NAME	Anish Gade
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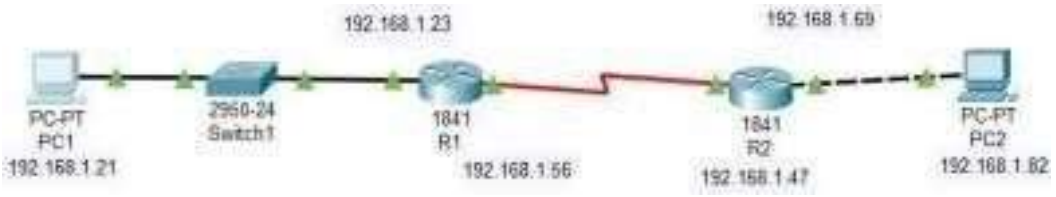
EXPERIMENT NO.	10

Topology Diagram



Addressing Table

R1	**Fa0/0**	**192.168.1.23**	**255.255.255.224**	**N/A**
	S0/0/0	**192.168.1.56**	**255.255.255.224**	**N/A**
R2	**Fa0/0**	**192.168.1.69**	**255.255.255.224**	**N/A**
	S0/0/0	**192.168.1.47**	**255.255.255.224**	**N/A**
PC1	**NIC**	**192.168.1.21**	**255.255.255.224**	**192.168.1.23**
PC2	**NIC**	**192.168.1.82**	**255.255.255.224**	**192.168.1.69**

Learning Objectives

Upon completion of this lab, you will be able to:

- Subnet an address space given requirements.
- Assign appropriate addresses to interfaces and document.
- Configure and activate Serial and FastEthernet interfaces.
- Test and verify configurations.
- Reflect upon and document the network implementation.

Scenario

In this lab activity, you will design and apply an IP addressing scheme for the topology shown in the Topology Diagram. You will be given one address block that you must subnet to provide a logical addressing scheme for the network. The routers will then be ready for interface address configuration according to your IP

addressing scheme. When the configuration is complete, verify that the network is working properly.

Task 1: Subnet the Address Space.

Step 1: Examine the network requirements.

You have been given the 192.168.1.0/24 address space to use in your network design. The networkconsists of the following segments:

- The network connected to router R1 will require enough IP addresses to support 15 hosts.
- The network connected to router R2 will require enough IP addresses to support 30 hosts.
- The link between router R1 and router R2 will require IP addresses at each end of the link.

Step 2: Consider the following questions when creating your network design.

How many subnets are needed for this network? **3 Subnets**

What is the subnet mask for this network in dotted decimal format?

255.255.255.224

What is the subnet mask for the network in slash format? **/27**

How many usable hosts are there per subnet? **30**

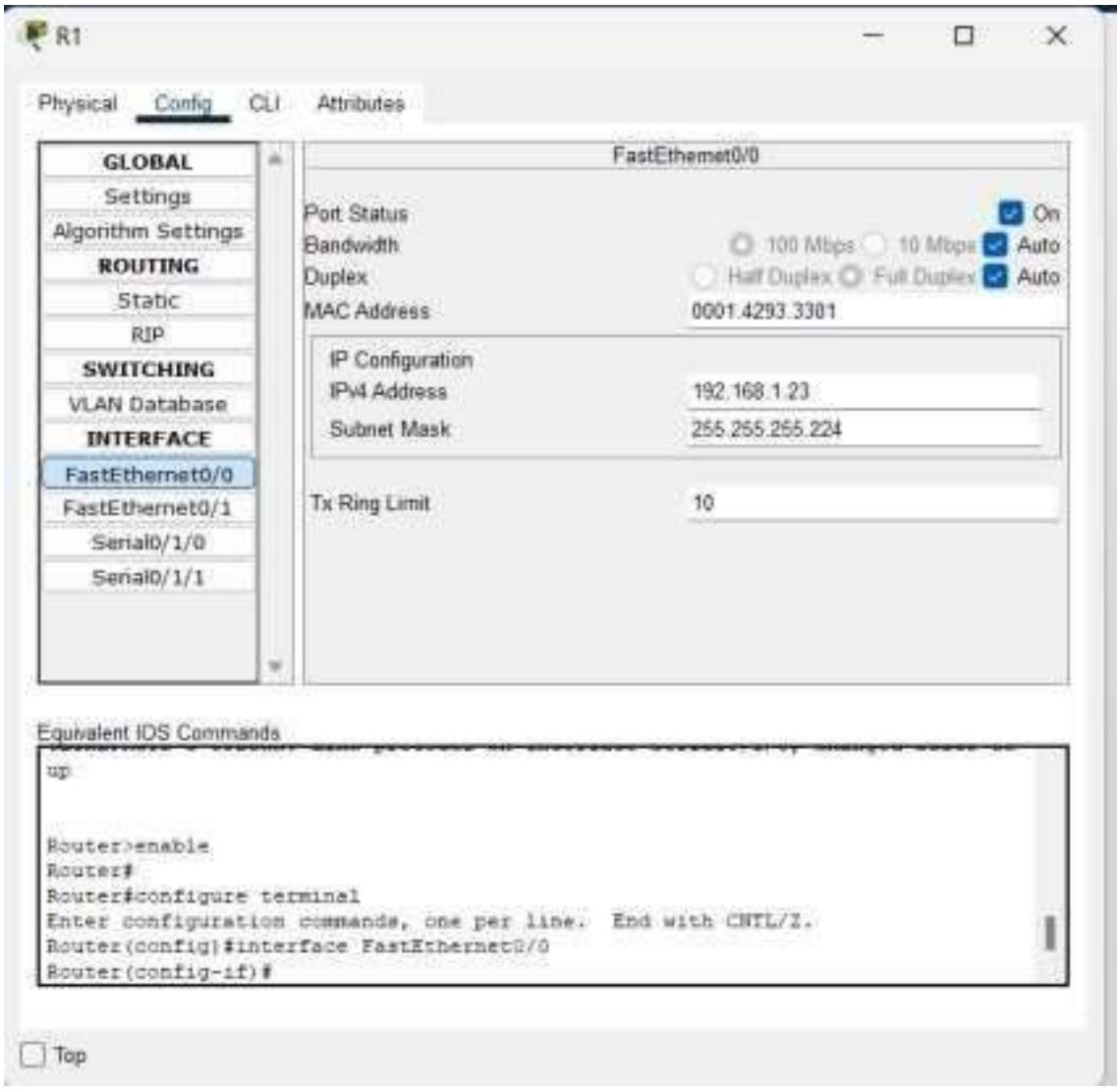
Step 3: Assign subnetwork addresses to the Topology Diagram.

1. Assign subnet 1 to the network attached to R1. - **192.168.1.0/27**
2. Assign subnet 2 to the link between R1 and R2. - **192.168.1.32/27**
3. Assign subnet 3 to the network attached to R2. - **192.168.1.64/27**

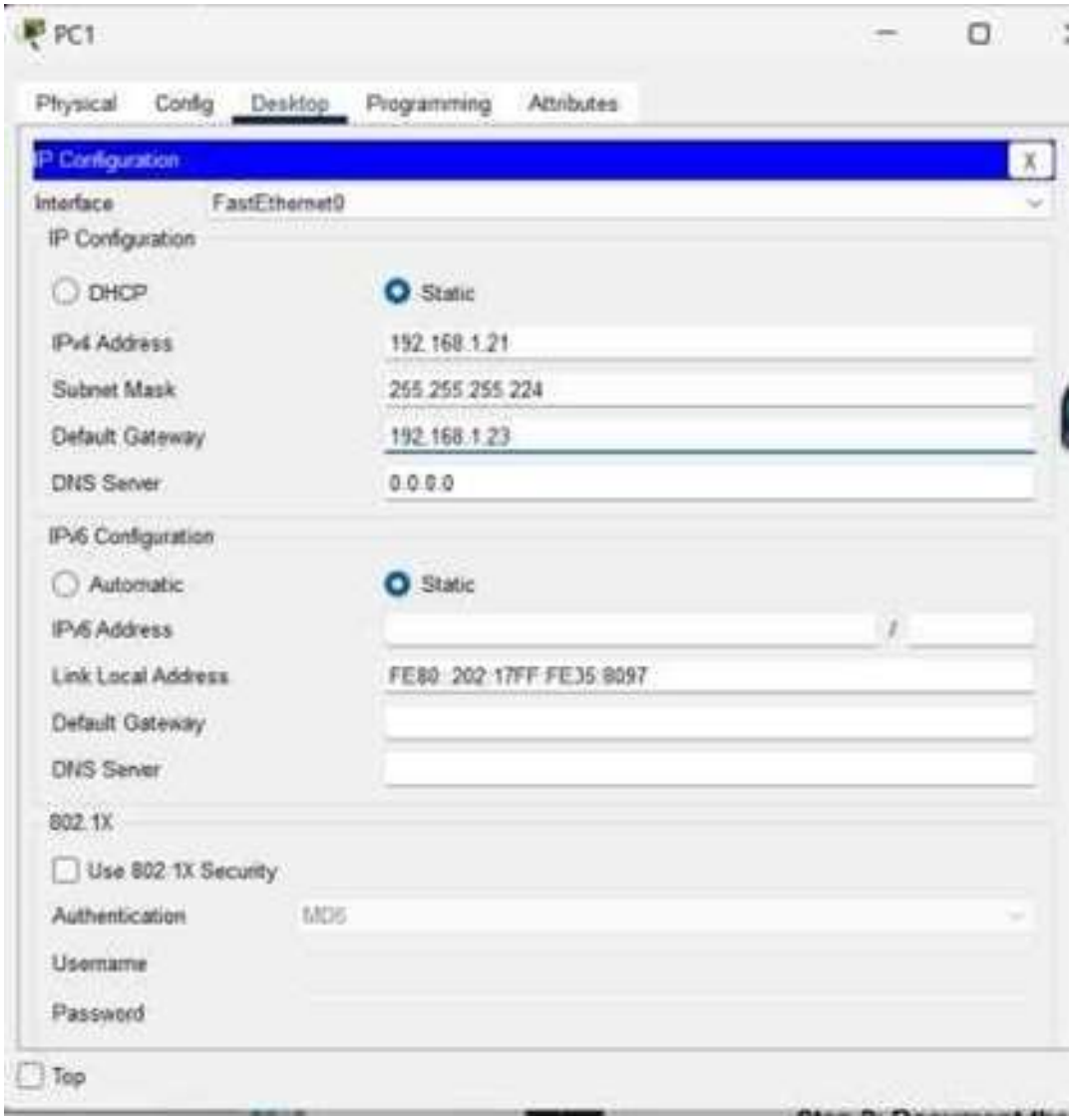
Task 2: Determine Interface Addresses.

Step 1: Assign appropriate addresses to the device interfaces.

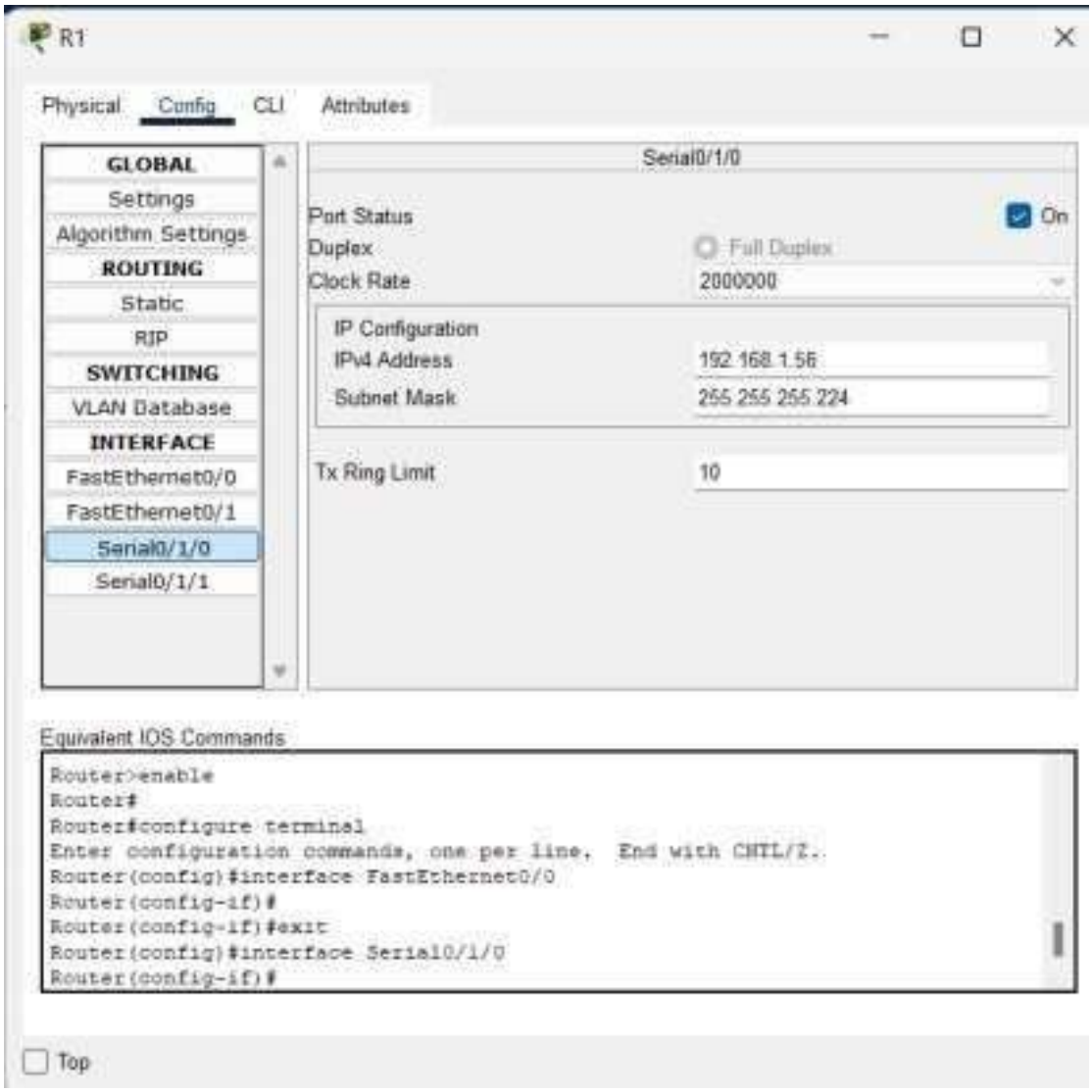
1. Assign the first valid host address in subnet 1 to the LAN interface on R1.



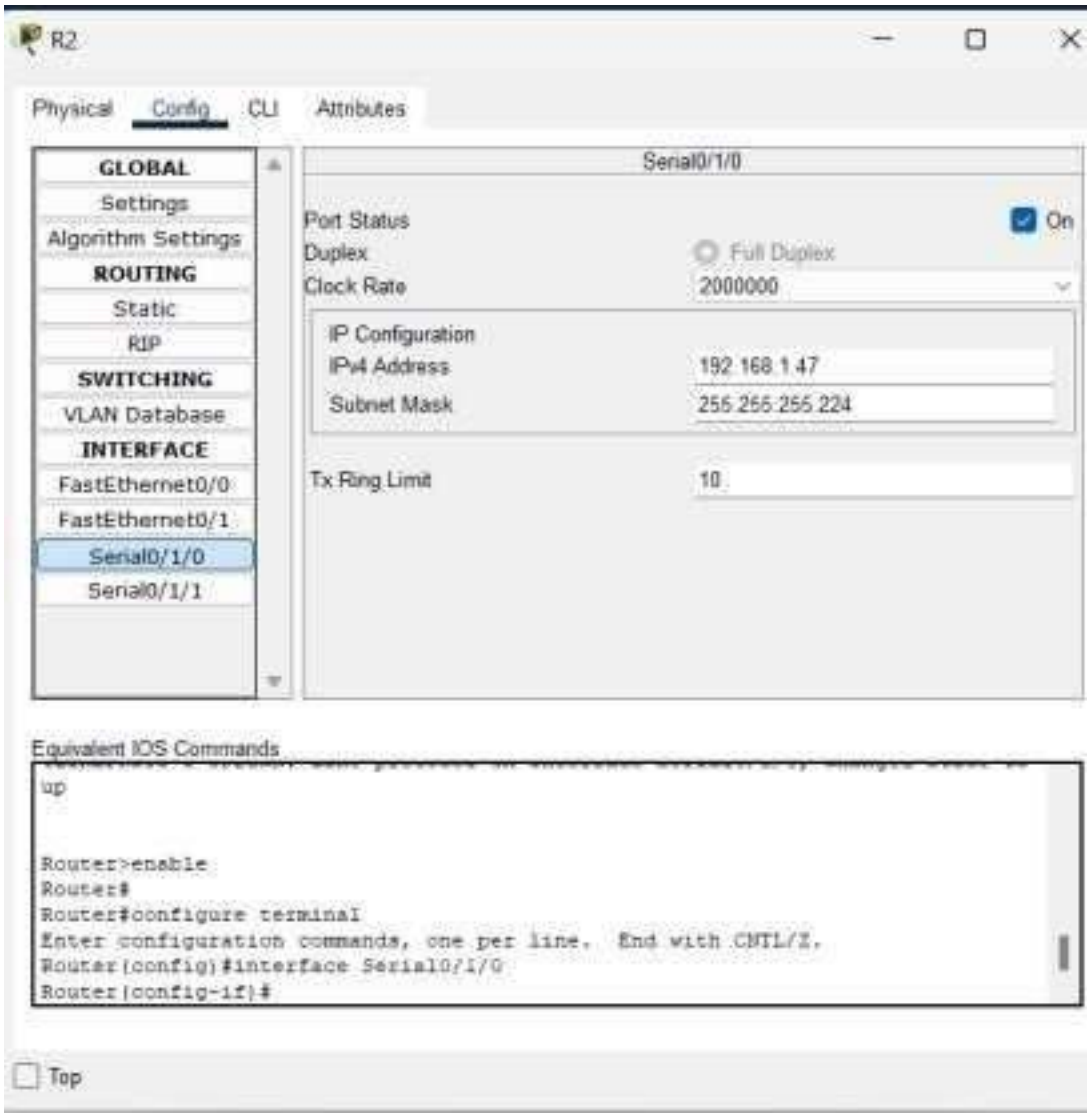
2. Assign the last valid host address in subnet 1 to PC1.



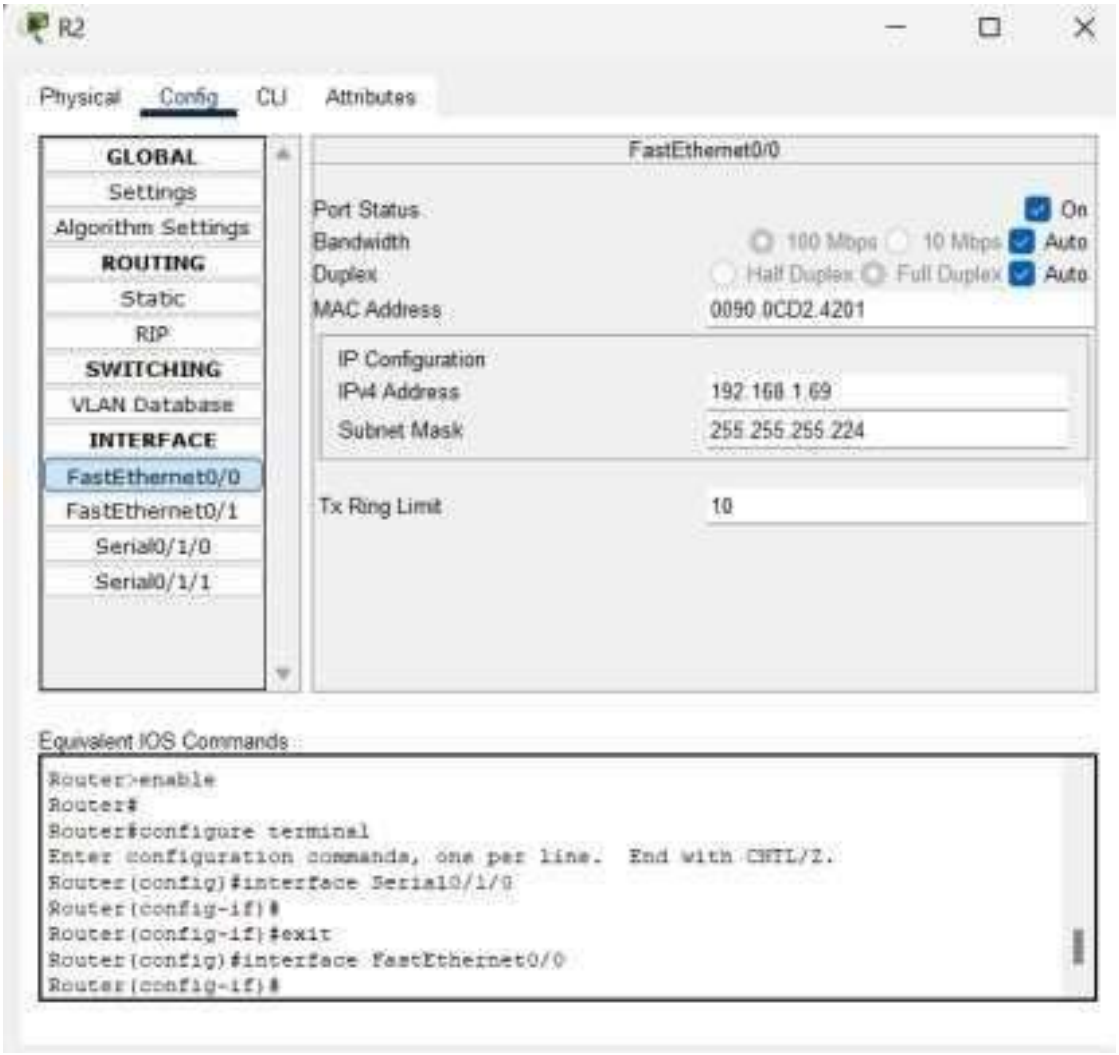
3. Assign the first valid host address in subnet 2 to the WAN interface on R1.



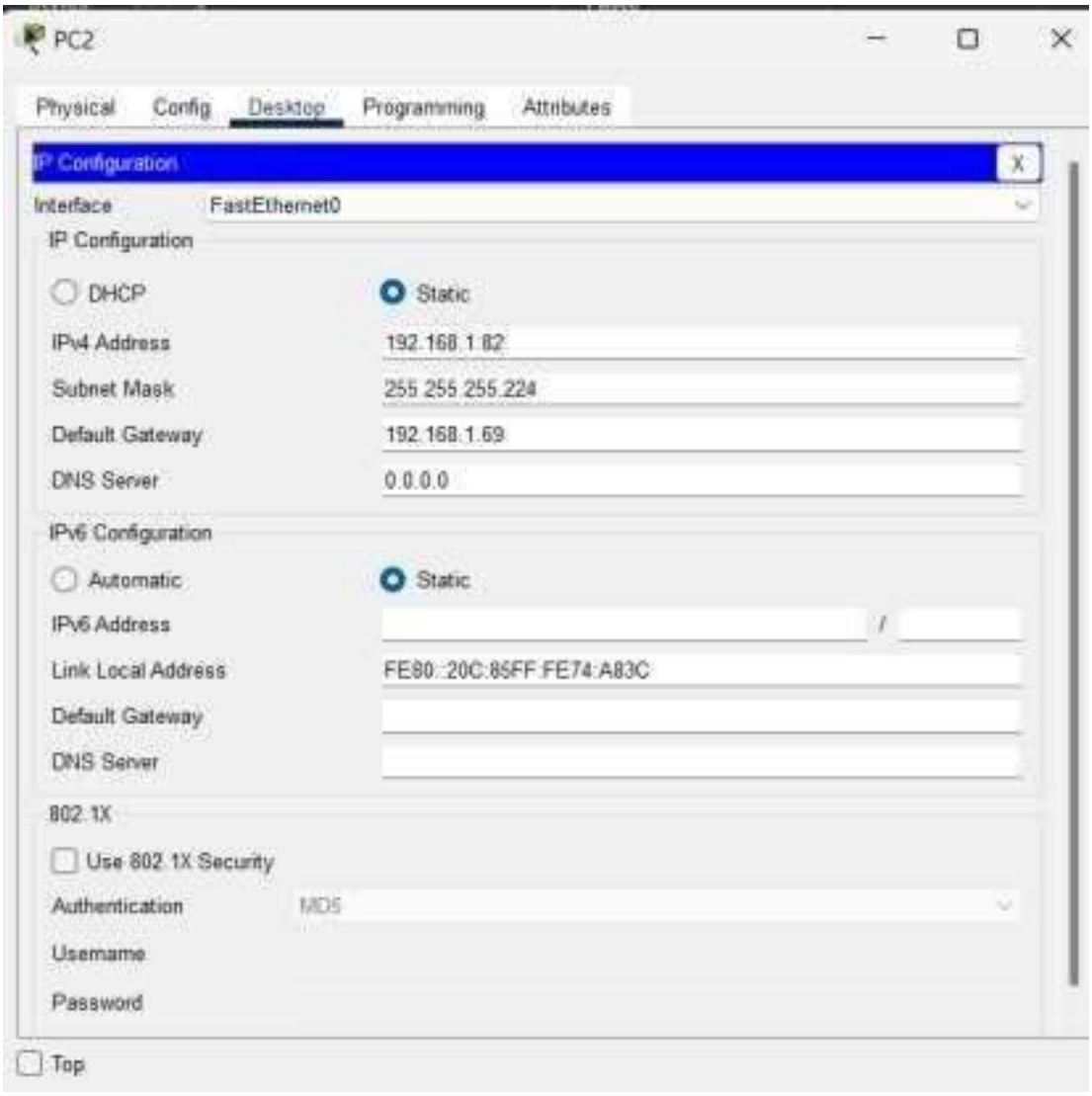
4. Assign the last valid host address in subnet 2 to the WAN interface on R2.



5. Assign the first valid host address in subnet 3 to the LAN interface of R2.



6. Assign the last valid host address in subnet 3 to PC2.

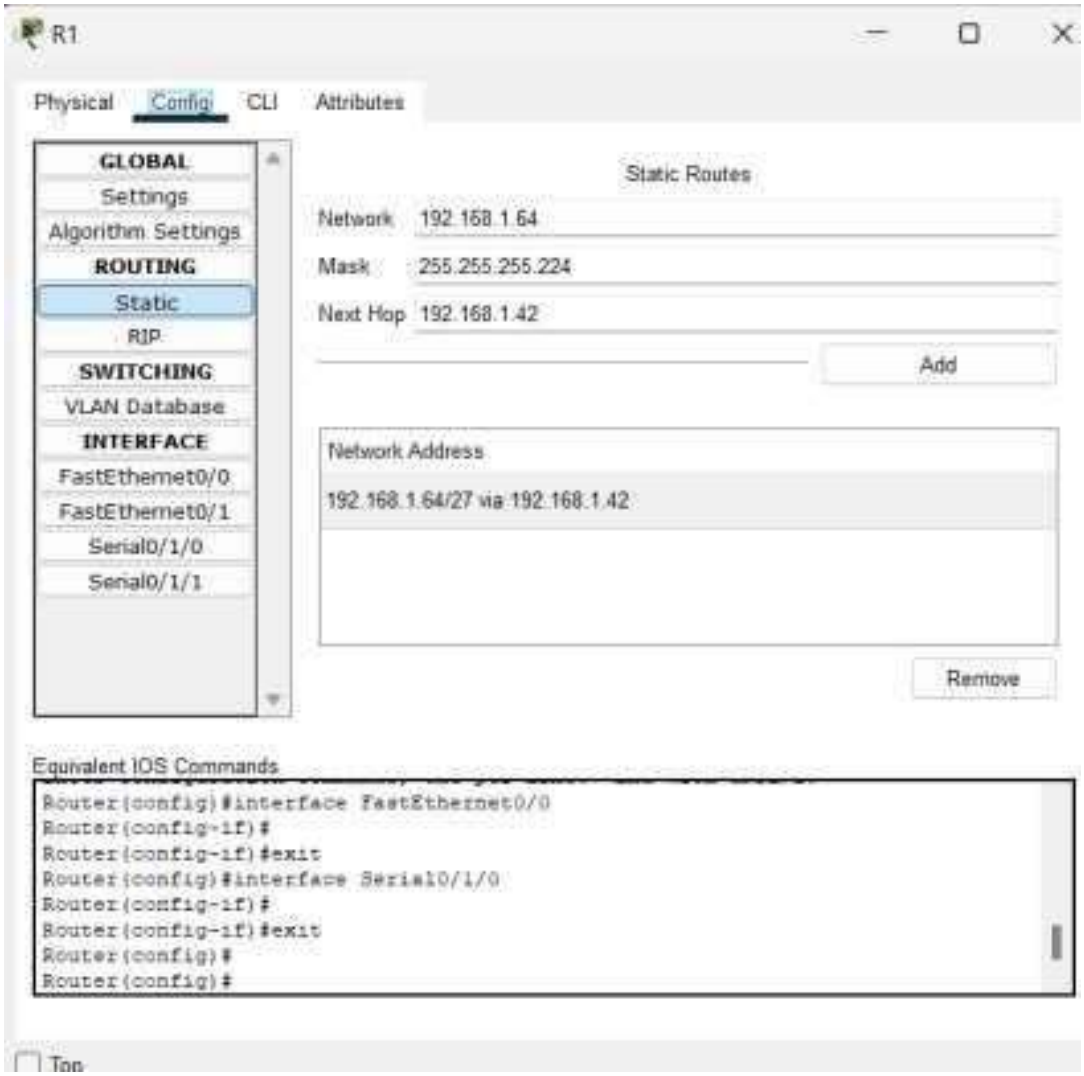


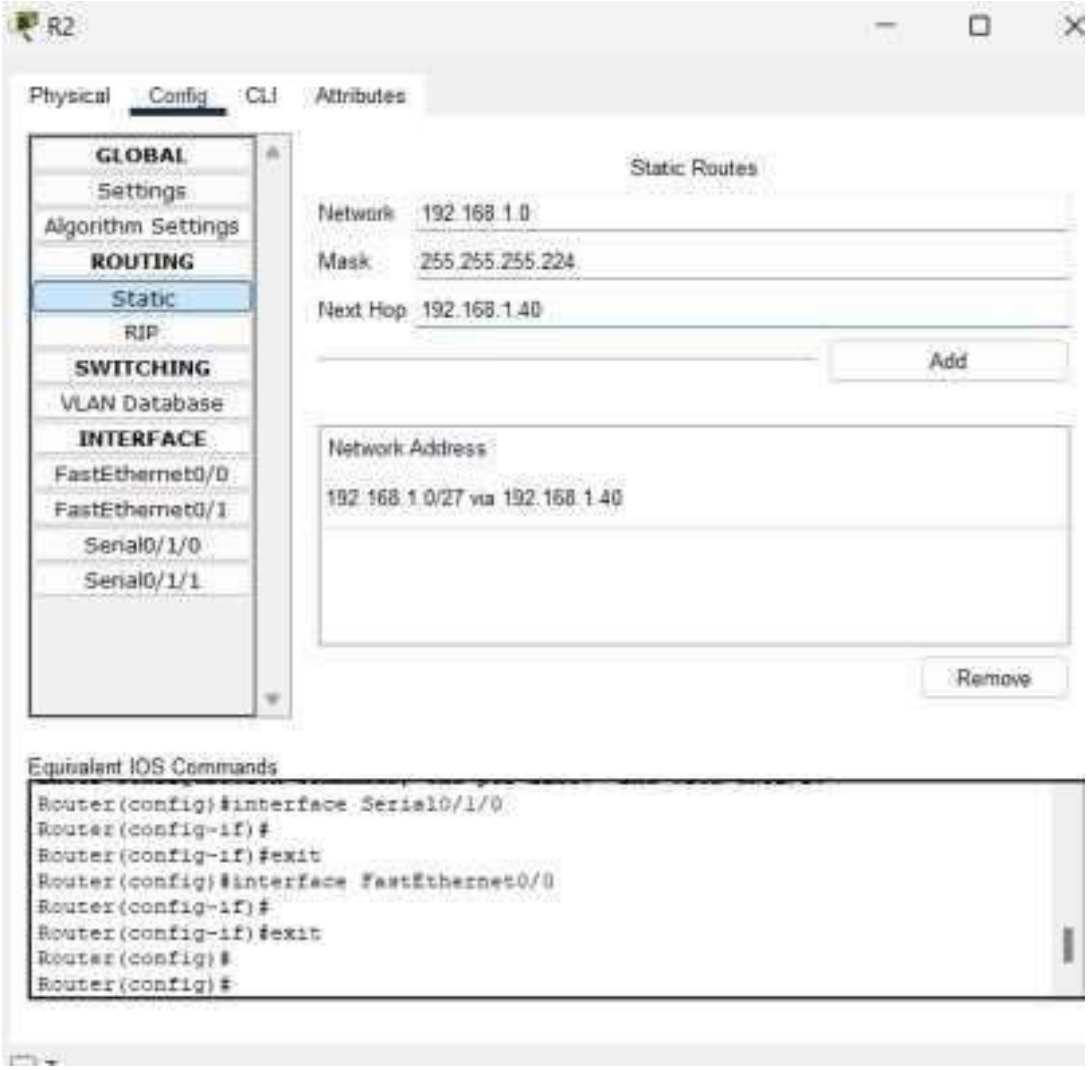
Step 2: Document the addresses to be used in the table provide under the Topology Diagram.

Task 3: Configure the Serial and FastEthernet Addresses.

Step 1: Configure the router interfaces.

Configure the interfaces on the R1 and R2 routers with the IP addresses from your network design. Please note, to complete the activity in Packet Tracer you will be using the Config Tab. When you havefinished, be sure to save the running configuration to the NVRAM of the router.

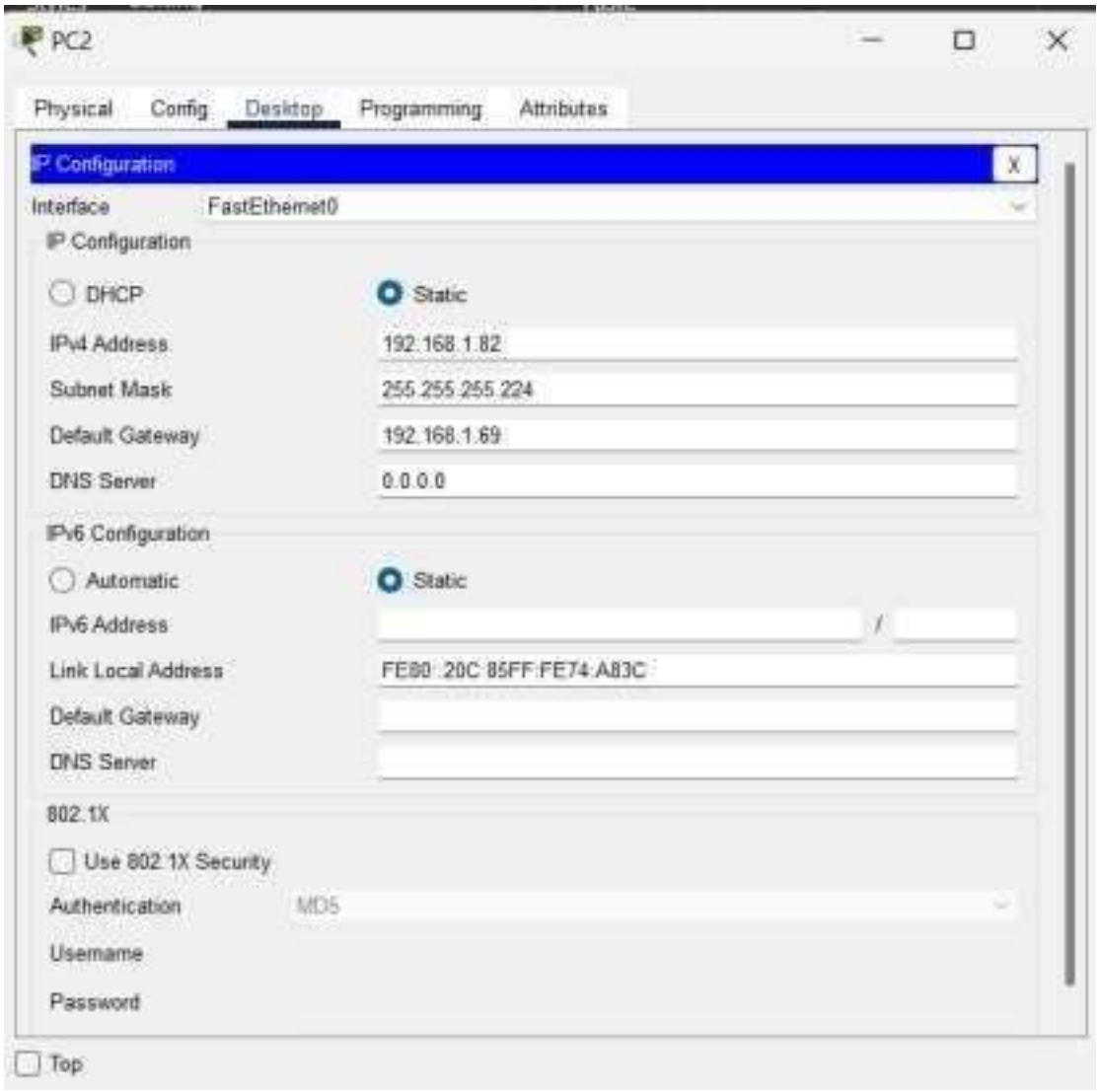

R1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Static Routes
Network 192.168.1.64
Mask 255.255.255.224
Next Hop 192.168.1.42
Add
Network Address
192.168.1.64/27 via 192.168.1.42
Remove
Equivalent IOS Commands
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#
Top



Step 2: Configure the PC interfaces.

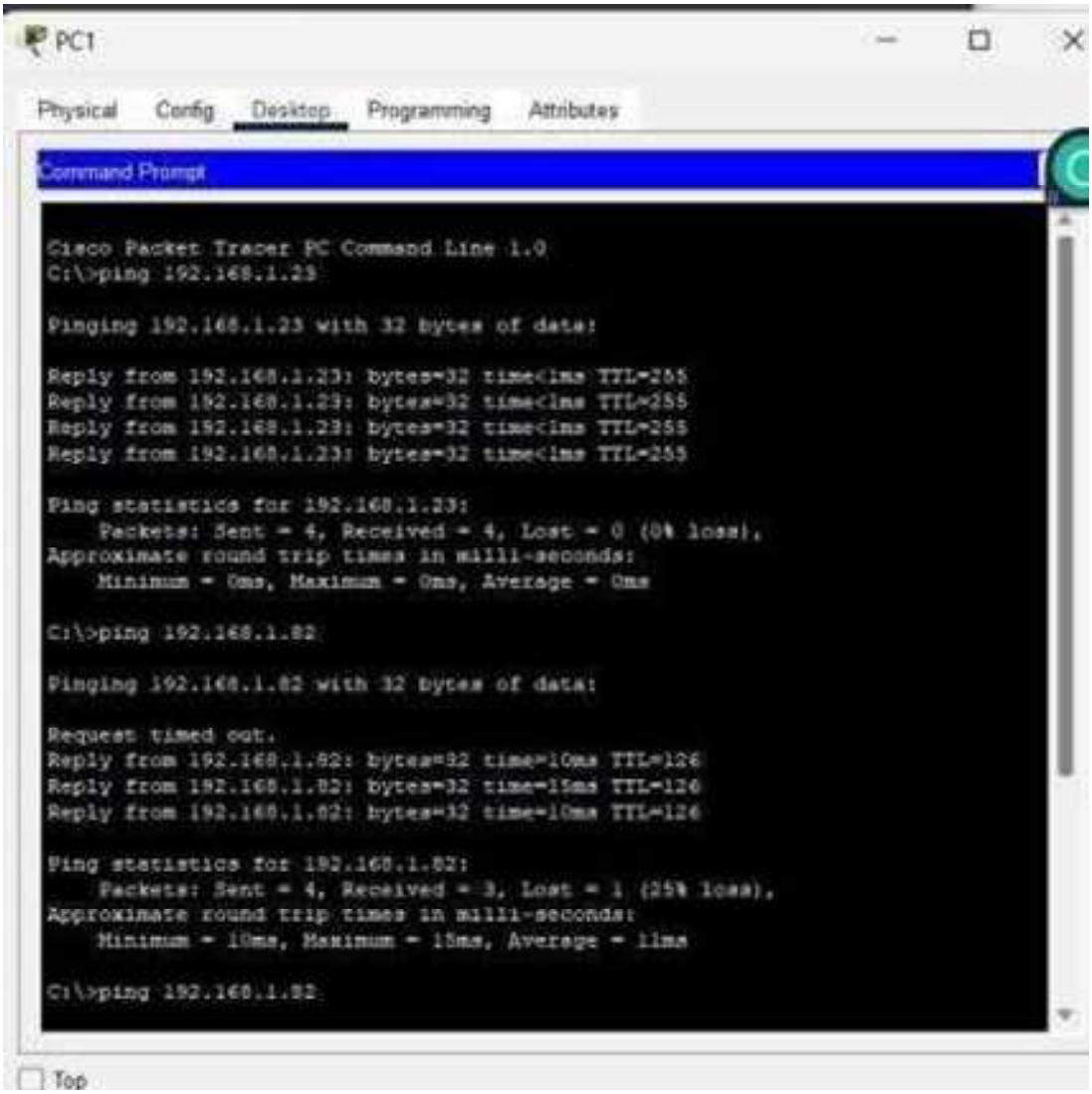
Configure the Ethernet interfaces of PC1 and PC2 with the IP addresses and default gateways from yournetwork design.


PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.21
Subnet Mask
255.255.255.224
Default Gateway
192.168.1.23
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::202:17FF:FE35:8097
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

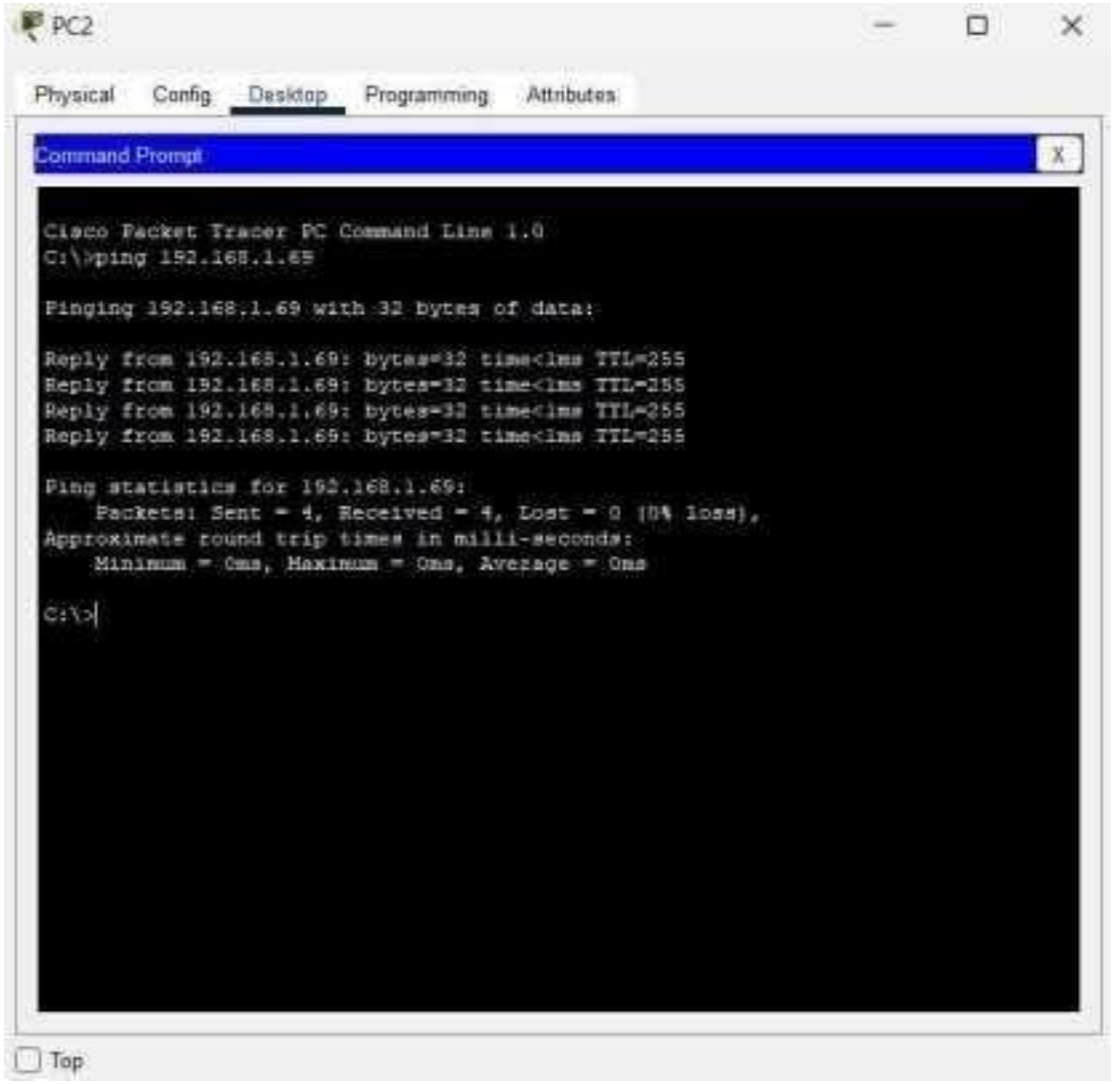


Task 4: Verify the Configurations.

Answer the following questions to verify that the network is operating as expected. From the host attached to R1, is it possible to ping the default gateway?**_Yes**

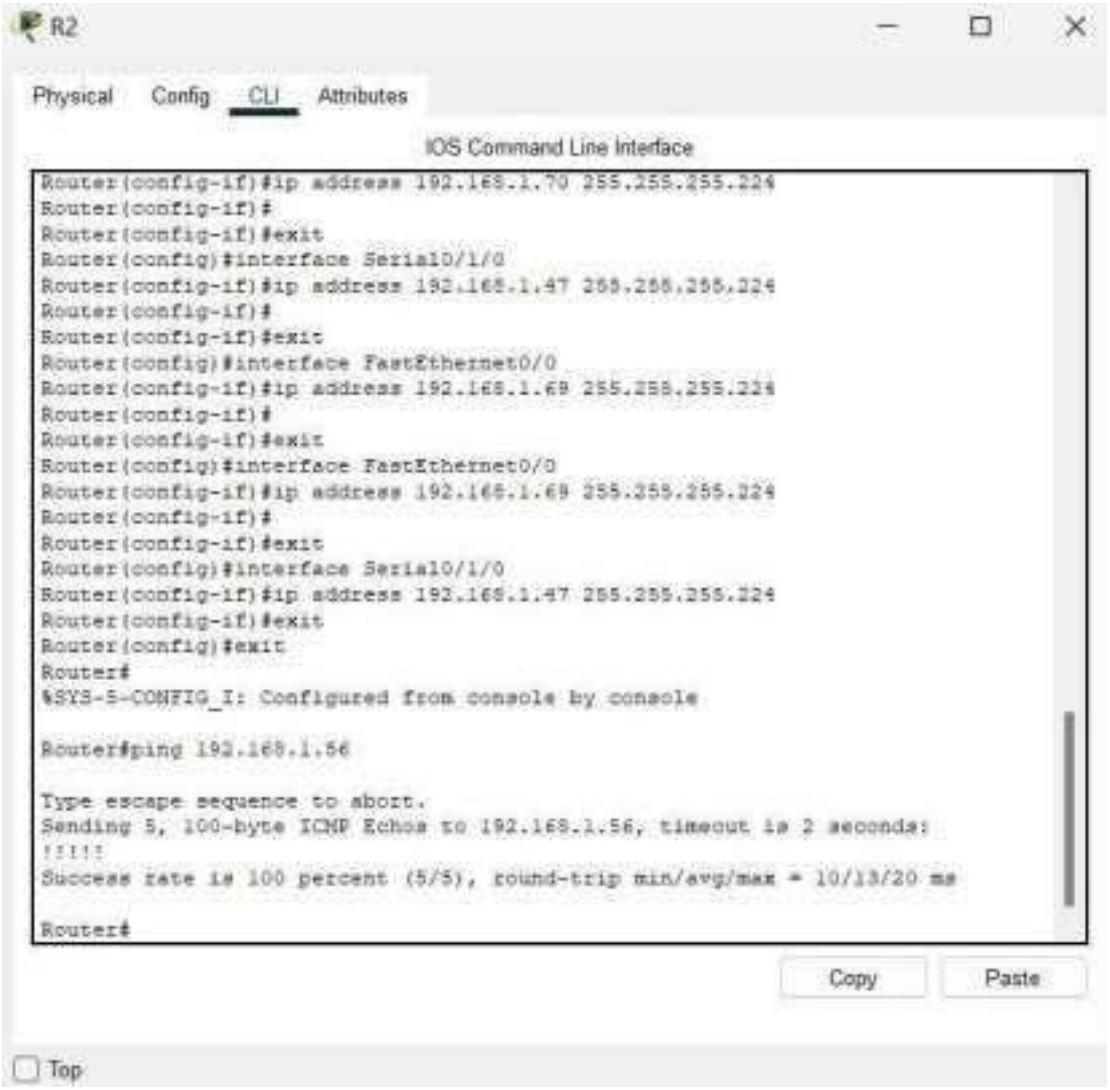


From the host attached to R2, is it possible to ping the default gateway? **Yes**



From the router R1, is it possible to ping the Serial 0/0/0 interface of R2?**_Yes**

From the router R2, is it possible to ping the Serial 0/0/0 interface of R1?**_Yes**



The answer to the above questions should be **yes**. If any of the above pings failed, check your physicalconnections and configurations.

Task 5: Reflection

Are there any devices on the network that cannot ping each other?

No, all the devices on the network can ping each other. This can be verified by trying to pingPC1 in subnet 1 with PC2 in subnet 3 and PC2 in subnet 3 with PC1 insubnet 1.

What is missing from the network that is preventing communication between these devices?

Both the routers R1 and R2 are statically configured to route packets to the destination network. Therefore, there is communication between

the devices.

CONCLUSION

From this experiment, I learned about IP addressing, different forms of IPv4 addressing, router configuration, subnets, and subnet masks. I also learned to use Cisco Packet tracer software for visualizing and testing the network by successfully pinging computers on different networks andgateway routers using the ping comma