Practical No 6

Aim: Using Packet Tracer to create a network with three routers with RIPv2 and each router associated network will have minimum three PC and show the connectivity

Theory:

RIPv2 is an enhancement to the original RIP protocol developed in 1994. RIPv2 is also a distance vector routing protocol but has a few enhancements to make it more efficient than RIPv1.
RIPv2 is more efficient than RIPv1, but is not suitable for larger, more complex networks. It simply provides more flexibility on smaller networks.
RIPv2 uses the same routing metric as RIPv1, the hop count. Updates with RIPv2 are sent via multicasts and not broadcasts. RIPv2 can also be configured to do classless routing. When configured for classless routing, RIPv2 will transmit submit masks when it sends routing updates. This allows for the use of subnetting and discontiguous networks.
RIPv2 allows for authentication to be required for updates. When authentication is enabled, each router is configured with the RIP update password. The password sent with the RIP update must match the password configured on the destination router. If the passwords do not match, then the receiving router will not process the update.

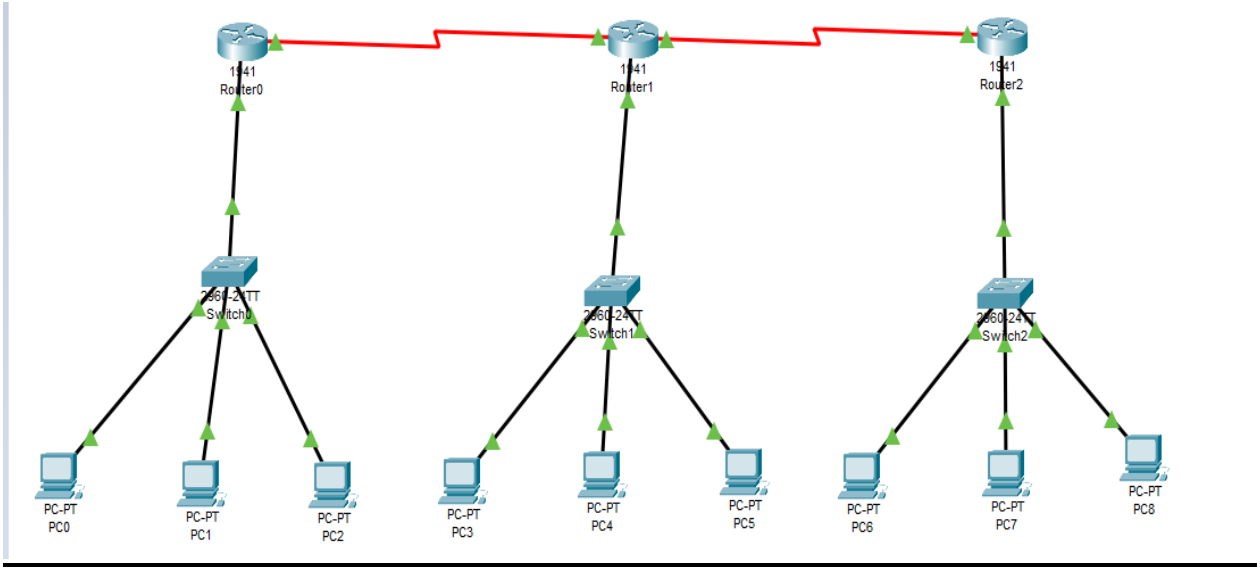
Advantages of RIPv2

1) It's a standardized protocol.
2) It's VLSM compliant.
3) Provides fast convergence.
4) It sends triggered updates when the network changes.
5) Works with snapshot routing – making it ideal for dial networks.

Disadvantage of RIPv2

1) Max hop count of 15, due to the 'count-to-infinity' vulnerability.
2) No concept of neighbors.
3) Exchanges entire table with all neighbors every 30 seconds (except in the case of a triggered update).

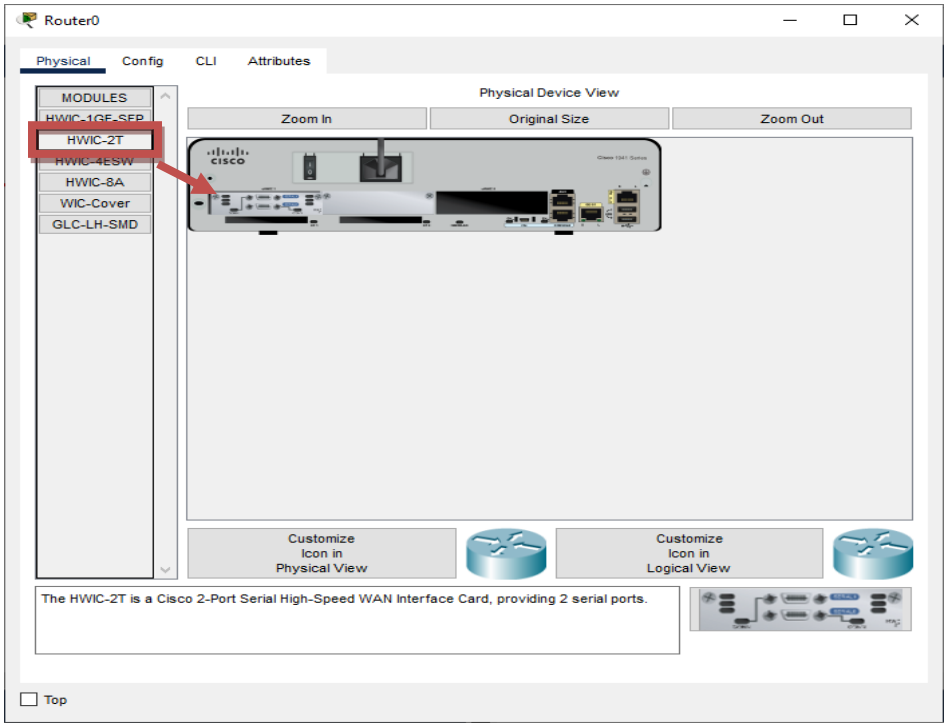
We use the following topology for the present case



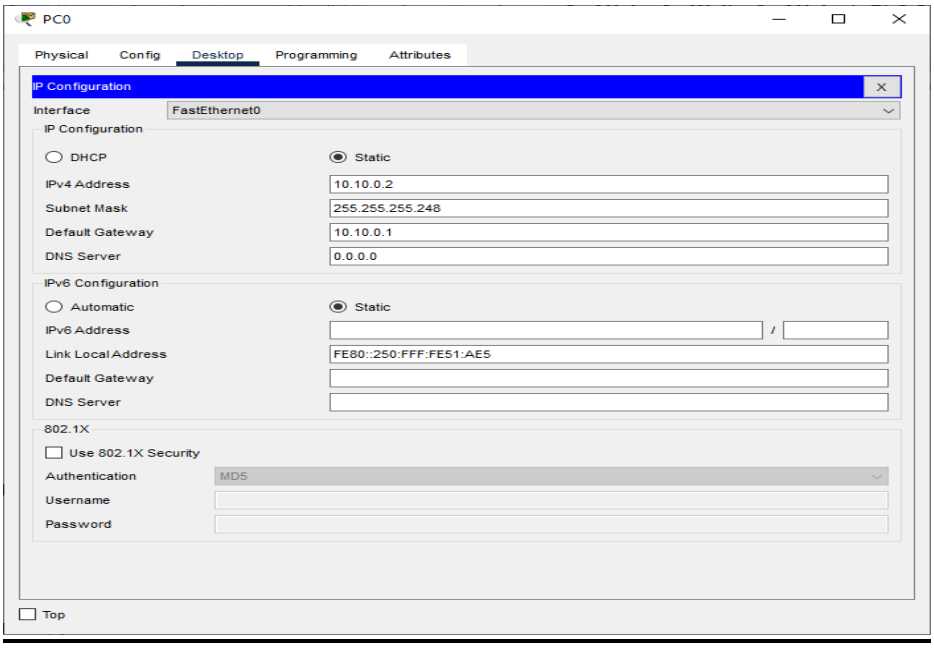
We configure the above network using the following IP addresses

Host	Interface	IP address	Subnet Mask	Network Address	Default Gateway
Router 0	G0/0	10.10.0.1	255.255.255.248	10.10.0.0	
	S0/1/0	192.168.0.1	255.255.255.252	192.168.0.0	
Router 1	G0/0	10.20.0.1	255.255.255.248	10.20.0.0	
	S0/1/0	192.168.0.2	255.255.255.252	192.168.0.0	
	S0/1/1	192.168.1.1	255.255.255.252	192.168.1.0	
Router 2	G0/0	10.30.0.1	255.255.255.248	10.30.0.0	
	S0/1/1	192.168.1.2	255.255.255.252	192.168.1.0	
PC0	FastEthernet0	10.10.0.2	255.255.255.248	10.10.0.0	10.10.0.1
PC1	FastEthernet0	10.10.0.3	255.255.255.248	10.10.0.0	10.10.0.1
PC2	FastEthernet0	10.10.0.4	255.255.255.248	10.10.0.0	10.10.0.1
PC3	FastEthernet0	10.20.0.2	255.255.255.248	10.20.0.0	10.20.0.1
PC4	FastEthernet0	10.20.0.3	255.255.255.248	10.20.0.0	10.20.0.1
PC5	FastEthernet0	10.20.0.4	255.255.255.248	10.20.0.0	10.20.0.1
PC6	FastEthernet0	10.30.0.2	255.255.255.248	10.30.0.0	10.30.0.1
PC7	FastEthernet0	10.30.0.3	255.255.255.248	10.30.0.0	10.30.0.1
PC8	FastEthernet0	10.30.0.4	255.255.255.248	10.30.0.0	10.30.0.1

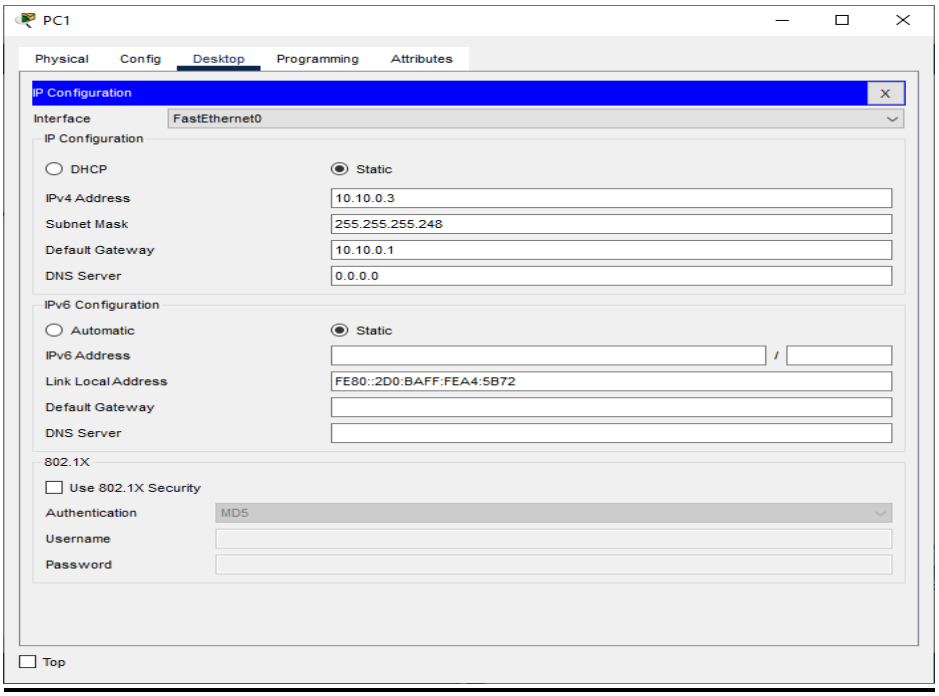
Adding Serial Interface in each Router



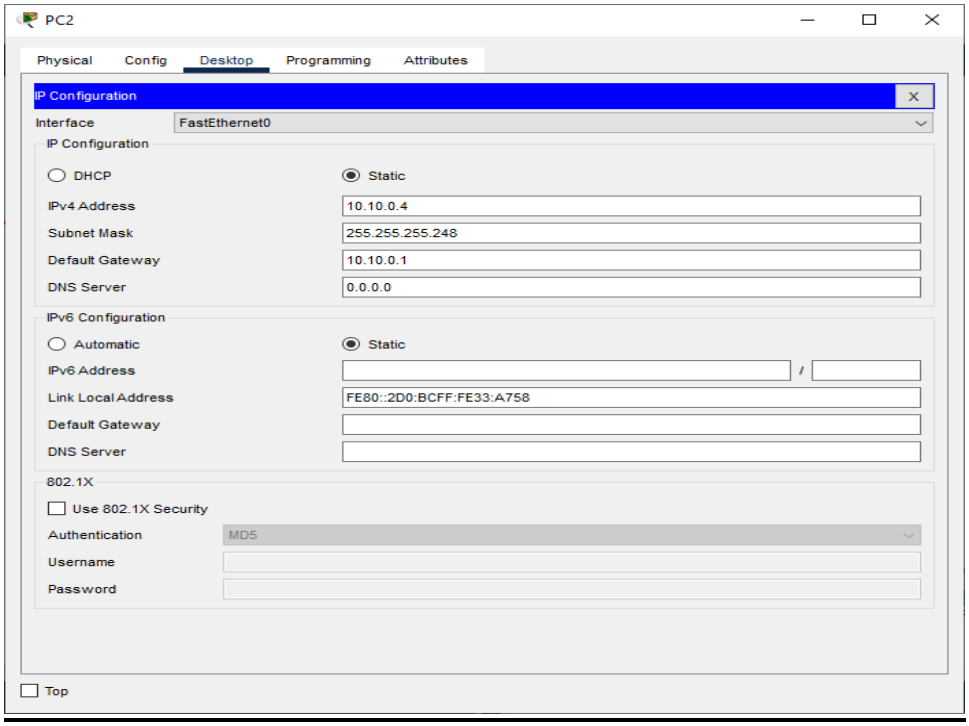
Configuring PC0:



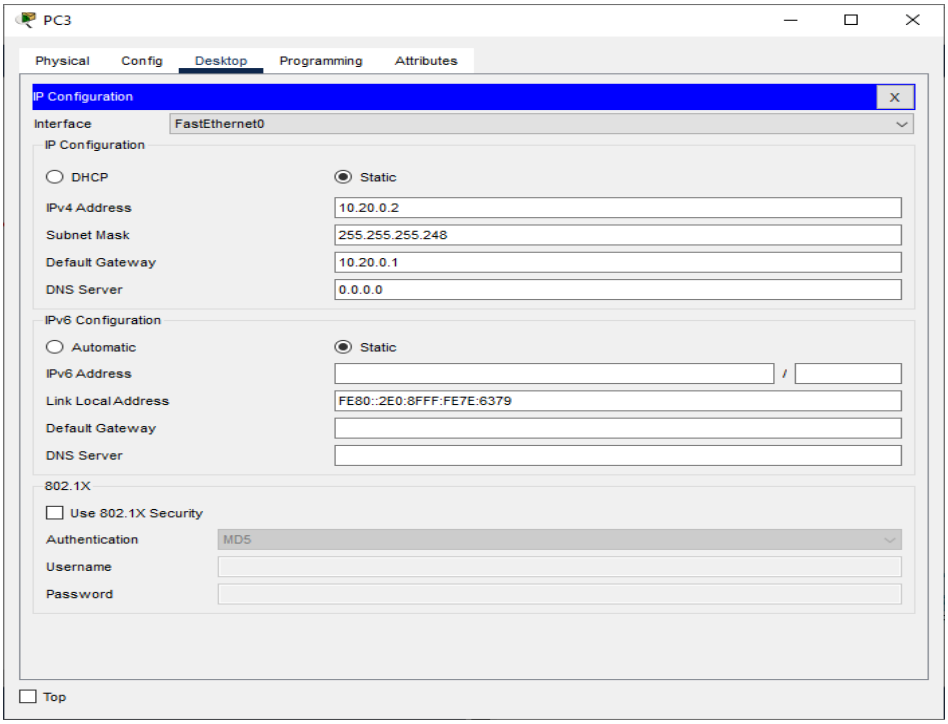
Configuring PC1:



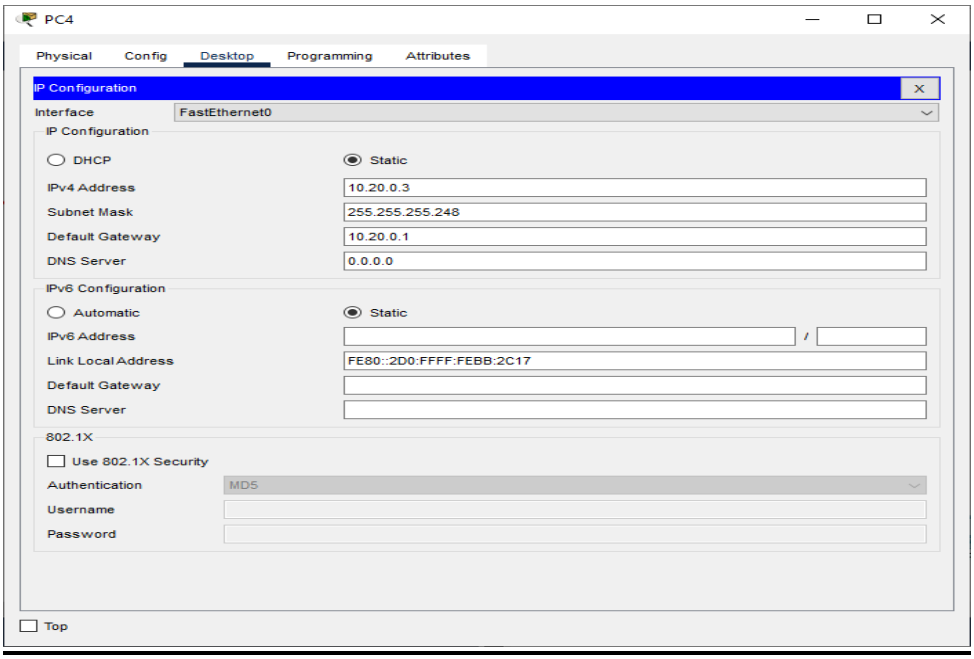
Configuring PC2:



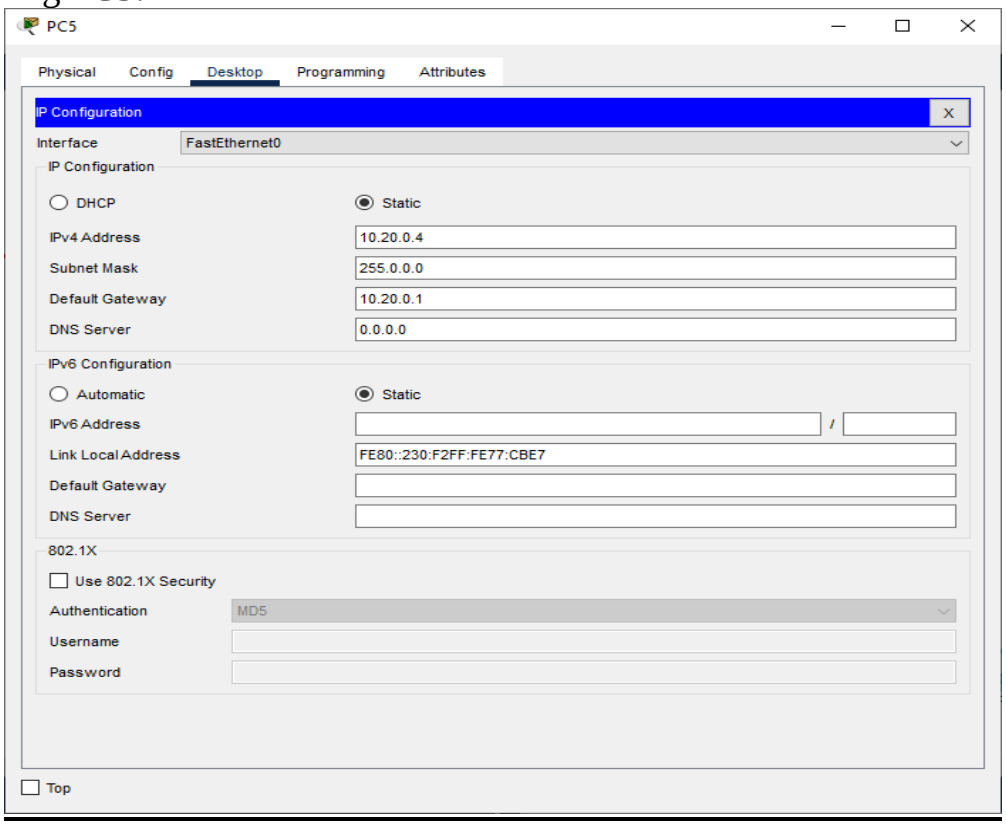
Configuring PC3:



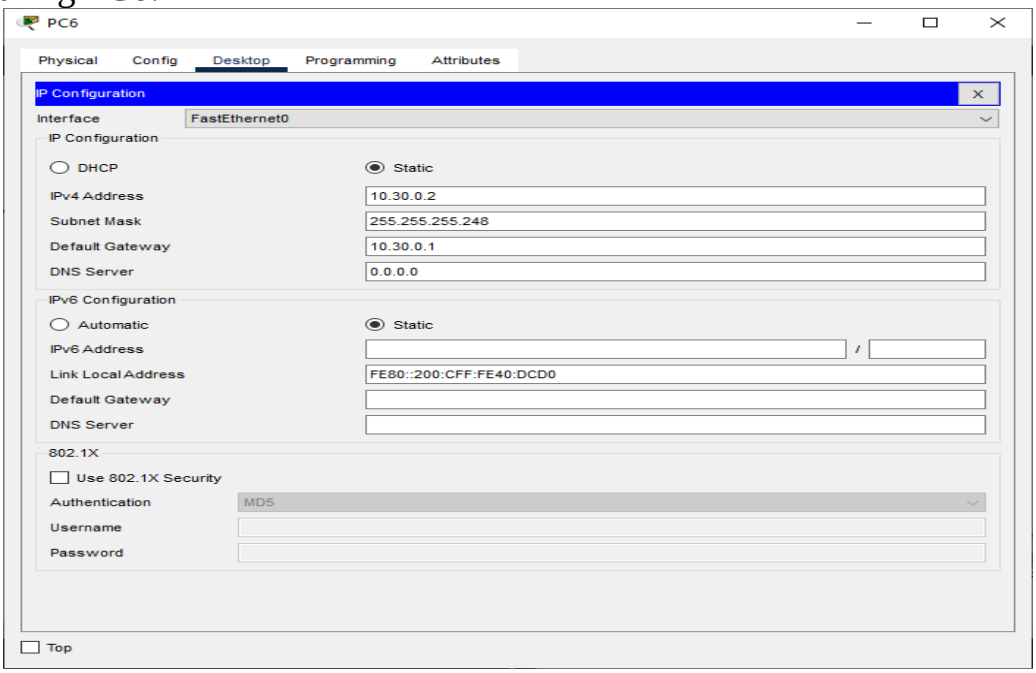
Configuring PC4:



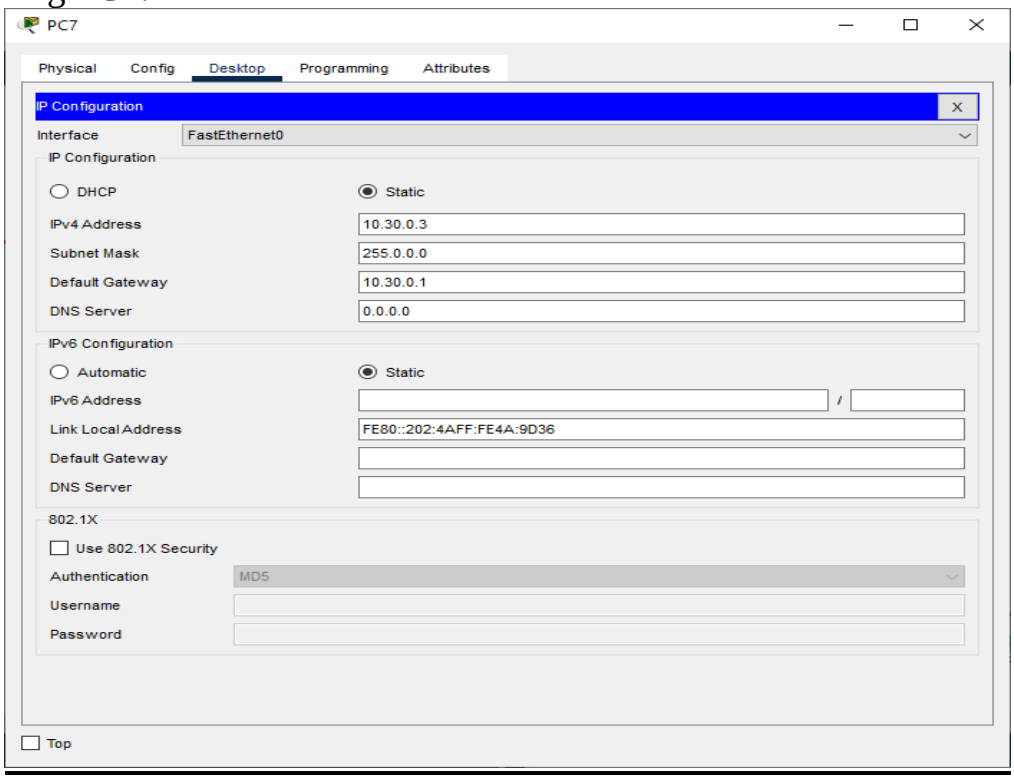
Configuring PC5:



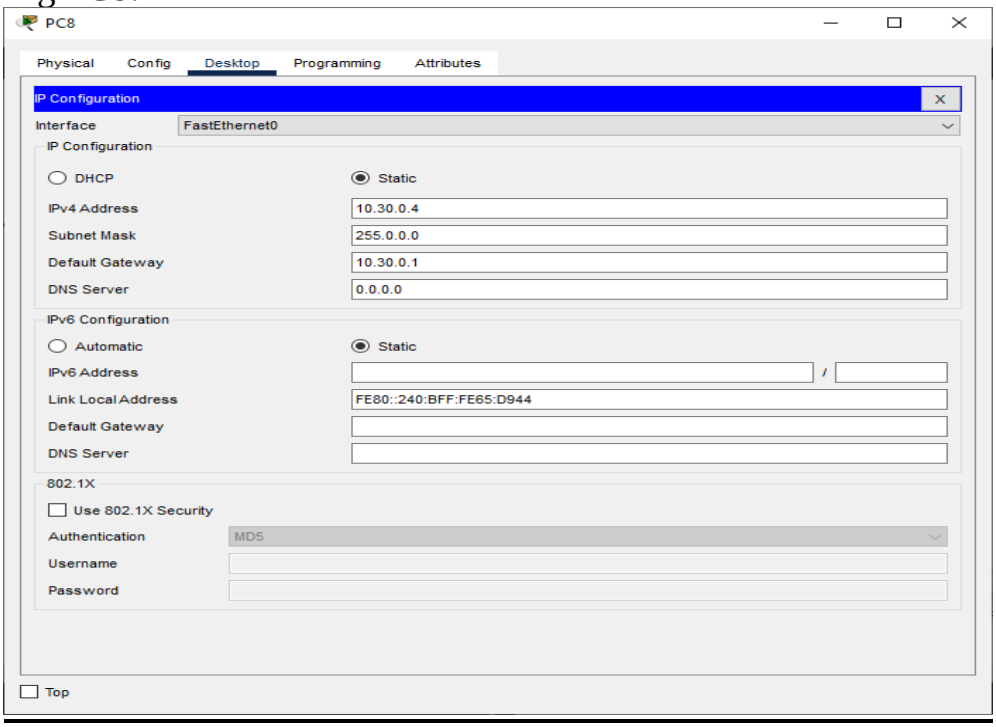
Configuring PC6:



Configuring PC7:

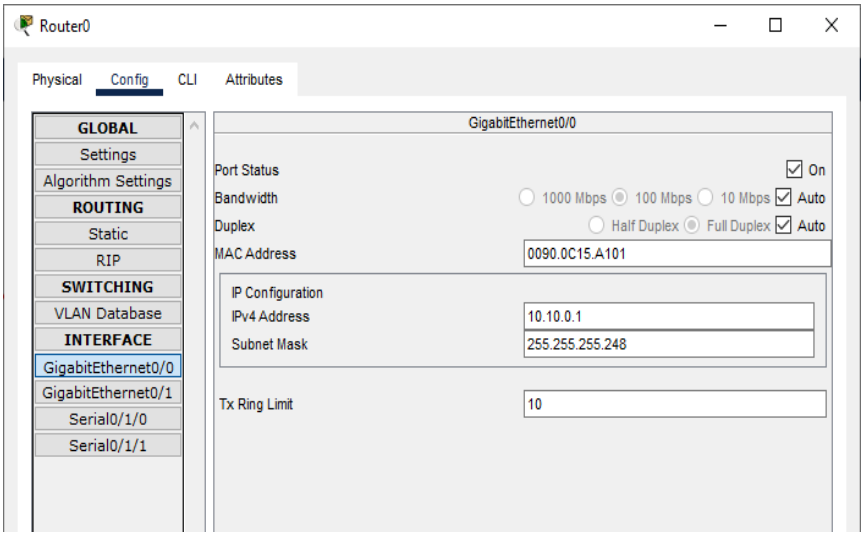


Configuring PC8:

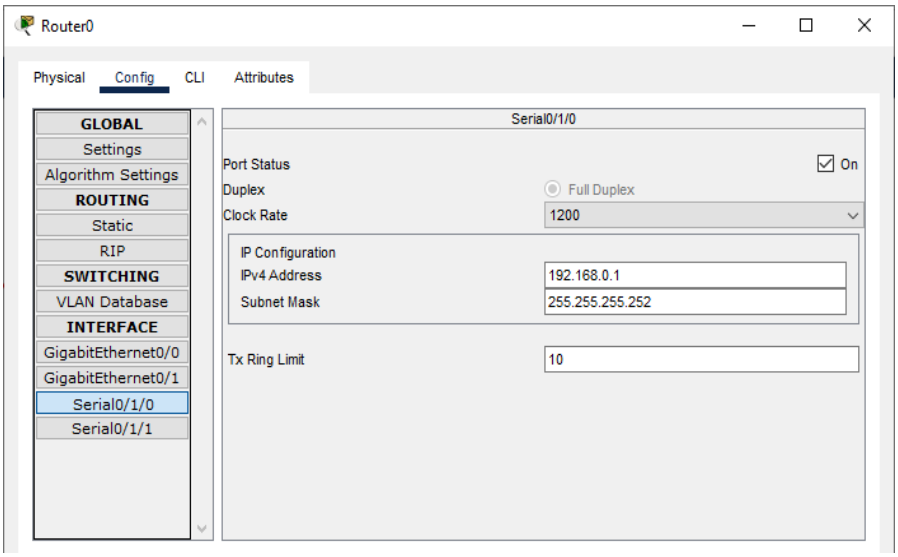


Configuring IP addresses on Router 0

i) Interface G0/0

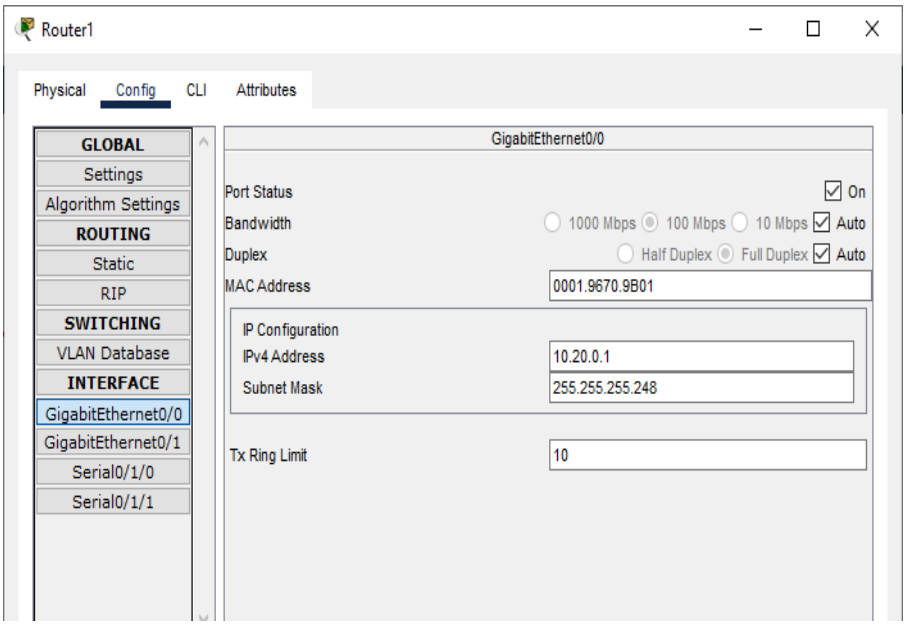


ii) Interface S0/1/0

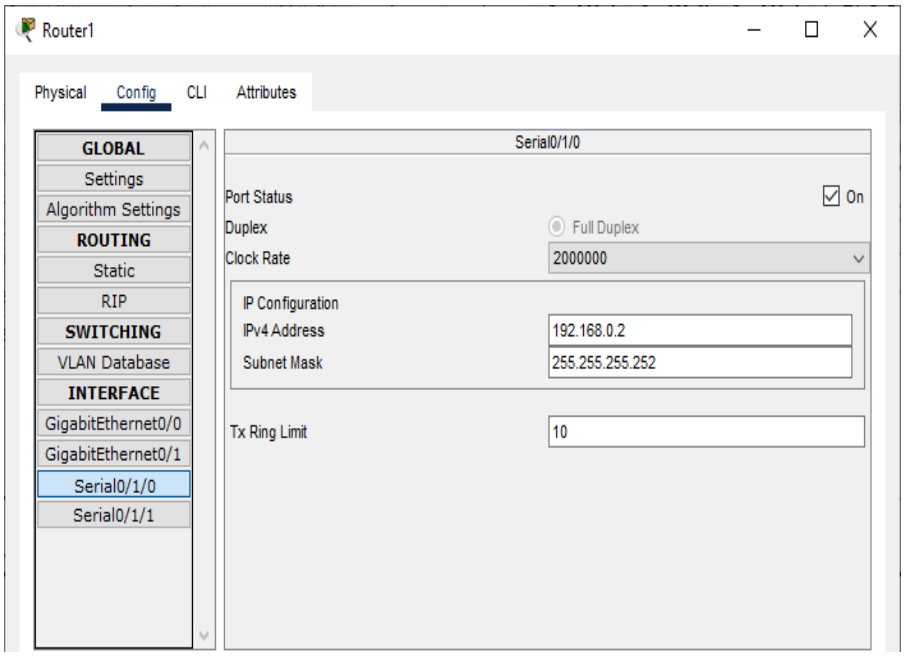


Configuring IP addresses on Router 1

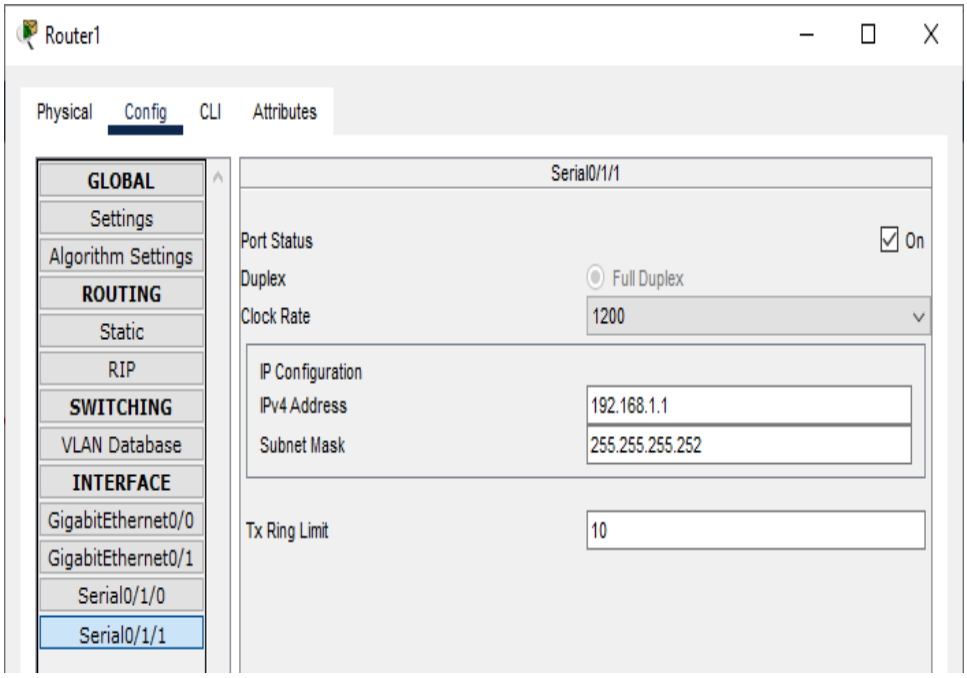
i) Interface G0/0



ii) Interface S0/1/0

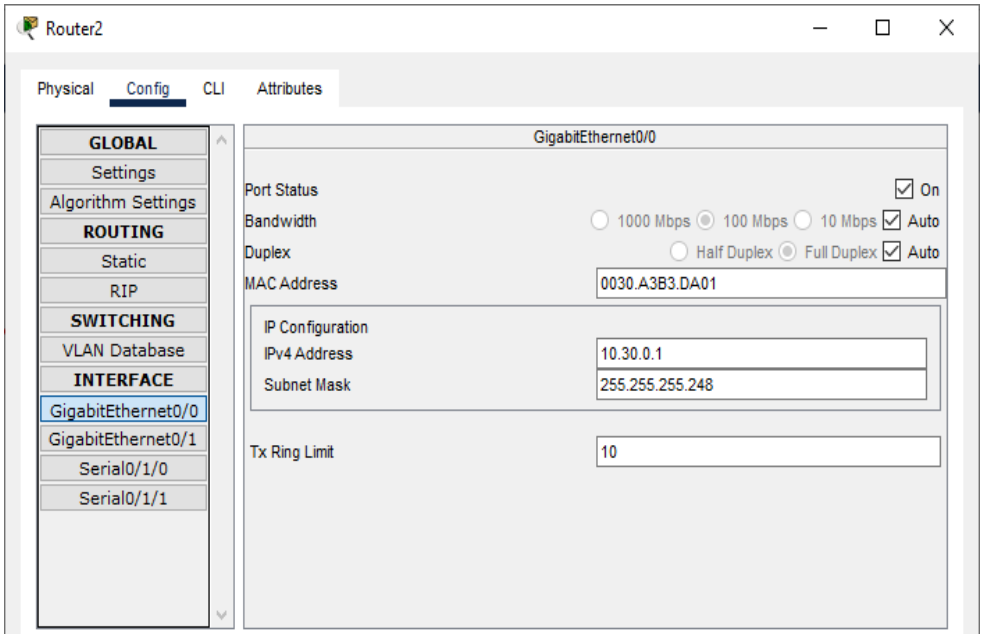


iii) Interface S0/1/1

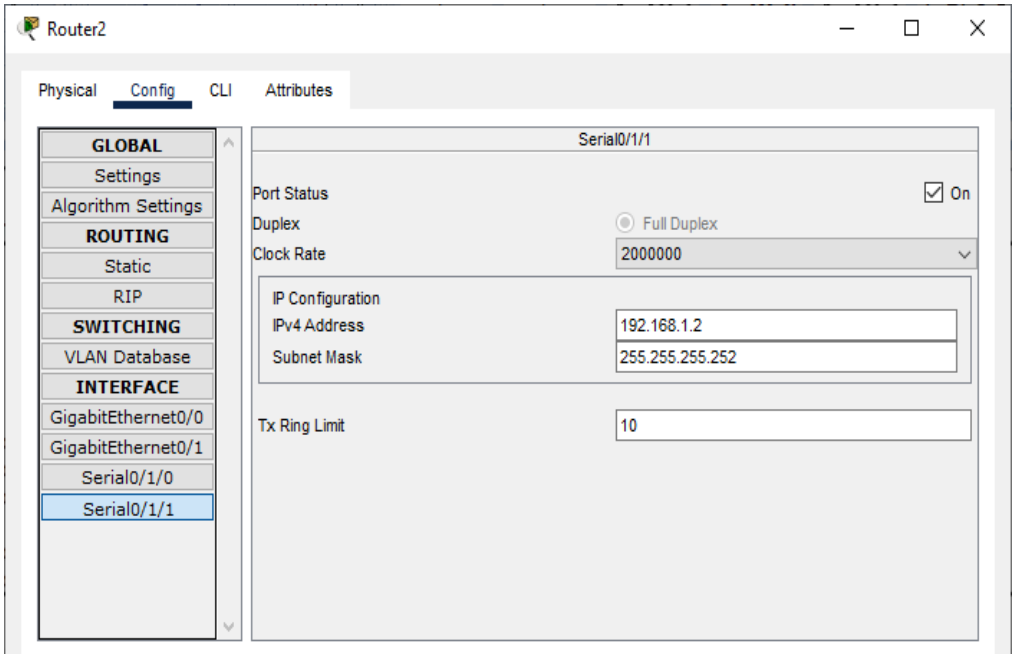


Configuring IP addresses on Router 2

i) Interface G0/0



ii) Interface S0/1/1



Configuring Router 0 for RIPv2 (using the CLI mode)

Router>enable
Router#configure terminal
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 10.10.0.0
Router(config-router)#network 192.168.0.0
Router(config-router)#exit
Router(config)#

Configuring Router 1 for RIPv2 (using the CLI mode)

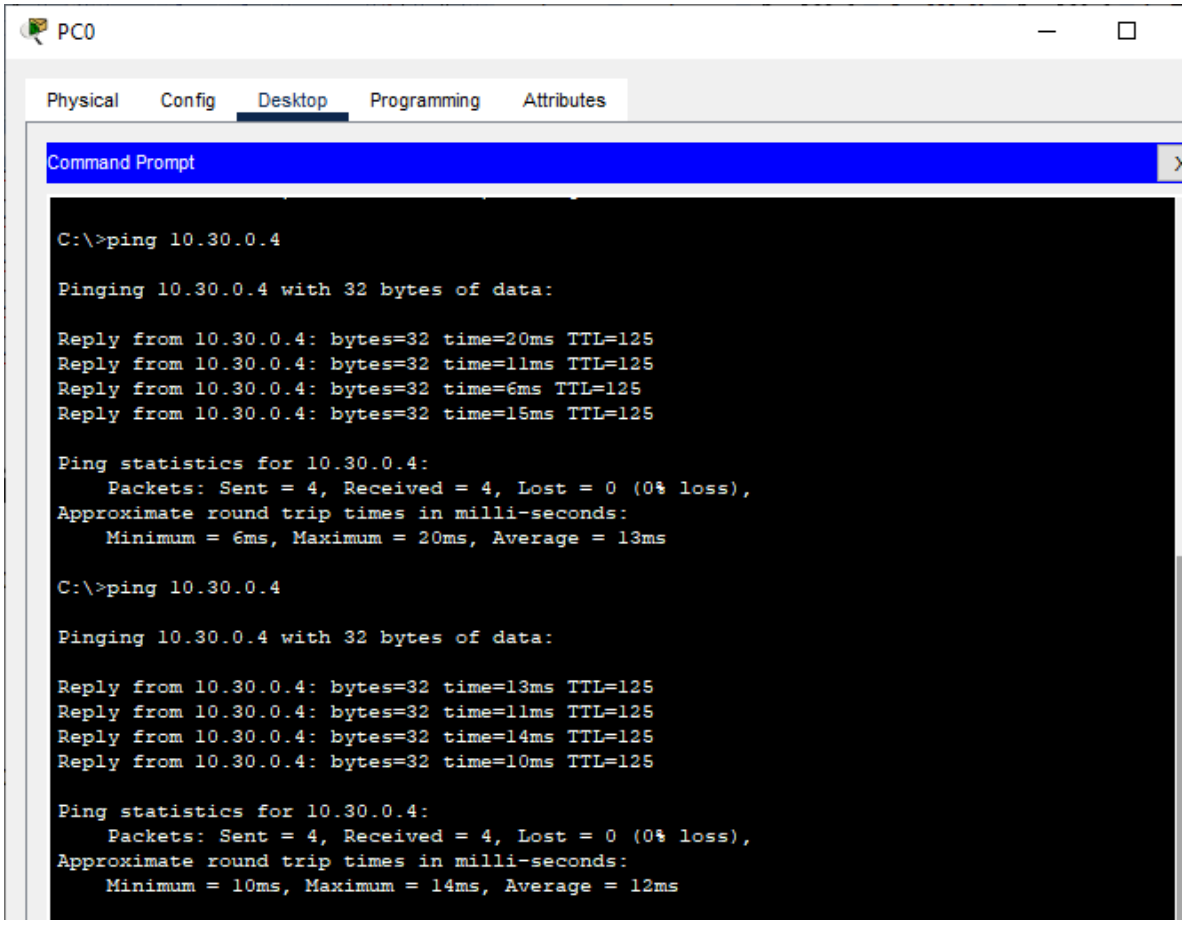
Router>enable
Router#configure terminal
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 10.20.0.0
Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#exit
Router(config)#

Configuring Router 2 for RIPv2 (using the CLI mode)

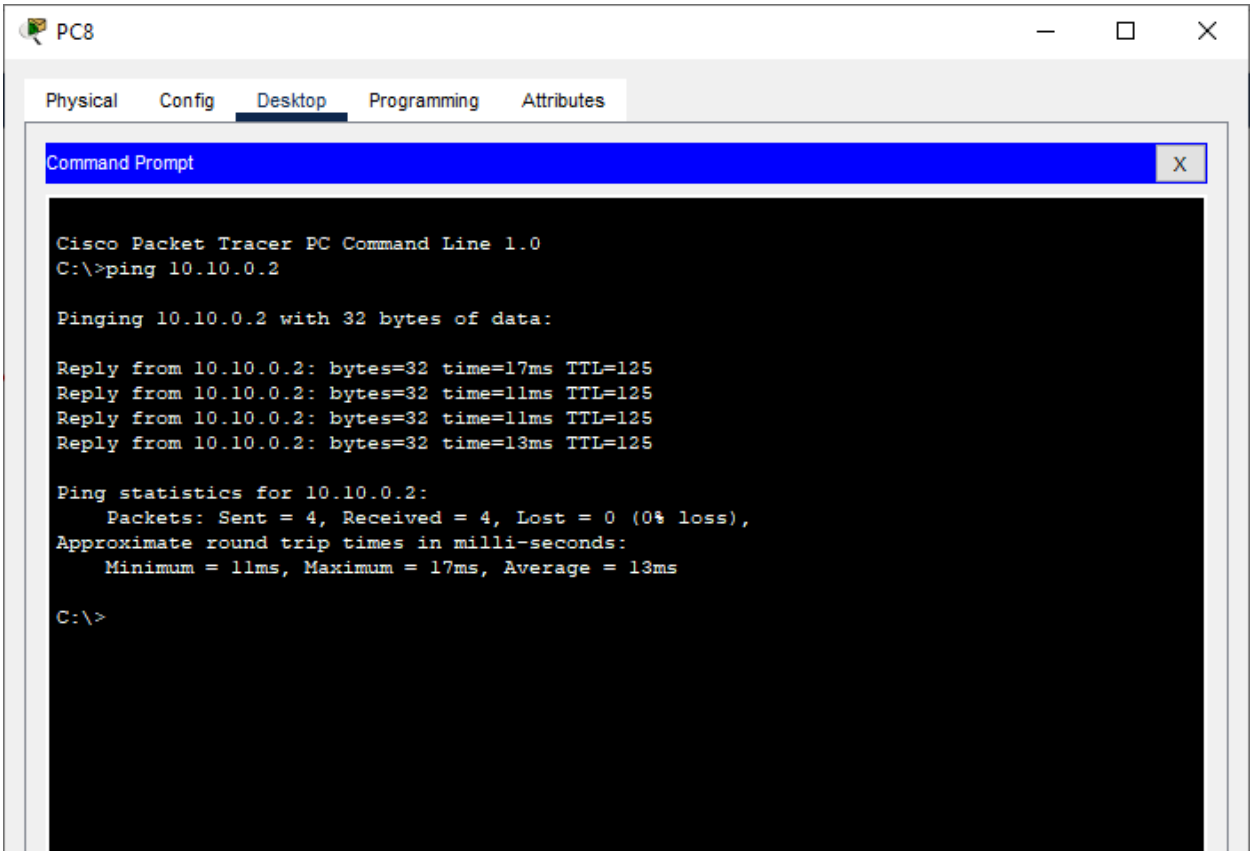
```
Router>enable
Router#configure terminal
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 10.30.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#exit
Router(config)#
```

Checking the connectivity by using the ping command

i) Pinging PC8 (ip address 10.30.0.4) from PC0



ii) Pinging PC0 (ip address 10.10.0.2) from PC8



Result:

Hence the RIPv2 has been studied and verified through the given network

Link for the video demonstration of the practical:

https://youtu.be/qrBpjxSkZY8