Lab4 – Computer Network Design using SWITCH and ROUTERS in GNS3

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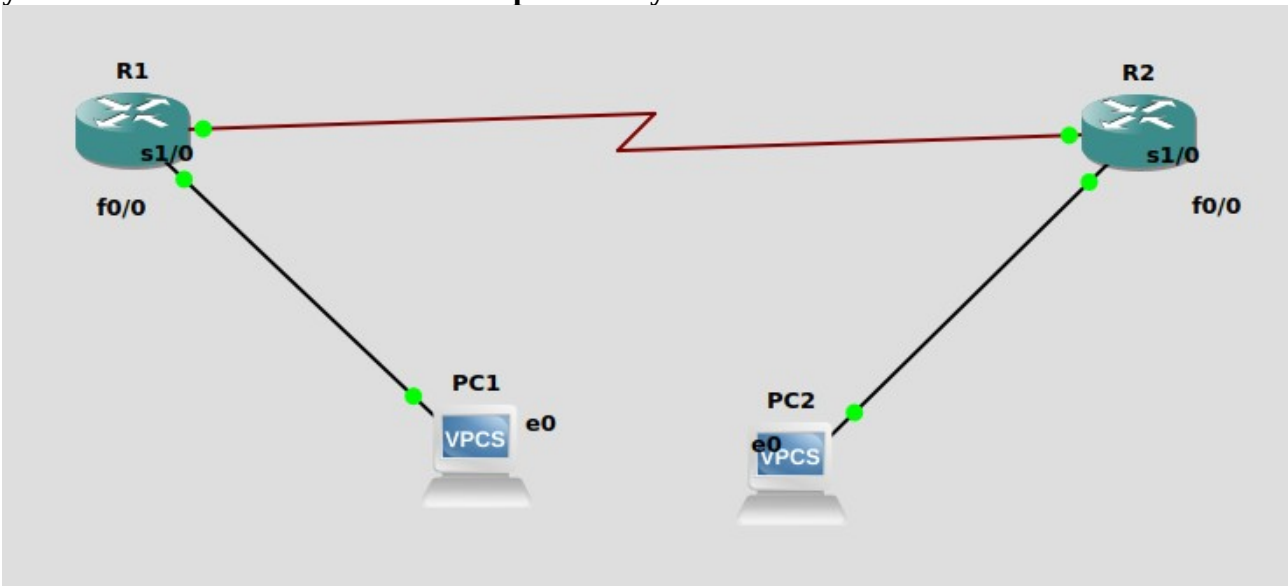
1. Switching Cisco IOS Command Modes

This exercise demonstrates how to log into a router and how to work with the different Cisco IOS command modes. It is important to understand the different modes so you know where you are and what commands are accepted at any time.



I made the network structure and assigned IP addresses to every interface.

R1:
s1/0: 10.0.0.1 255.0.0.0
f0/0: 20.0.0.1 255.0.0.0

R2:
s1/0: 10.0.0.2 255.0.0.0
f0/0: 30.0.0.1 255.0.0.0

PC1:
20.0.0.2 Gateway: 20.0.0.1

PC2:
30.0.0.2 Gateway: 30.0.0.1

I pinged PC2 from PC1, but there was a timeout.

This is because the packets are going through the gateway but not getting routed completely. For this,we need to configure the routers with the **destination network** and **next hop's IP address.**

Pc2 to s1/0 of r2

```
R1(config)#ip route 30.0.0.0 255.0.0.0 10.0.0.2
R1(config)#
```

pc1 to s1/0 of r1

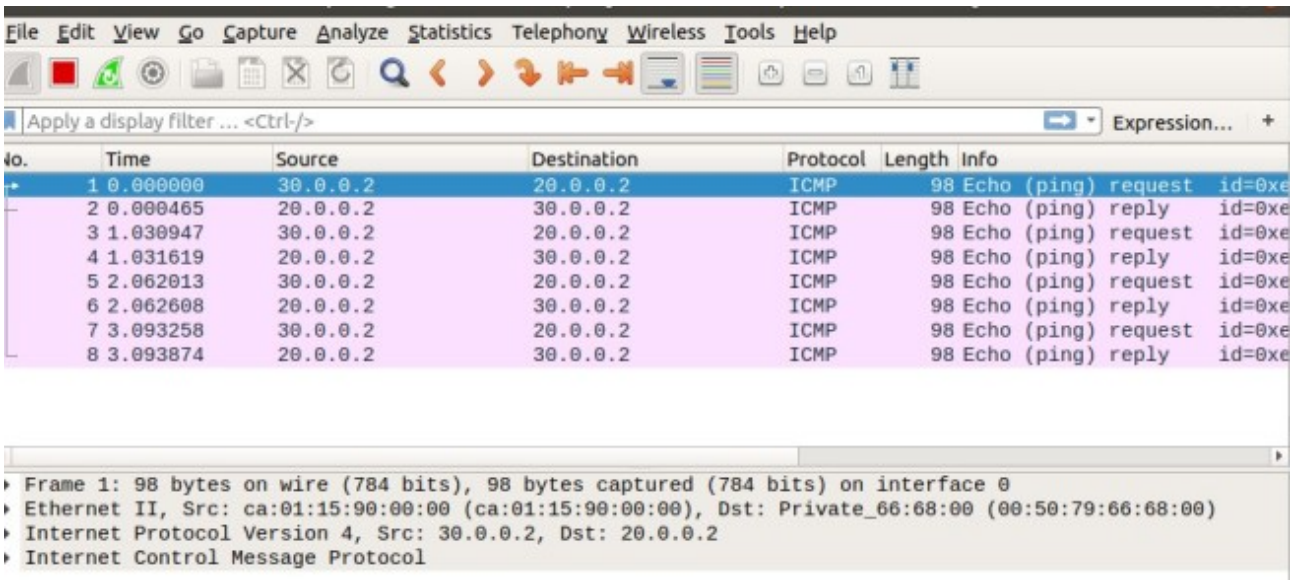
```
R2(config)#ip route 20.0.0.0 255.0.0.0 10.0.0.1
R2(config)#
```

Now the routes have been established.

We ping PC1 from PC2 again, and this is the response:

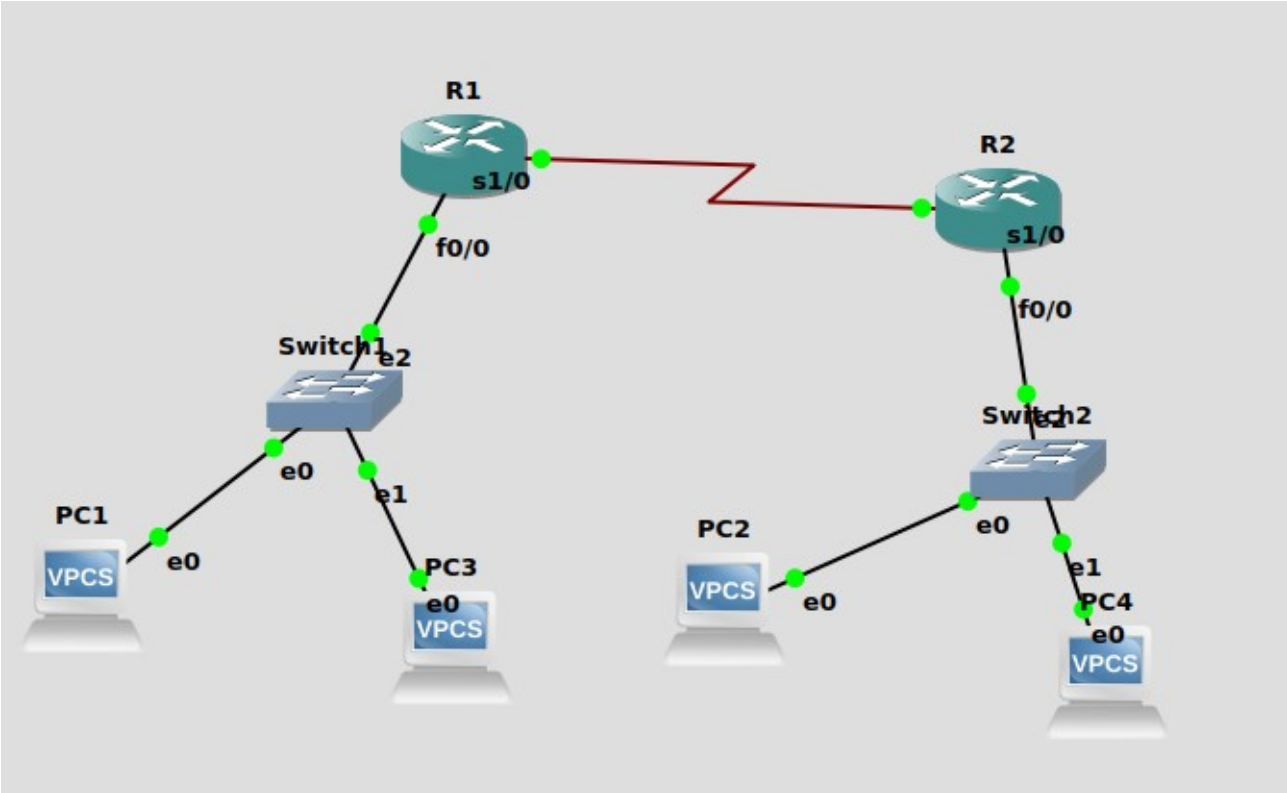
```
PC2> ping 20.0.0.2

20.0.0.2 icmp_seq=1 timeout
84 bytes from 20.0.0.2 icmp_seq=2 ttl=62 time=29.016 ms
84 bytes from 20.0.0.2 icmp_seq=3 ttl=62 time=29.828 ms
84 bytes from 20.0.0.2 icmp_seq=4 ttl=62 time=39.609 ms
84 bytes from 20.0.0.2 icmp_seq=5 ttl=62 time=40.955 ms
```

We can see ICMP messages being passed from PC1 (20.0.0.2) to PC2(30.0.0.2).



2) Next Page

Configure the below network topology as shown in Figure 7.8 and check the connectivity by pinging from PC0 to PC2.



Since there are multiple PCs on each network, we use a switch to help us forward the data to the destination device.

I first constructed the network topology and assigned IP addresses to every interface.

R1:
s1/0: 10.0.0.1 255.0.0.0
f0/0: 20.0.0.1 255.0.0.0

R2:
s1/0: 10.0.0.2 255.0.0.0
f0/0: 30.0.0.1 255.0.0.0

PC1:
20.0.0.2 Gateway: 20.0.0.1

PC2:
30.0.0.2 Gateway: 30.0.0.1

PC3:
20.0.0.3 Gateway: 20.0.0.1

PC4:
30.0.0.3 Gateway: 30.0.0.1

- I configured the routers with their respective routes (destination network ID and next hop IP address).

- First, to check whether the individual network with ID 30.0.0.0 is working, I

pinged PC4 (30.0.0.3) from PC32(30.0.0.2) and i could clearly see ICMP messages being exchanged between the two devices which confirmed the exchange of data.

- Next, to check whether my routers are working properly, I pinged PC1 (20.0.0.2) from PC2(30.0.0.2), and again, Wireshark showed me ICMP messages getting exchanged from address 30.0.0.2 to 20.0.0.2 and vice versa.