



Building a Switch and Router Network

✓ Completed	✓
⚙ Status	To Do: Theory

Objectives

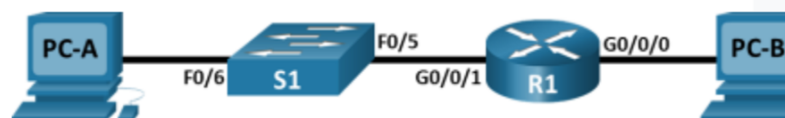
Part 1: Set up the Topology and Initialize Devices

Part 2: Configure Devices and Verify Connectivity

Scenario

In this activity, the devices in the network were connected to align with the desired topology, as illustrated below. They were also configured according to the addressing table highlighted below. For this activity, the required materials were: 1 (4321) Cisco Router, 1 (2960) Switch, and 2 PCs as end devices

Topology



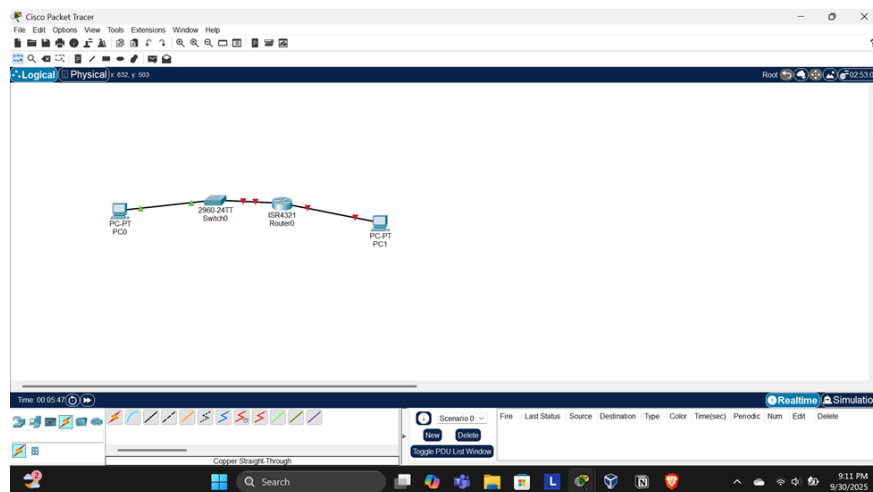
Addressing Table

Device	Interface	IP Address / Prefix	Default Gateway
R1	G0/0/0	192.168.0.1 /24	N/A
		2001:db8:acad::1/64	
		fe80::1	
	G0/0/1	192.168.1.1 /24	N/A
		200:db8:acad:1::1/64	
		fe80::1	
S1	VLAN 1	192.168.1.2 /24	192.168.1.1
PC-A	NIC	192.168.1.3 /24	192.168.1.1
		2001:db8:acad:1::3/64	fe80::1
PC-B	NIC	192.168.0.3 /24	192.168.0.1
		2001:db8:acad::3/64	fe80::1

Part 1: Set up the Topology and Initialize Devices

Step 1: Cable the Network as shown in the topology

The network was cabled using copper straight-through cables and required devices according to the topology.

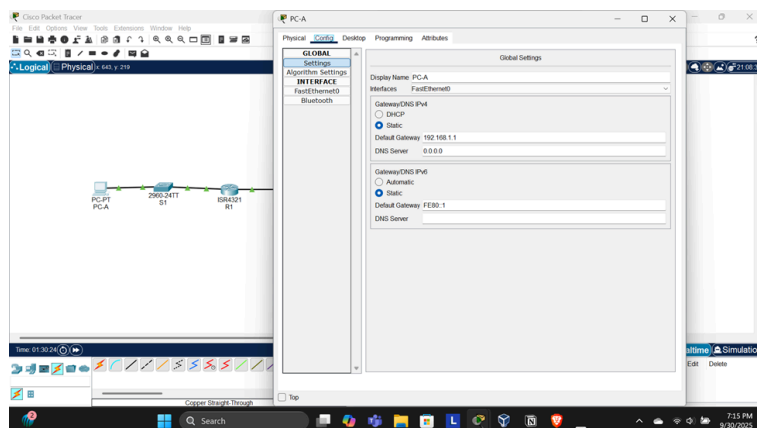
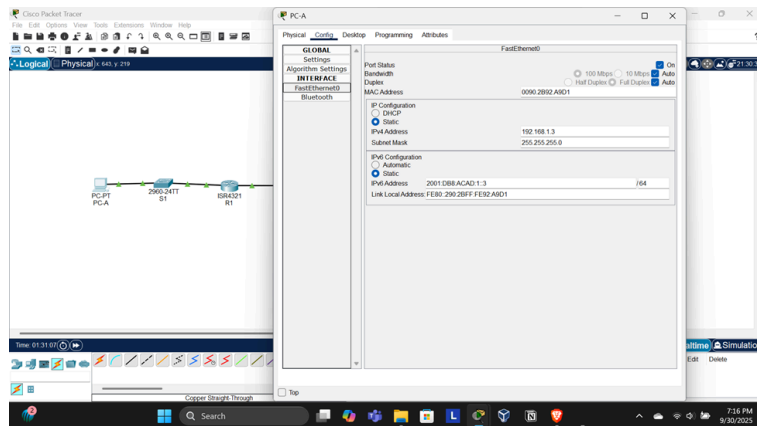


Part 2: Configure Devices and Verify Connectivity

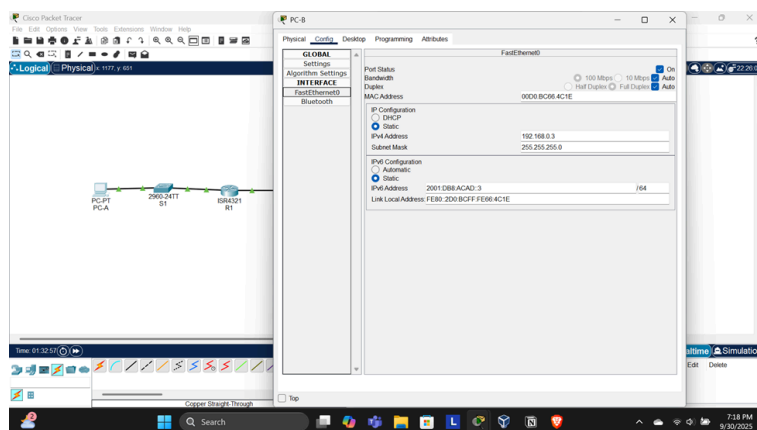
Step 1: Assign static IP information to the PC interfaces

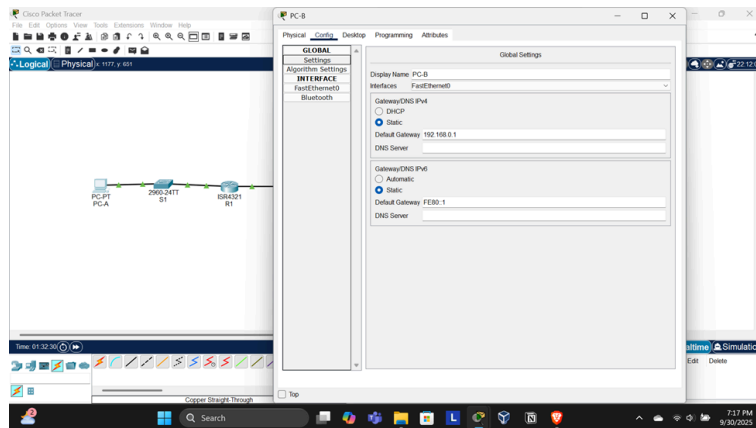
1. The IP address, subnet mask, and default gateway were configured on the two PCs.

a. PC-A



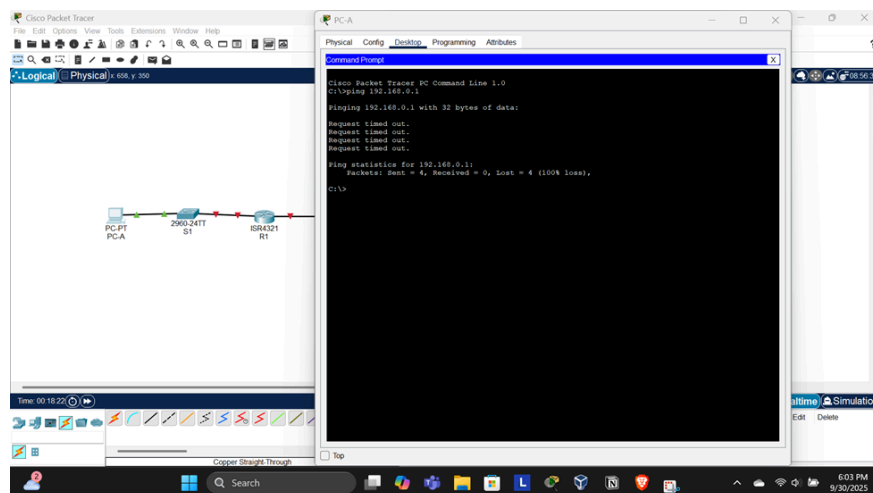
b. PC-B





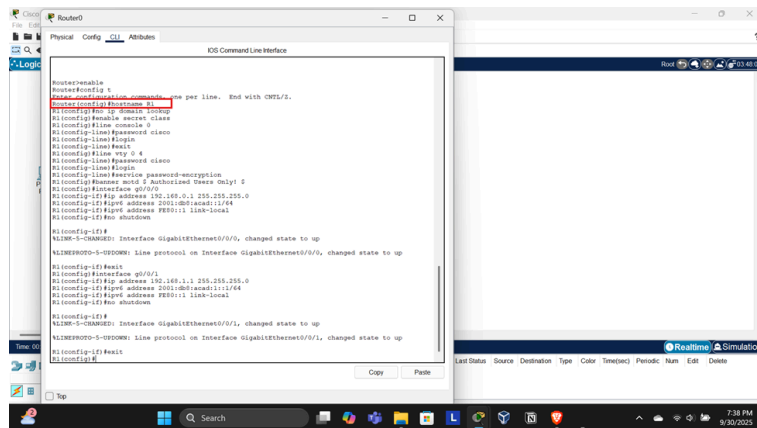
2. To confirm connectivity, PC-A was pinged from PC-B

As highlighted below, the ping was not successful, and this is because the router interfaces have not yet been configured to connect the different networks where these PCs reside, thus allowing communication ultimately.

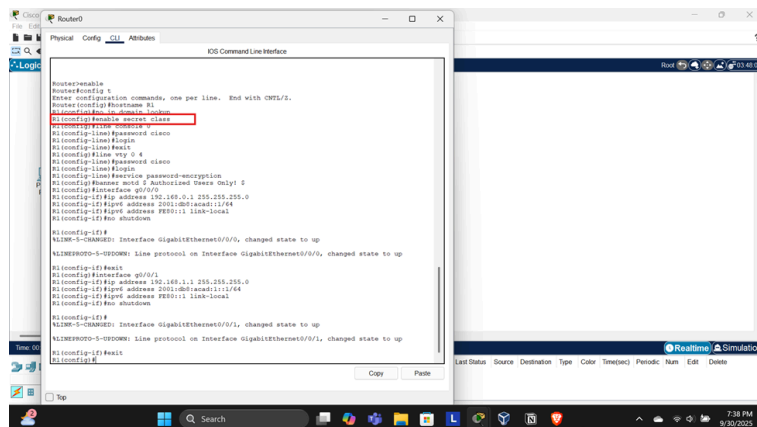


Step 2: Configure the Router

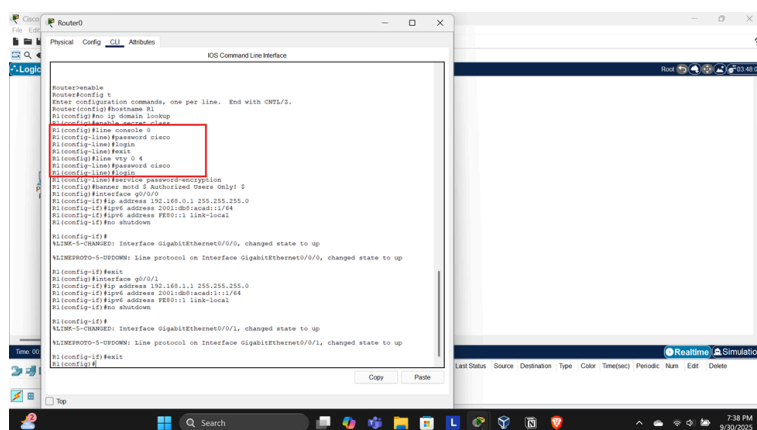
1. The router was configured using the CLI tab. The configurations of the basic settings included the following:
 - a. Assigned a hostname



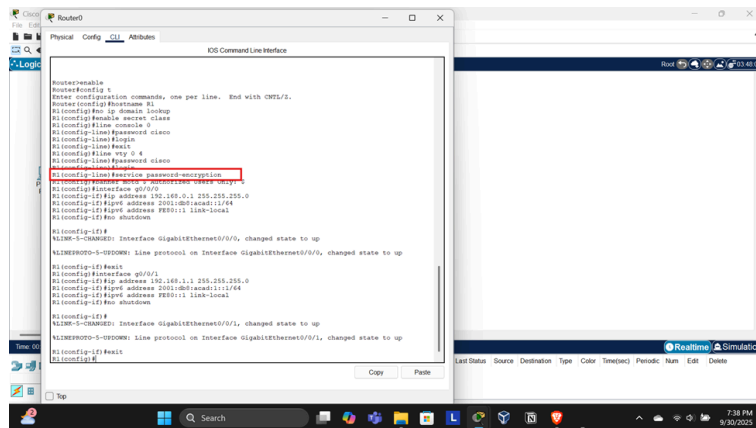
b. Configured the privilege EXEC mode password in global configuration mode



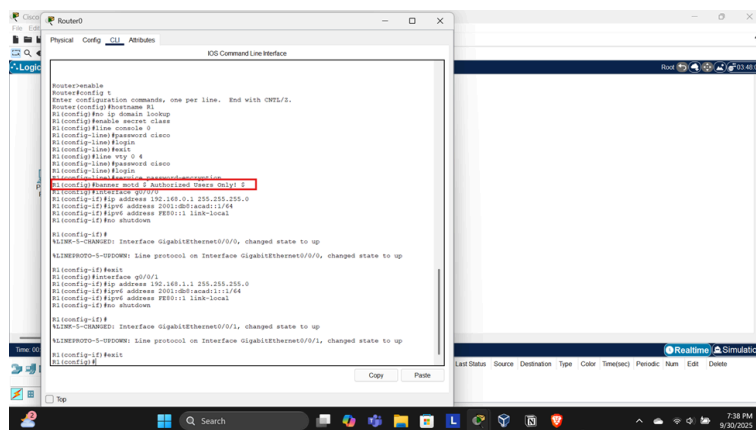
c. Configured the line console and line VTY configuration mode a password in global configuration mode, and required a login



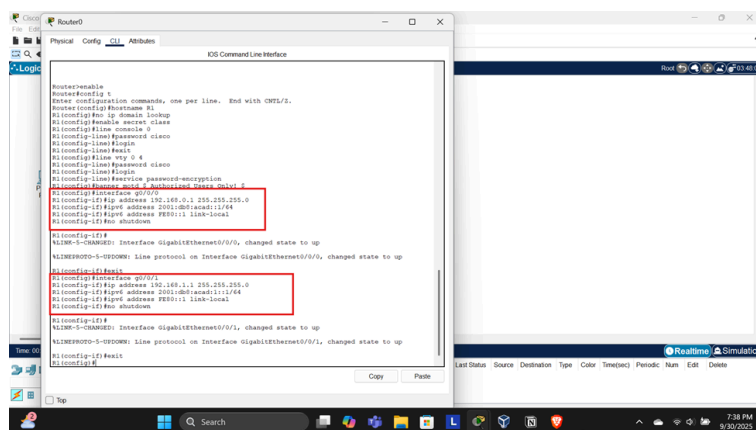
d. Encrypted the plaintext passwords



e. Created a banner that notified only authorized access

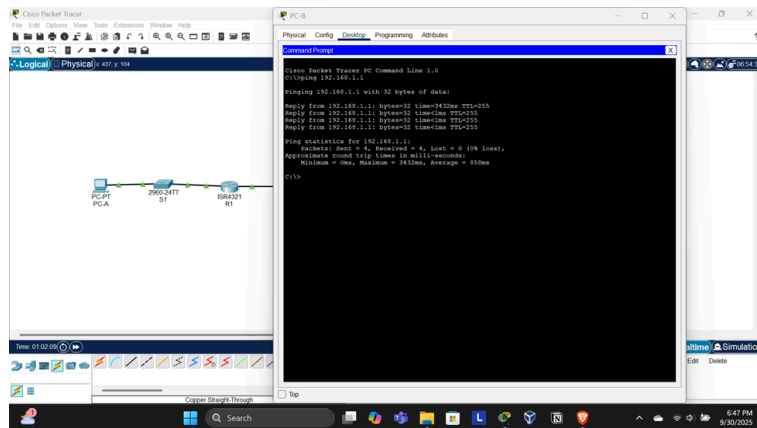


f. Activated both interfaces G0/0/0 & G0/0/1 in the router for each network for ip and ipv6 addresses



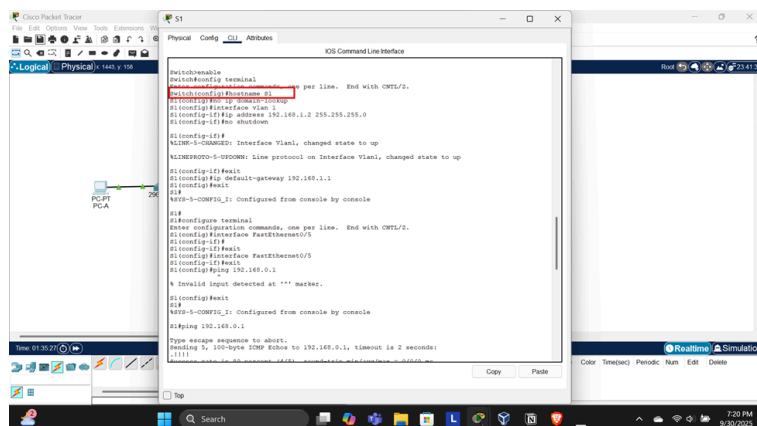
g. To confirm connectivity, PC-B was pinged from PC-A

The ping was successful, as the router is routing the ping traffic between the networks, and the default settings for the switch will automatically enable the interfaces that are connected to it.

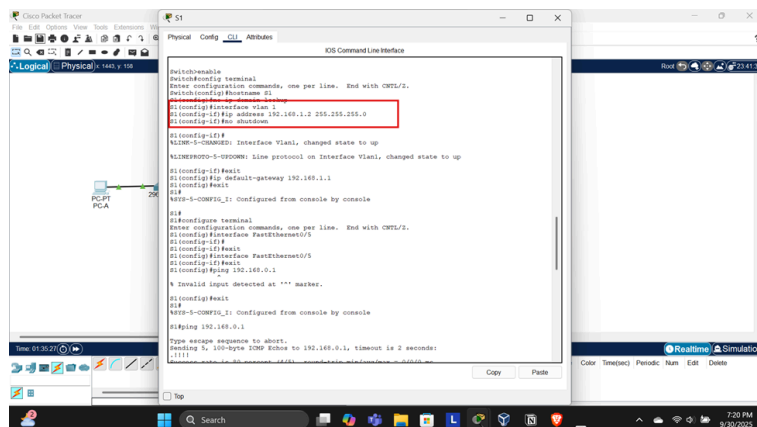


Step 3: Configure the Switch

1. The switch was configured using the CLI tab. The configurations of the basic settings included the following:
 - a. Assigned a hostname



- b. Configured and activated the VLAN interface



- c. Configured the default gateway

The screenshot shows the Cisco Packet Tracer application. On the left, there's a top toolbar with icons for file operations, editing, and simulation. Below it, a status bar shows the time as 01:39:27. In the center, a network diagram shows two routers, R1 and R2, connected by a cable. A large window titled "KIS Command Line Interface" displays the configuration commands for both routers.

```
Switchenable
Switch>configure terminal
Switch(config)# configure commands, one per line. End with CTRL/Z.
R1(config)#en
R1(config)#no ip domain-lookup
R1(config)#interface Vlan 1
R1(config-if)#ip address 192.168.1.2 255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
VLANIP-5-COMMIG: Interface Vlan1, changed state to up
VLANIPPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

R1(config-if)#exit
R1(config)#ip default-gateway 192.168.1.1
R1(config)#exit

VLANIP-5-COMMIG-T: Configured from console by console

R2#
R2#configure terminal
R2#show configuration commands, one per line. End with CTRL/Z.
R2(config)#interface FastEthernet0/5
R2(config-if)#ifconfig
R2(config-if)#ipconfig
R2(config)#interface FastEthernet0/5
R2(config-if)#ifconfig
R2(config-if)#ipconfig
R2(config)#ipconfig 192.168.0.1

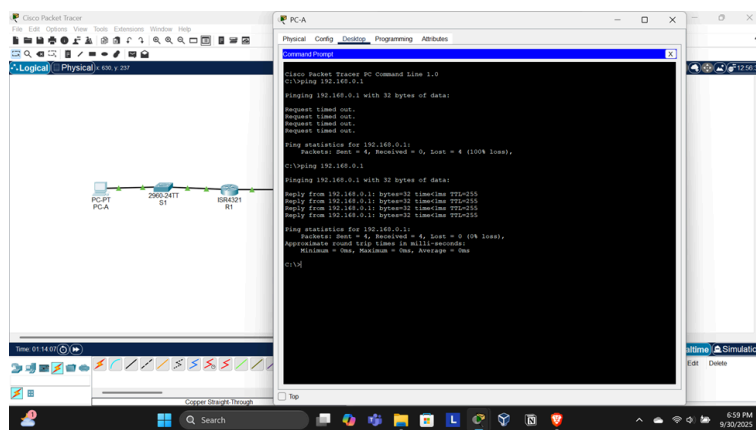
A Shellview input detected at *** marker.

R2#
R2#VLANIP-5-COMMIG_1: Configured from console by console

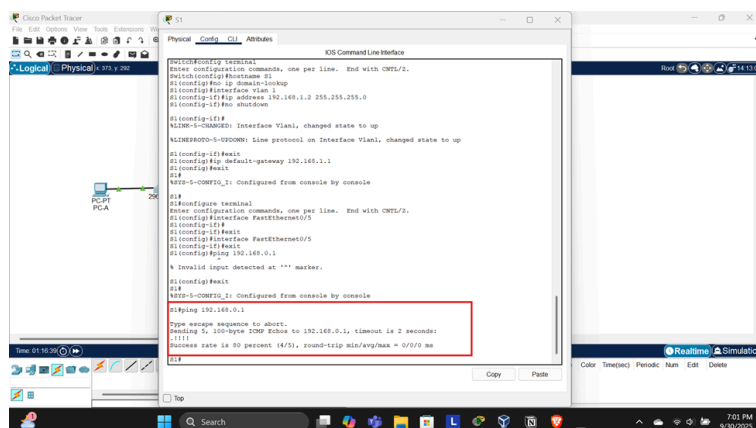
R2#ping 192.168.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:
!!!!!!
```

1. The PCs were pinged from PC-A to PC-B and from S1 to PC-B
 - a. PC-A to PC-B



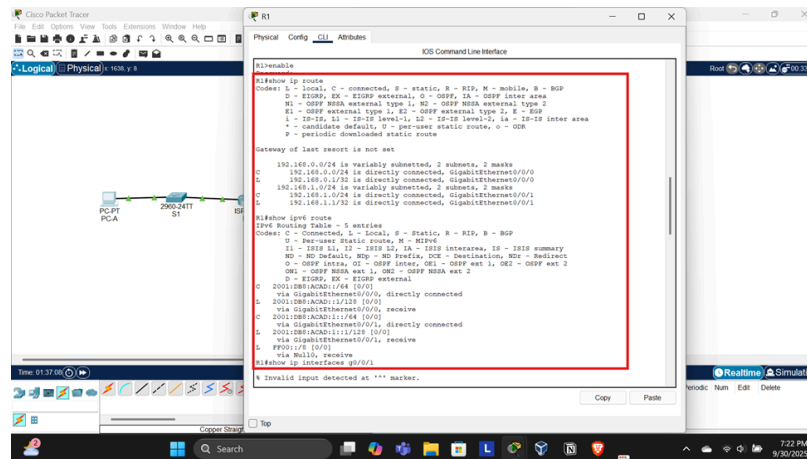
- b. S1 to PC-B



Part 3: Display Device Information

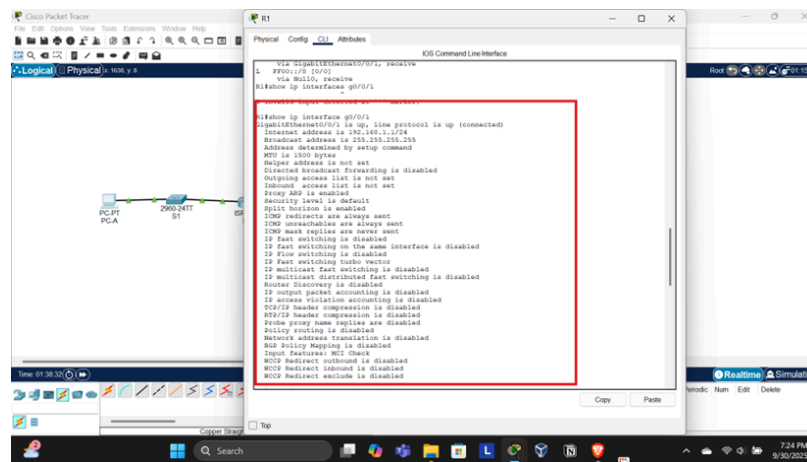
Step 1: Display the routing table on the router

1. Using the ip route command, the results showed that the C designated a directly connected subnet, and the L designated a local interface with 2 C route entries with the interfaces G0/0/0 and G0/0/1.

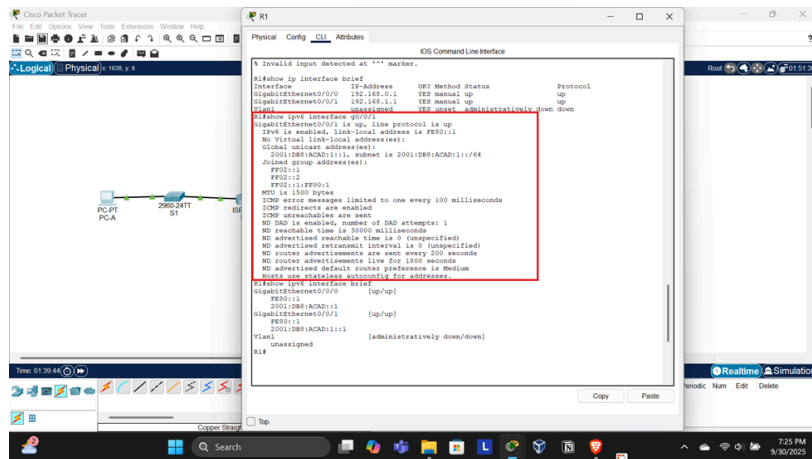


Step 2: Display interface information on the router

1. Using the show ip interface command on G0/0/1, its operational status was up with the IP address of: 192.160.1/24, and MAC Address of: to be determined by setup command.



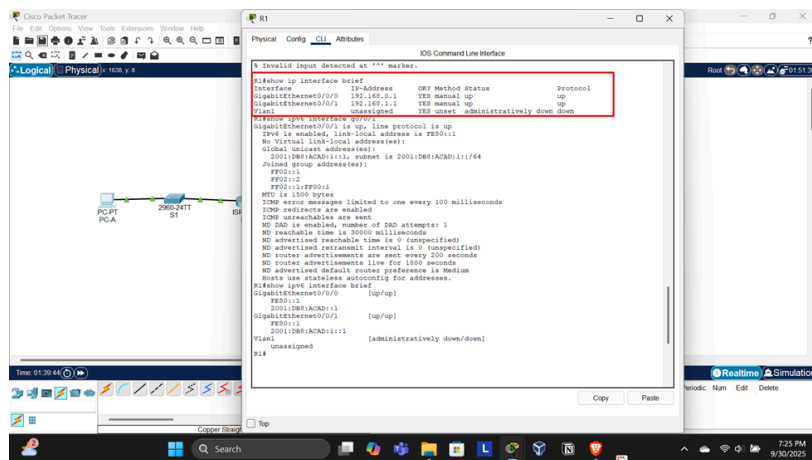
2. Similarly, for IPv6, show ipv6 interface command was utilized.



Step 3: Display a summary list of the interfaces on the router and switch

The show ip interface brief command was utilized to display a summary list of the interfaces on the device and provides immediate feedback on the status of each interface.

1. IP



2. IPv6

