Computer Networks Lab

Oct 26, 2021

Experiment -13

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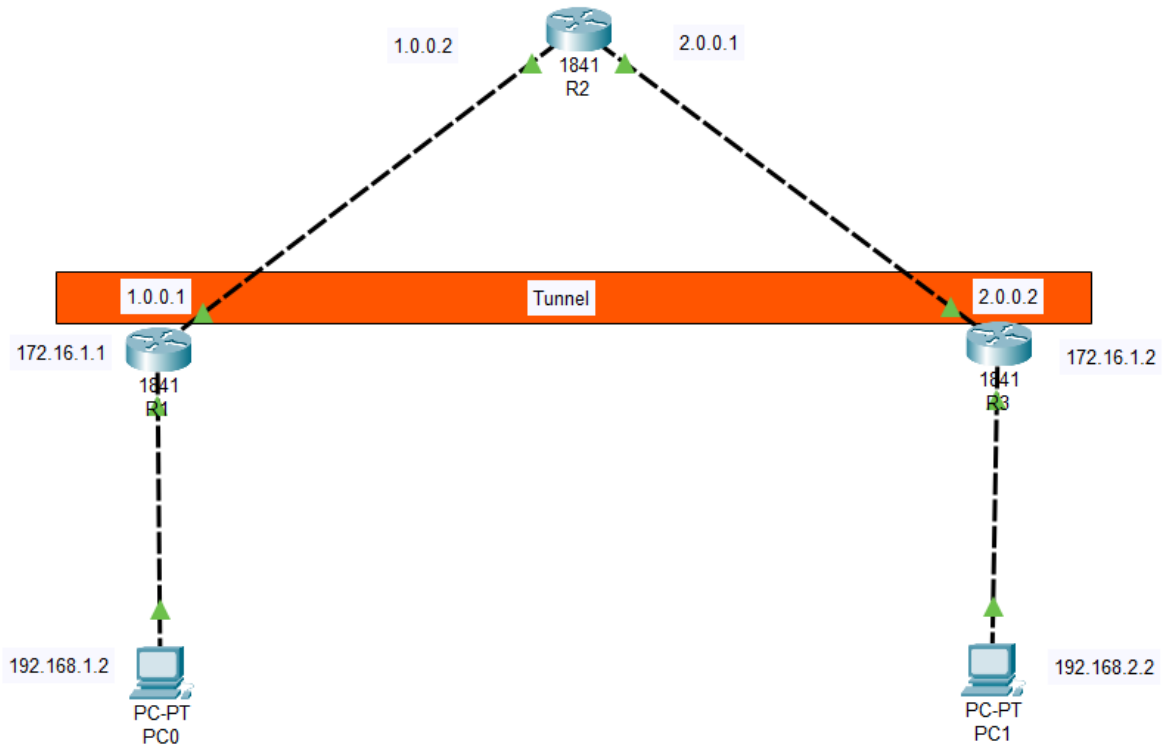
Aim:

To implement VPN Configuration using Cisco Packet Tracer

Setup:



ire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC1	PC0	ICMP		0.000	N	1	(edit)	(delete)

Procedure:

Create the setup as shown in the following figure and configure everything according to it. After placing the routers, open each one of them, turn the switch off and place WIC-1T in its respective slot and turn the switch back on.

Configuration on Router R1:

```
Router > enable
Router#config t
Router(config)#host r1
r1(config)#int fa0/0
r1(config-if)#ip add 192.168.1.1 255.255.255.0
r1(config-if)#no shutdown
r1(config-if)#exit
r1(config)#int fa0/1
r1(config-if)#ip address 1.0.0.1 255.0.0.0
r1(config-if)#no shutdown
```

Configuration on Router R2:

```
Router>enable
Router#config t
Router(config)#host r2
r2(config)#int fa0/0
r2(config-if)#ip add 1.0.0.2 255.0.0.0
r2(config-if)#no shutdown
r2(config-if)#exit
r2(config)#int fa0/1
r2(config-if)#ip add 2.0.0.1 255.0.0.0
r2(config-if)#no shutdown
```

Configuration on Router R3:

```
Router>enable
Router#config t
Router(config)#host r3
r3(config)#int fa0/0
r3(config-if)#ip add 2.0.0.2 255.0.0.0
r3(config-if)#no shutdown
r3(config-if)#exit
r3(config)#int fa0/1
r3(config-if)#ip add 192.168.2.1 255.255.255.0
r3(config-if)#no shutdown
```

Default routing configuration on Router R1:

```
r1>enable
r1#config t
Enter configuration commands, one per line. End with CNTL/Z.
r1(config)#ip route 0.0.0.0 0.0.0.0 1.0.0.2
r1(config)#
```

Default routing configuration on Router R3:

```
r3>enable
r3#config t
Enter configuration commands, one per line. End with CNTL/Z.
r3(config)#ip route 0.0.0.0 0.0.0.0 2.0.0.1
r3(config)#
```

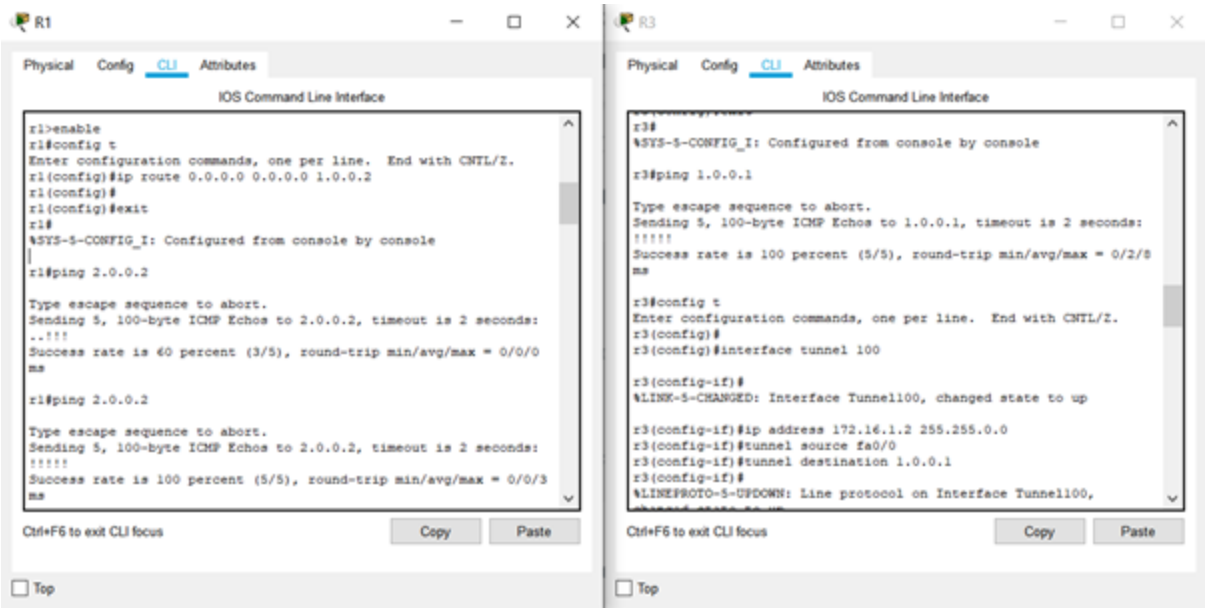
Testing:

First, we go to router r1 and ping with router r3:

```
r1#ping 2.0.0.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.0.0.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 26/28/33 ms
```

Now we go to router r3 and test the network by pinging the router r1 interface.

```
r3#ping 1.0.0.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 1.0.0.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 25/28/32 ms
```



you can clearly see both routers pinging each other successfully.

Now, create VPN TUNNEL between R1 and R3:

First create a VPN TUNNEL on Router R1:

r1#config t
r1(config)#interface tunnel 10
r1(config-if)#ip address 172.16.1.1 255.255.0.0
r1(config-if)#tunnel source fa0/1
r1(config-if)#tunnel destination 2.0.0.2
r1(config-if)#no shutdown

Now, create a VPN TUNNEL on Router R3:

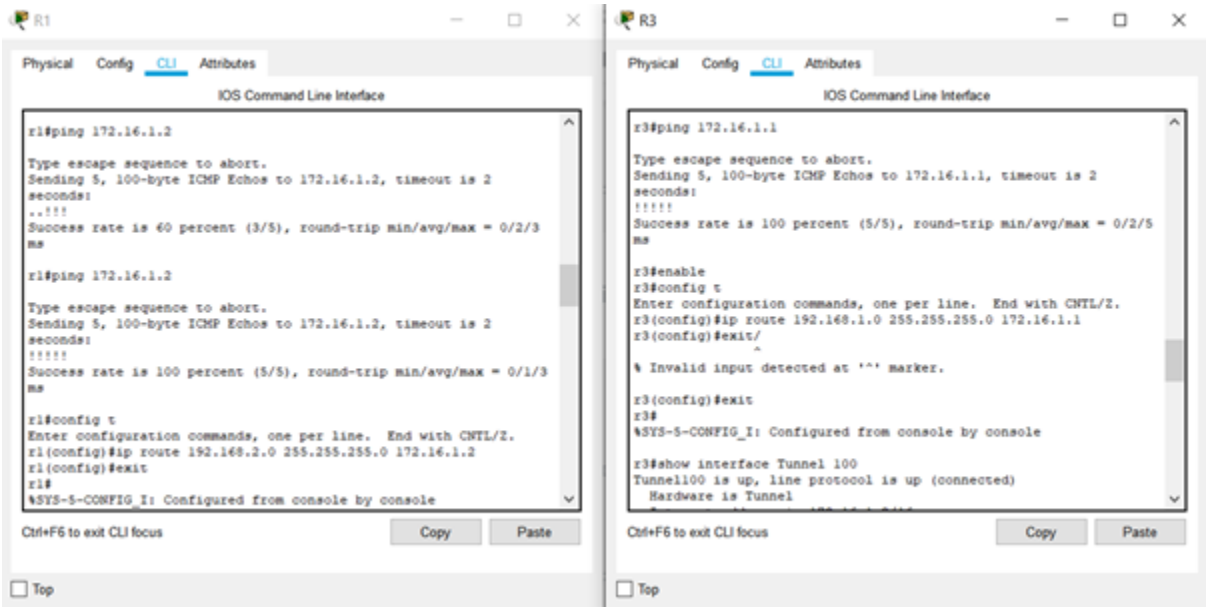
r3#config t
r3(config)#interface tunnel 100
r3(config-if)#ip address 172.16.1.2 255.255.0.0
r3(config-if)#tunnel source fa0/0
r3(config-if)#tunnel destination 1.0.0.1
r3(config-if)#no shutdown

Now test communication between these two routers again by pinging each other:

r1#ping 172.16.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.1.2, timeout is 2 seconds:
!!!!!

r3#ping 172.16.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.1.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 33/45/83 ms



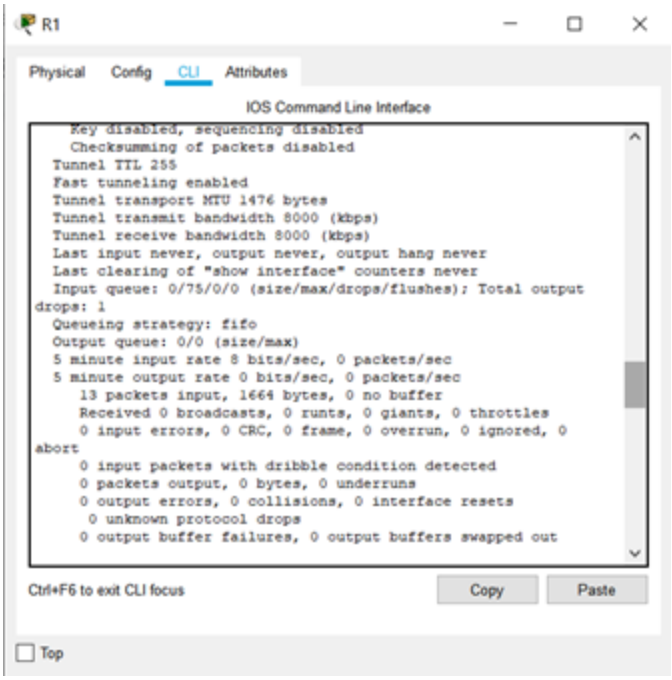
Now Do routing for created VPN Tunnel on Both Router R1 and R3:
r1(config)#ip route 192.168.2.0 255.255.255.0 172.16.1.2

r3(config)#ip route 192.168.1.0 255.255.255.0 172.16.1.1

TEST VPN TUNNEL CONFIGURATION:

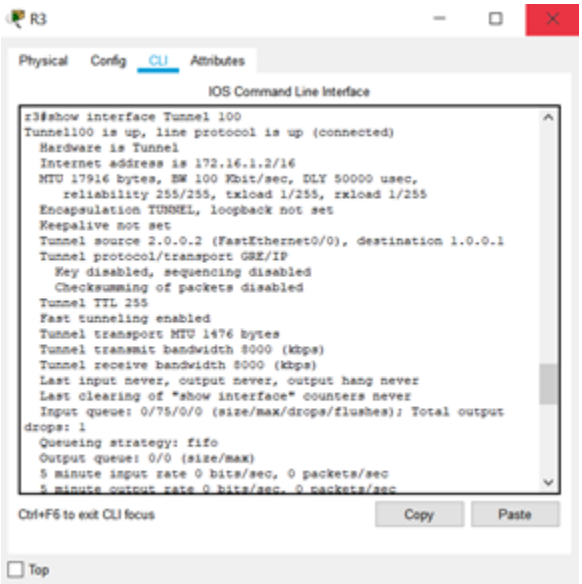
Now, I am going to router R1 and test whether a tunnel is created or not.

r1#show interfaces Tunnel 10



Now going to Router R3 and test VPN Tunnel Creation:

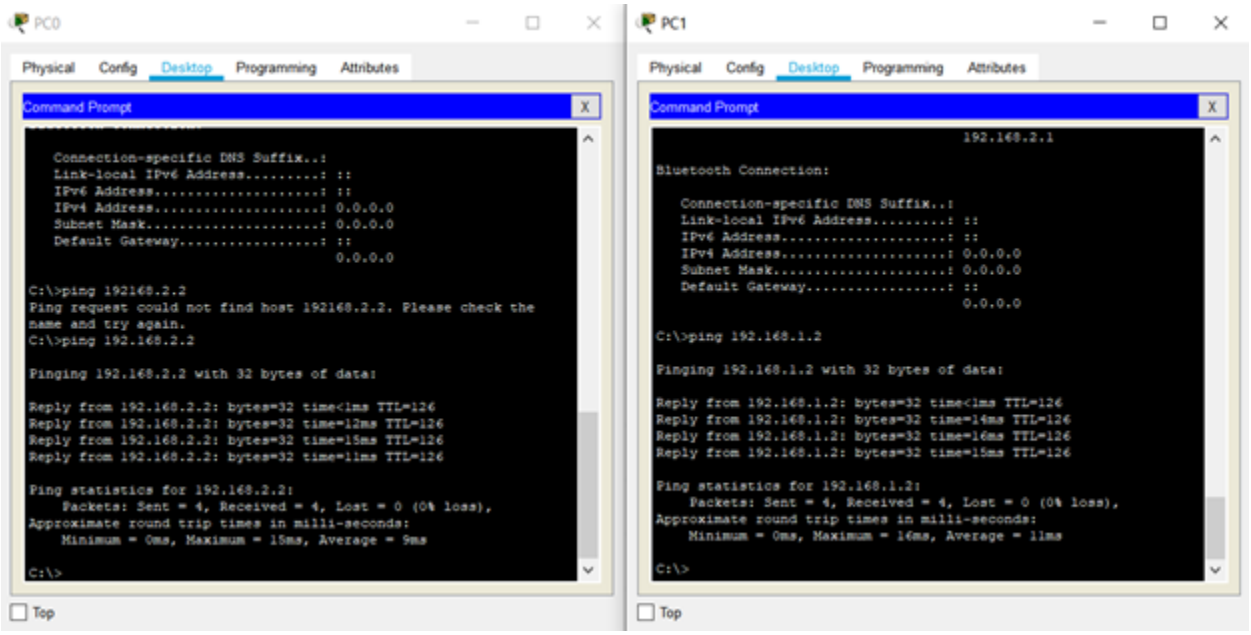
r3#show interface Tunnel 100



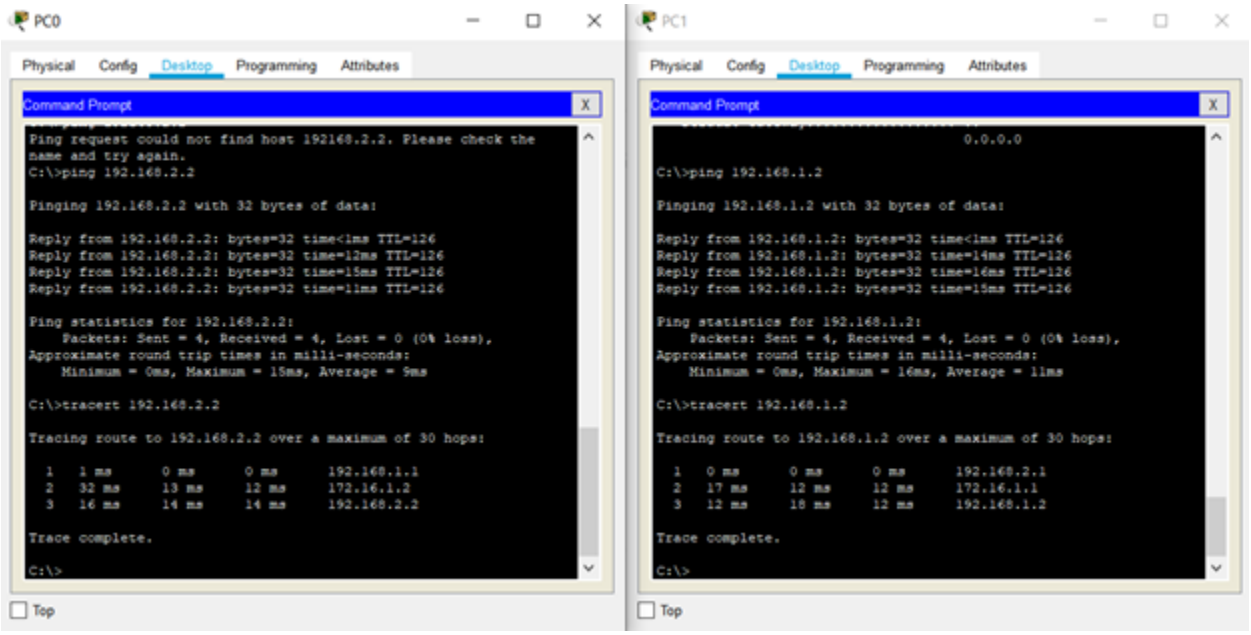
HOW TO TRACE THE VPN TUNNEL PATH?

Now if you want to check what path vpn tunnel is using just go to any of the computers i.e pc and then ping another pc located in a different network. And then trace the path using tracert. Its result will show the path followed by the VPN Tunnel created by you.

PC>ipconfig
PC>ping 192.168.1.2



PC>tracert 192.168.1.2



Result:

The above aim has been successfully achieved and verified.