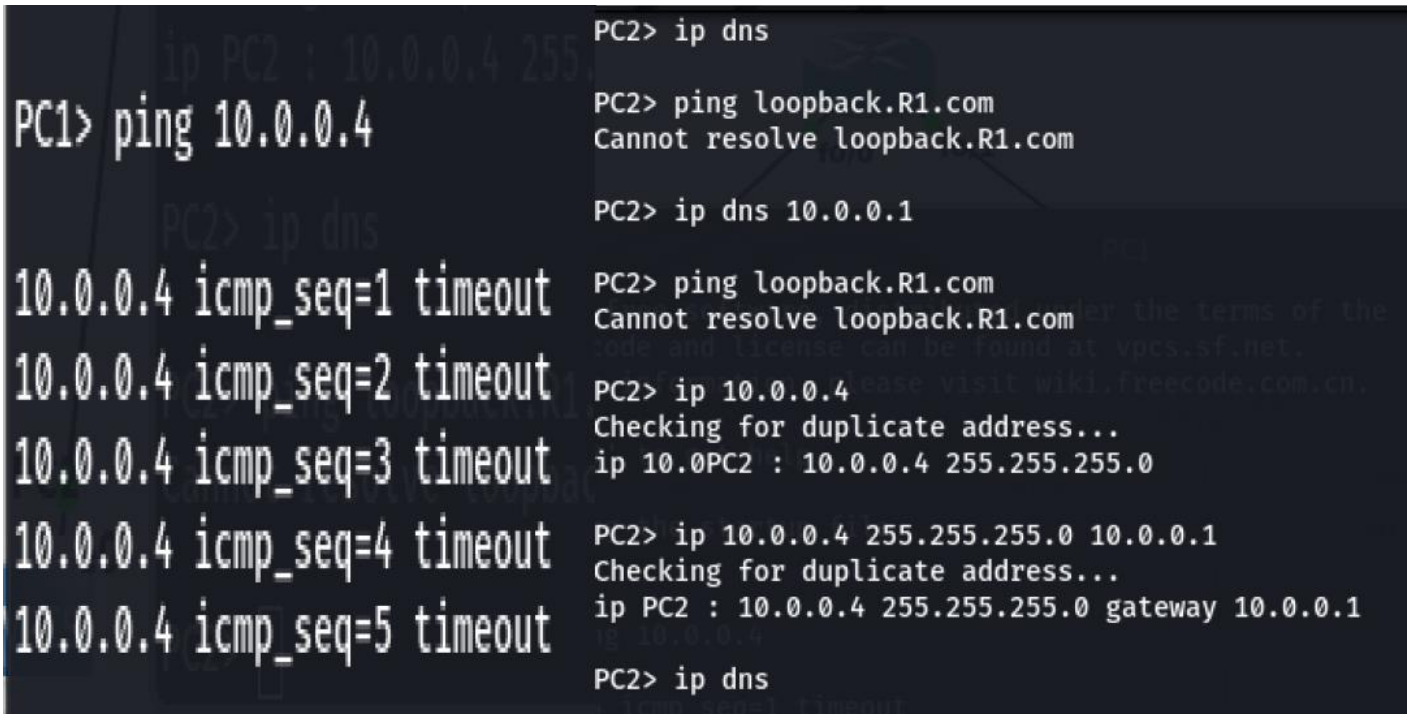

```
R1(config)#ip dns server
R1(config)#ip host loopback.R1.com 2.2.2.2
R1(config)#interface loopback 1
R1(config-if)#i
*Mar  1 00:31:15.739: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R1(config-if)#ip address 2.2.2.2 255.255.255.255
R1(config-if)#end
R1#
*Mar  1 00:31:31.583: %SYS-5-CONFIG_I: Configured from console by console
R1#ping loopback.R1.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 = 1/1/4 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
R1#
*Mar  1 00:33:08.943: %SYS-5-CONFIG_I: Configured from console by console
```

```
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
R1#
*Mar  1 00:37:14.547: %SYS-5-CONFIG_I: Configured from console by console
R1#ping loopback.R1.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
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
R1#pin
*Mar  1 00:37:46.831: %SYS-5-CONFIG_I: Configured from console by console
```

```
R1#sh ip int brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            10.10.10.1      YES manual up                    up
Serial0/0                  unassigned      YES unset  administratively down down
FastEthernet0/1            unassigned      YES unset  administratively down down
Serial0/1                  unassigned      YES unset  administratively down down
Serial0/2                  unassigned      YES unset  administratively down down
FastEthernet1/0            unassigned      YES unset  administratively down down
Serial2/0                  unassigned      YES unset  administratively down down
Serial2/1                  unassigned      YES unset  administratively down down
Serial2/2                  unassigned      YES unset  administratively down down
Serial2/3                  unassigned      YES unset  administratively down down
Loopback1                  2.2.2.2         YES manual up                    up
R1#
```


PC1> ping 10.0.0.4
10.0.0.4 icmp_seq=1 timeout
10.0.0.4 icmp_seq=2 timeout
10.0.0.4 icmp_seq=3 timeout
10.0.0.4 icmp_seq=4 timeout
10.0.0.4 icmp_seq=5 timeout
PC2> ip dns
PC2> ping loopback.R1.com
Cannot resolve loopback.R1.com
PC2> ip dns 10.0.0.1
PC2> ping loopback.R1.com
Cannot resolve loopback.R1.com
PC2> ip 10.0.0.4
Checking for duplicate address...
ip 10.0PC2 : 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...
ip PC2 : 10.0.0.4 255.255.255.0 gateway 10.0.0.1
PC2> ip dns