

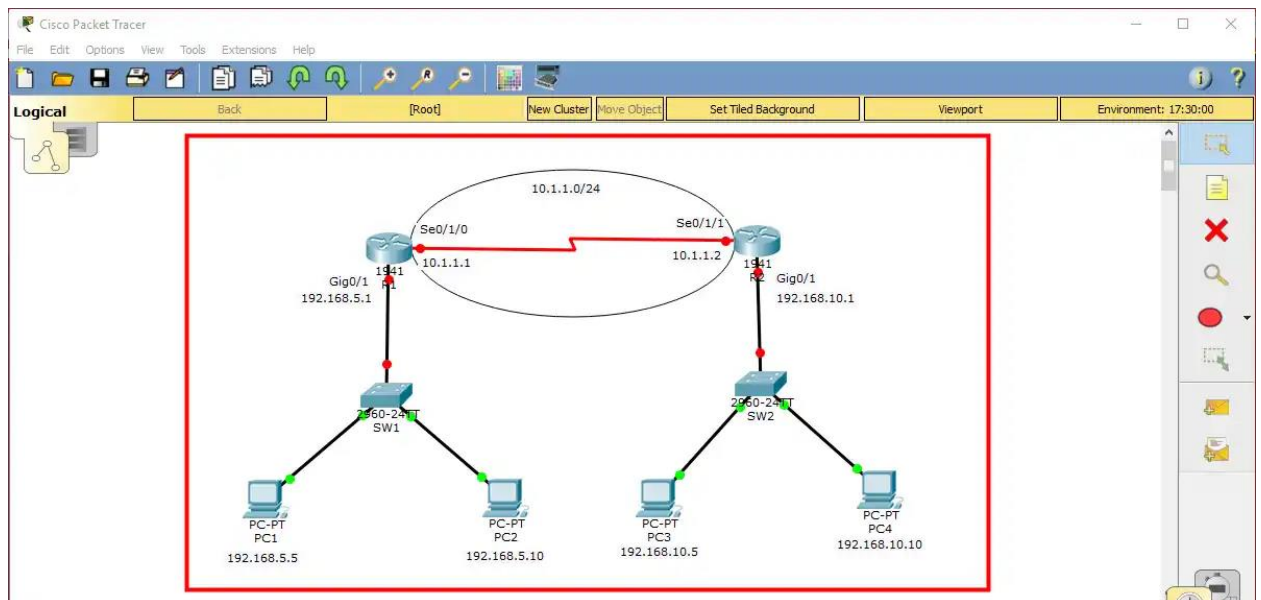
CN Lab 7: Configure RIP Version 1 (RIPv1) on Cisco Packet Tracer

To make a network like the picture, start by adding the devices:

- In the Device section, add two Router 1941 to the Logical workspace.
- Likewise, add two Cisco Switch 2960s.
- Lastly, add four PC-PTs.

To cable them in Packet Tracer, follow these steps:

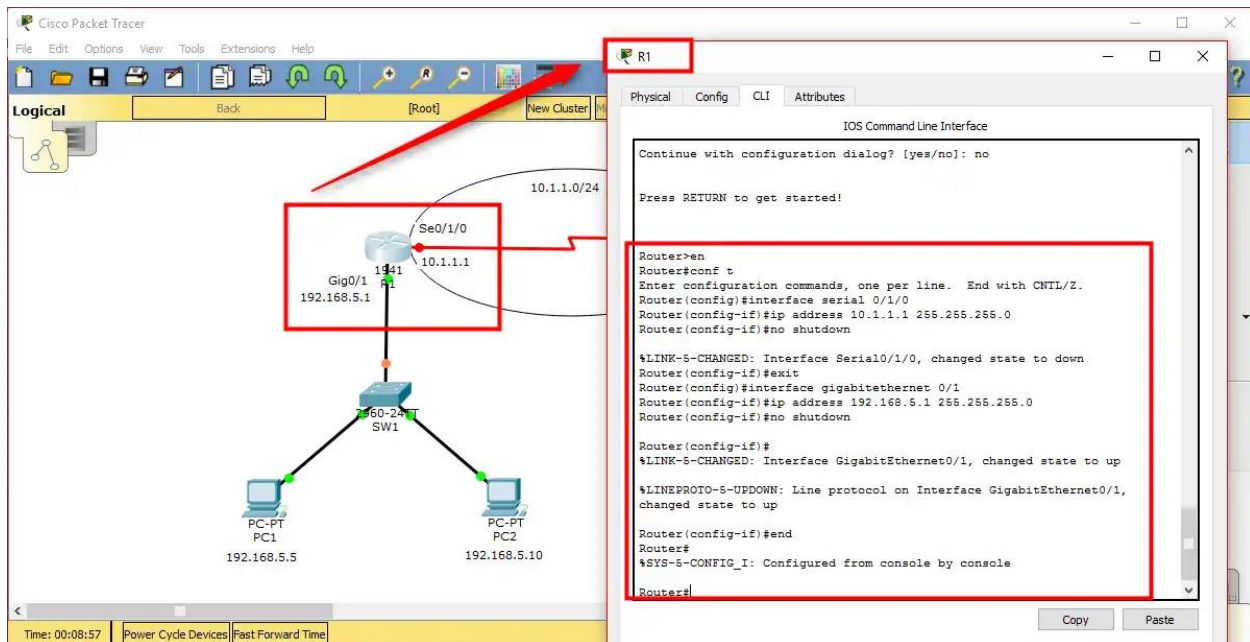
- Link the two routers with a Serial DCE-DTE cable.
- Connect the GigabitEthernet ports of R1 and R2 Routers to the Switch (SW1/SW2) ports with a straight-through cable.
- Connect PC1 and PC2 to SW1, PC3, and PC4 to SW2 with a straight cable.



1. Configuring GigabitEthernet and Serial Ports

Step 1

Click on the R1 Router you made in the setup, and open the settings. After that, go to the CLI tab. Use the commands below to give IP addresses to R1's GigabitEthernet and Serial ports.



■ For R1 – Se0/1/0:

```
R1#conf t
R1(config)#interface serial 0/1/0
R1(config-if)#ip address 10.1.1.1 255.255.255.0
R1(config-if)#no shutdown
```

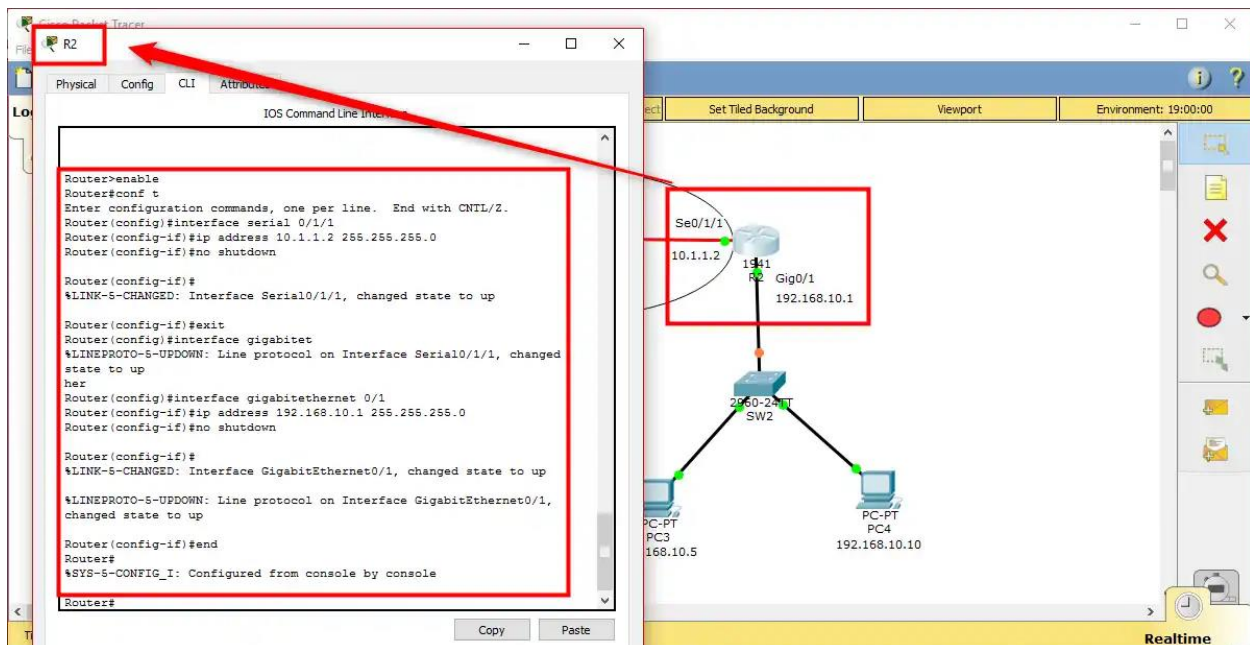
■ For R1 – Gig0/1:

R1#conf t

```
R1(config)#interface gigabitethernet 0/1
R1(config-if)#ip address 192.168.5.1 255.255.255.0
R1(config-if)#no shutdown
```

Step 2

Similarly, set up the Serial0/1/1 and Gig0/1 ports on Router R2 like this:



■ For R2 – Se0/1/1:

R1#conf t

```
R1(config)#interface serial 0/1/1
```

```
R1(config-if)#ip address 10.1.1.2 255.255.255.0
```

```
R1(config-if)#no shutdown
```

For R2 – Gig0/1:

R1#conf t

```
R1(config)#interface gigabitethernet 0/1
```

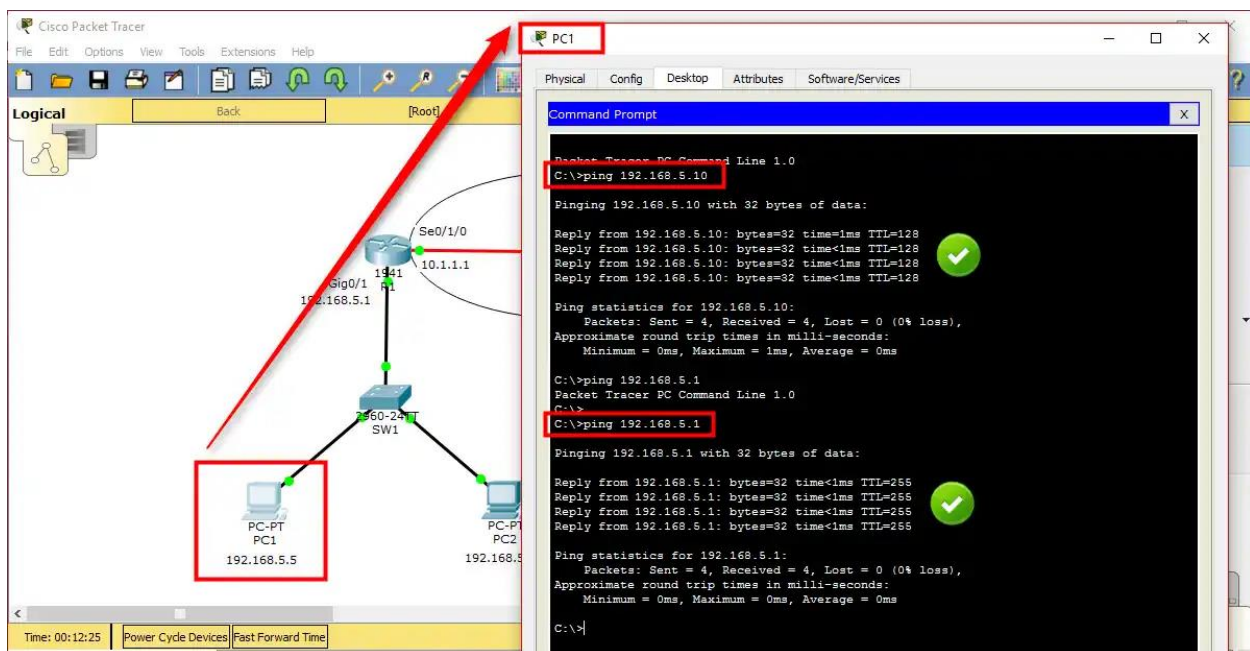
```
R1(config-if)#ip address 192.168.10.1 255.255.255.0
```

```
R1(config-if)#no shutdown
```

Step 3

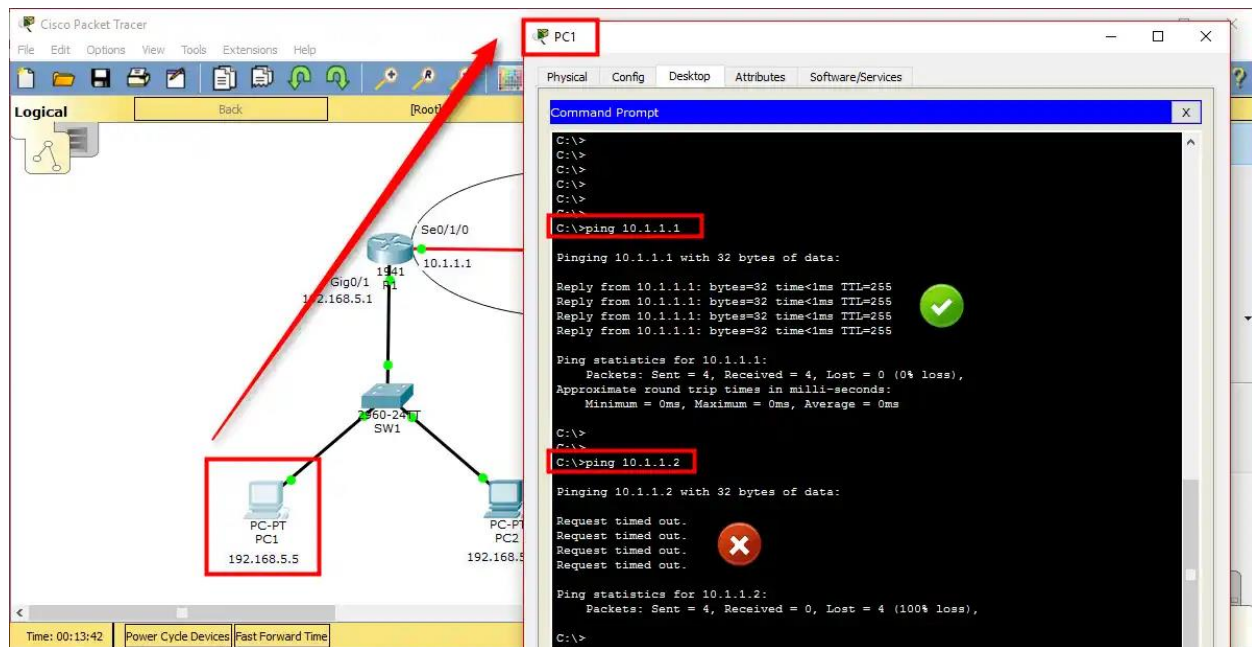
You have assigned IP addresses to Routers R1 and R2. Now, before enabling RIP, test the connection by pinging devices on LAN2 from LAN1.

Your connection from PC1 to R1's GigabitEthernet and Serial IPs will be smooth. Because of that, PC1 and PC2 are on the same network as Router R1.



Step 4

Now, try to ping the R2 Router's ports from the same machine, that is, PC1. At this stage, you will receive an error like the result in the image below. Because of that, **routers need a Routing** to talk to each other.



2. Enabling RIP Configuration

Step 1

Now, we want the PCs in LAN1 and LAN2 to talk to each other. To make this happen, let's turn on the RIP routing protocol on the Cisco Router R1 and R2 network devices.

Start by opening the R1 device's CLI, then use the commands below to turn on RIP.

```
R1#conf t - (From the Enable mode, go to Global mode.)
```

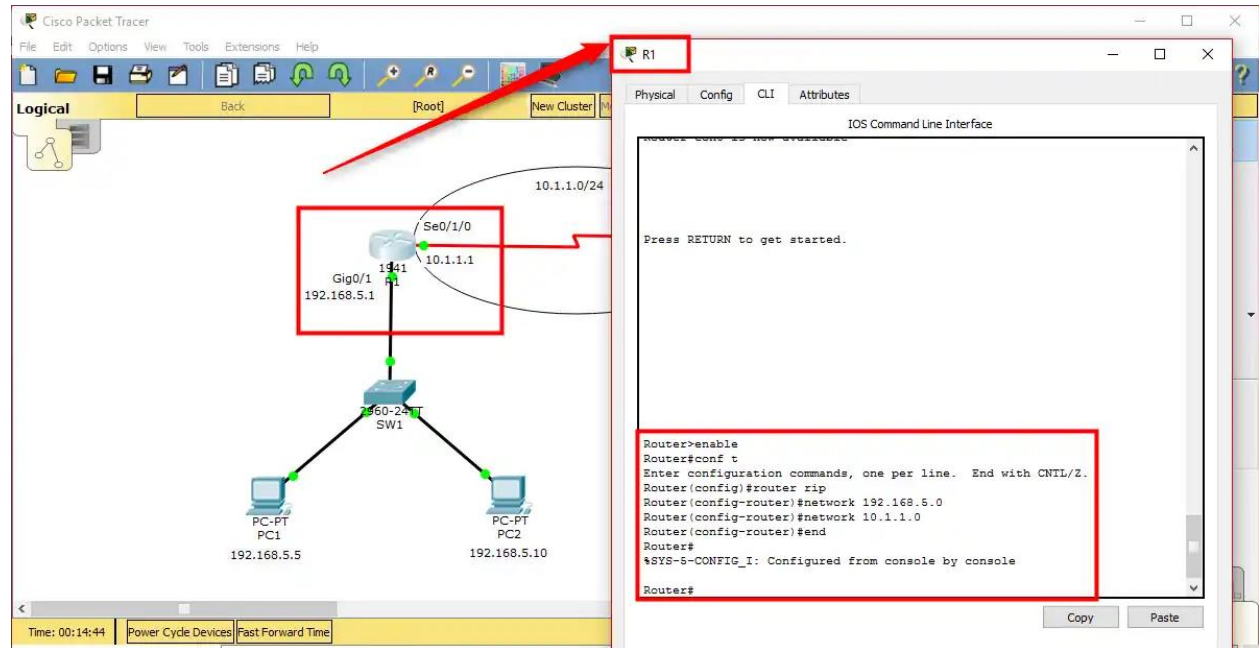
```
R1(config)#router rip - (In Global mode, turn on RIP.)
```

```
R1(config-router)#network 192.168.5.0 - (Add the network between R1 and SW1.)
```

```
R1(config-router)#network 10.1.1.0 - (Add the network between R1 and R2.)
```

```
R1(config-router)#exit - (Go to global mode.)
```

```
R1(config)# wr - (Save the settings.)
```



Step 2

You should apply the same steps to R2 as you did to R1. Now, follow these commands to set up RIP on R2:

```
R2#conf t - (Go to Global mode.)
```

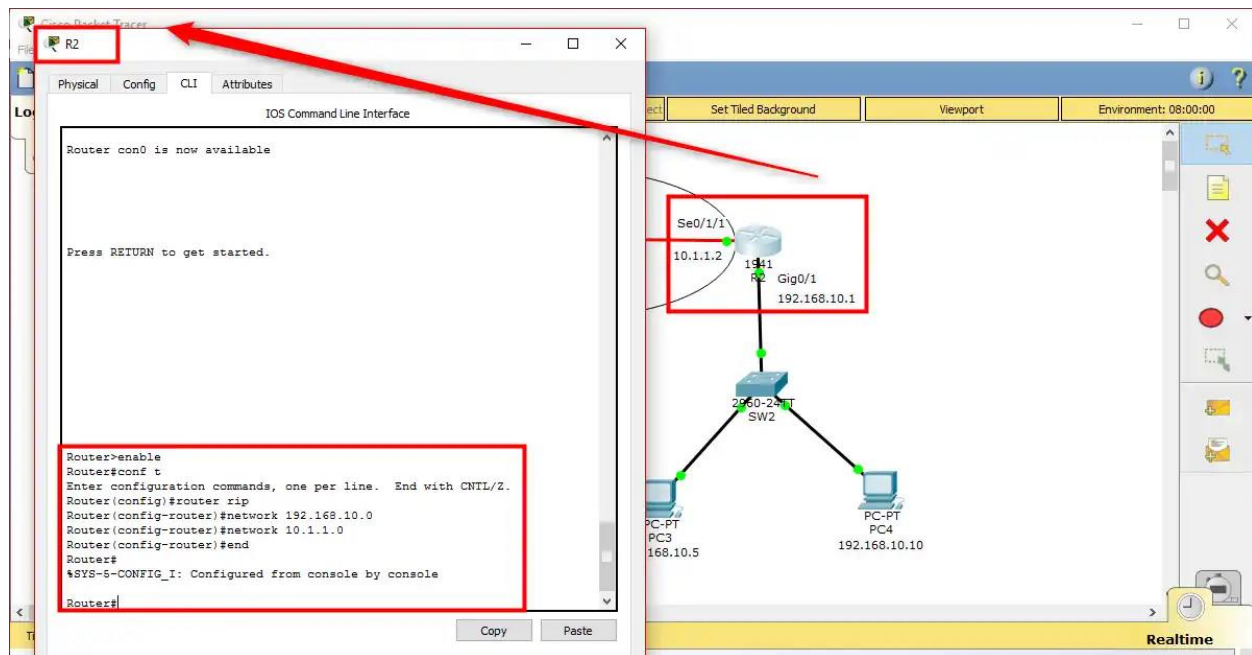
```
R2(config)#router rip - (Turn on RIP Routing.)
```

```
R2(config-router)#network 192.168.10.0 - (Add the network between R2 and SW2.)
```

```
R2(config-router)#network 10.1.1.0 - (Since R1 and R2 are a single network, this value is the same.)
```

```
R2(config-router)#exit - (Now, go to the previous mode.)
```

```
R2(config)# wr - (Save what you did in R2, too.)
```



Step 3

This step is up to you. You can decide how quickly RIP updates happen. Also, you can choose how long to keep the route valid and for how long.

This step makes the network work better.

The order of the command is like: timers basic “update time” “invalid time” “holddown time.”

```
R1(config)# router rip
```

```
R1(config-router)# timers basic 30 180 240
```

3. Verify and Check RIP Settings in Packet Tracer

Make sure you set up the Routing Information Protocol correctly. You can check and test it by pinging it from your PC. But if you want to look into it more, you can use show commands from the Routers for a detailed examination.

Now, to check if RIP is working in your setup on Packet Tracer, do the following:

a) show ip route

Step 1

Once you've set up RIPv1, R1 and R2 devices can chat with each other. So they will share details about the networks you add with others. Now, check these routes by using the "show ip route" command.

The result of the "show ip route" command on R1 looks like this:

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central switch (SW1) connected to two PCs (PC1 and PC2) and a router (R1). R1 is connected to SW1 via its GigabitEthernet0/1 interface (IP: 192.168.5.1). R1 has a serial interface (Serial0/0/0) connected to another router (R2) via its Serial0/0/0 interface (IP: 10.1.1.1). The network is divided into three subnets: 10.0.0.0/8, 10.1.1.0/24, and 192.168.0.0/24. A red box highlights R1 in the diagram, and a red arrow points to the CLI window on the right.

The CLI window on the right shows the output of the 'show ip route' command on R1. The output is as follows:

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

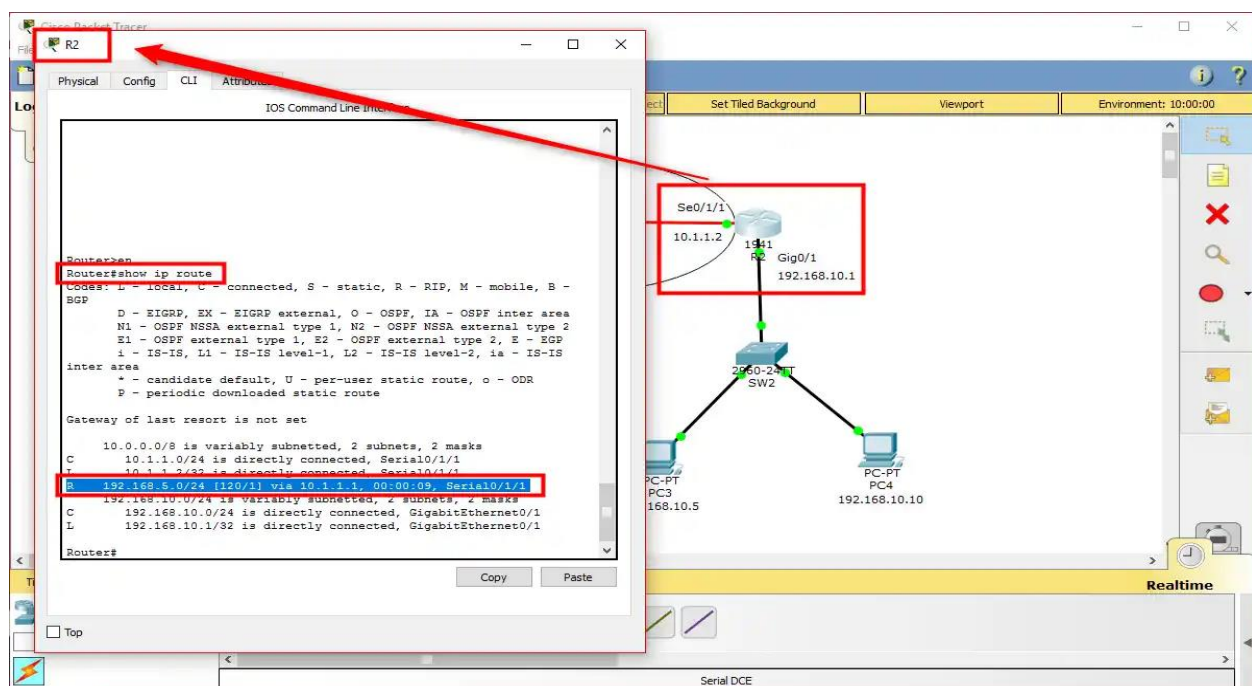
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    10.1.1.0/24 is directly connected, Serial0/0/0
L    10.1.1.1/32 is directly connected, Serial0/0/0
C    192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.5.0/24 is directly connected, GigabitEthernet0/1
R    192.168.10.0/24 (120/1) via 10.1.1.2, 00:00:14, Serial0/0/0
Router#
```


Looking at the picture, you can find the entry “R – 192.168.10.0/24 (120/1) via 10.1.1.2, 00:00:14, Serial0/1/0”. Here’s what this route record means:

- **R:** It means RIP is OK.
- **192.168.10.0/24:** It shows the target network and **CIDR**.
- **120/1:** The first number (120) indicates the metric value. The second number (1) shows the distance to the referral source.
- **via 10.1.1.2:** It is the IP address of the Router used to reach the routing entry.
- **00:00:14:** This tells us that it learned this routing info just 14 seconds ago.
- **Serial 0/1/0:** It shows the output port used to reach the target.

Step 2

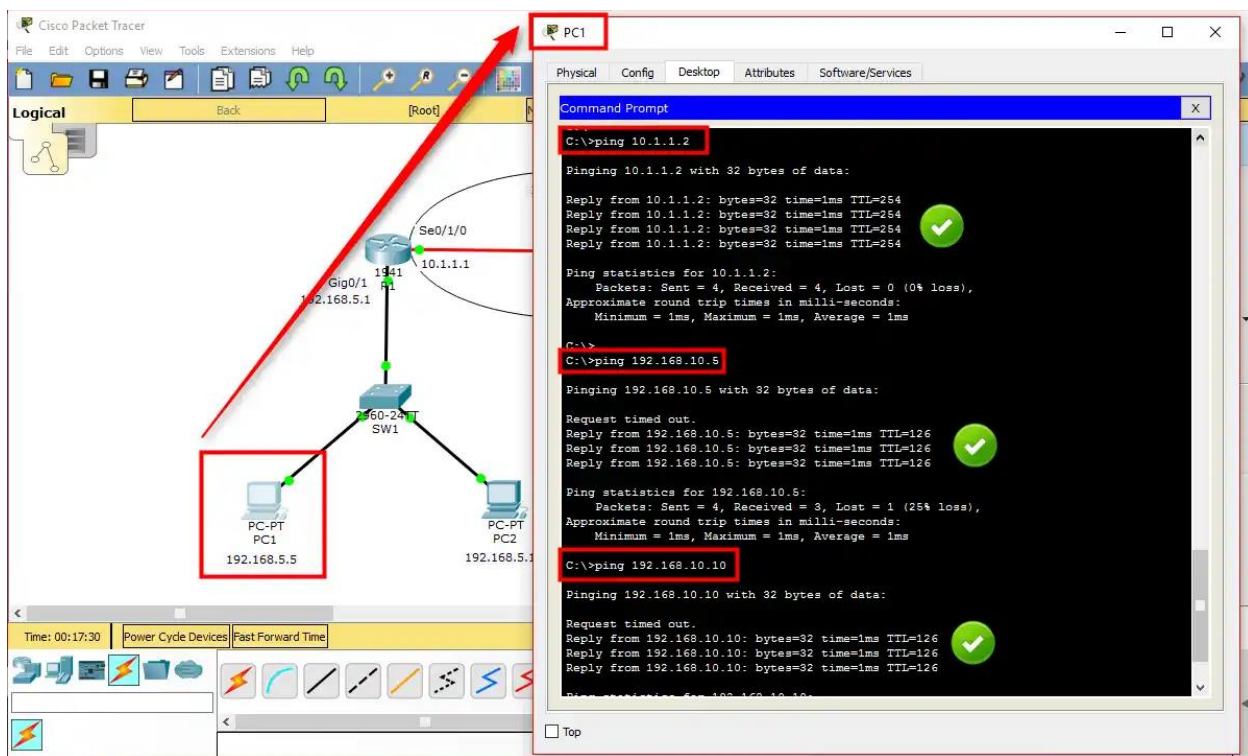
Likewise, check the routing routes on Router R2. For this, run “show ip route.”



Step 3

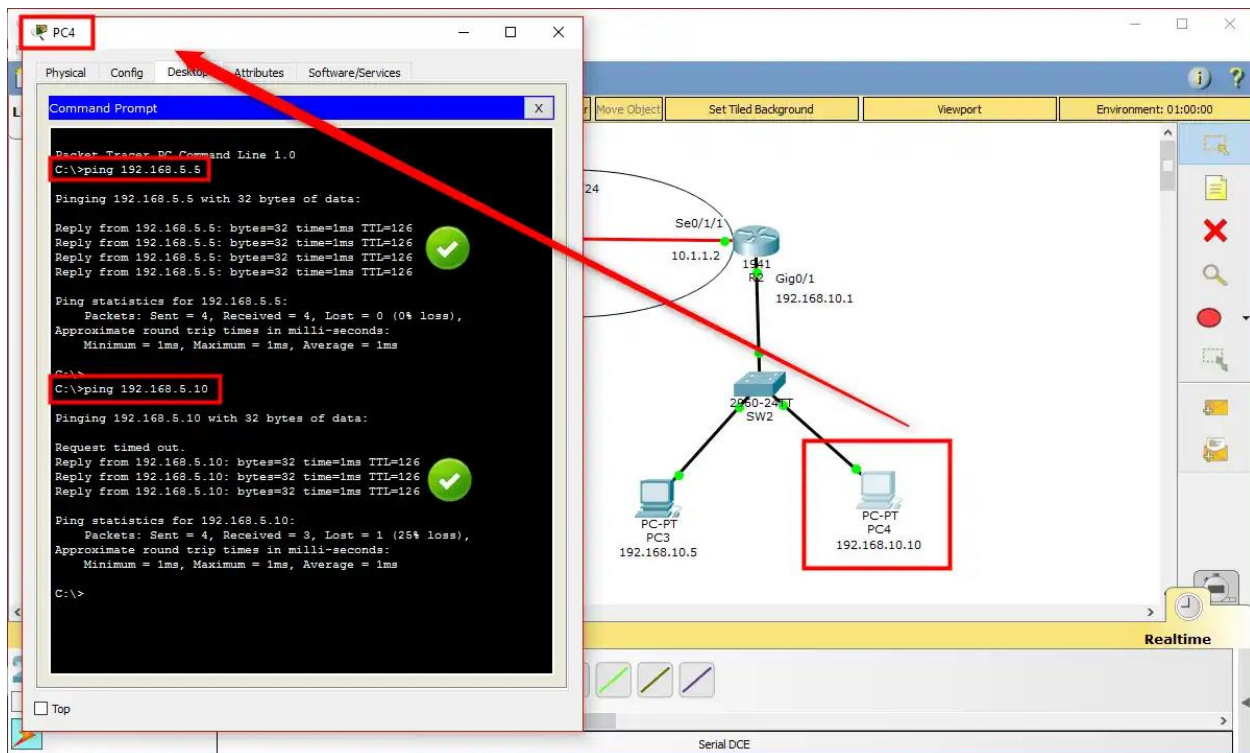
Now that you have RIP set up, try testing the connection by pinging the target network from PC1. Before, the ping didn't work, but now Routers can talk to each other directly.

Now, ping R2's Serial port from PC1 and Ping PC3 and PC4 on its subnet. As shown in the image, users on LAN1 can now access LAN2.



Step 4

PCs on the 192.168.10.0/24 network can also access 192.168.5.0/24, that is, LAN1, without any problems.

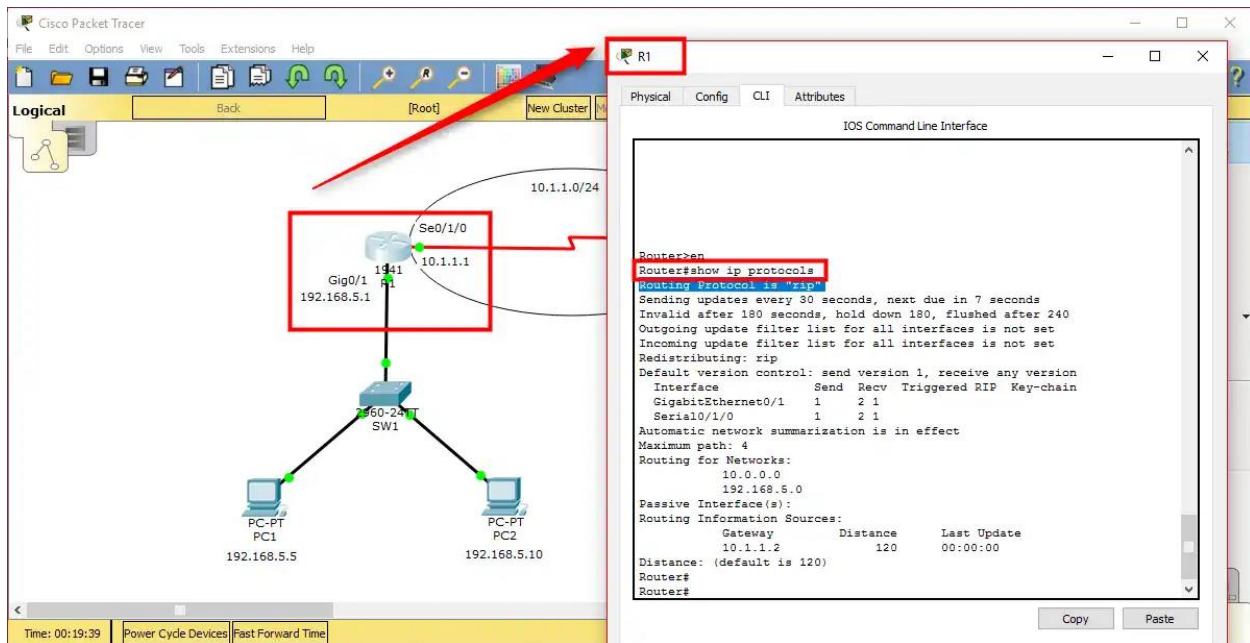


b) show ip protocols

Step 1

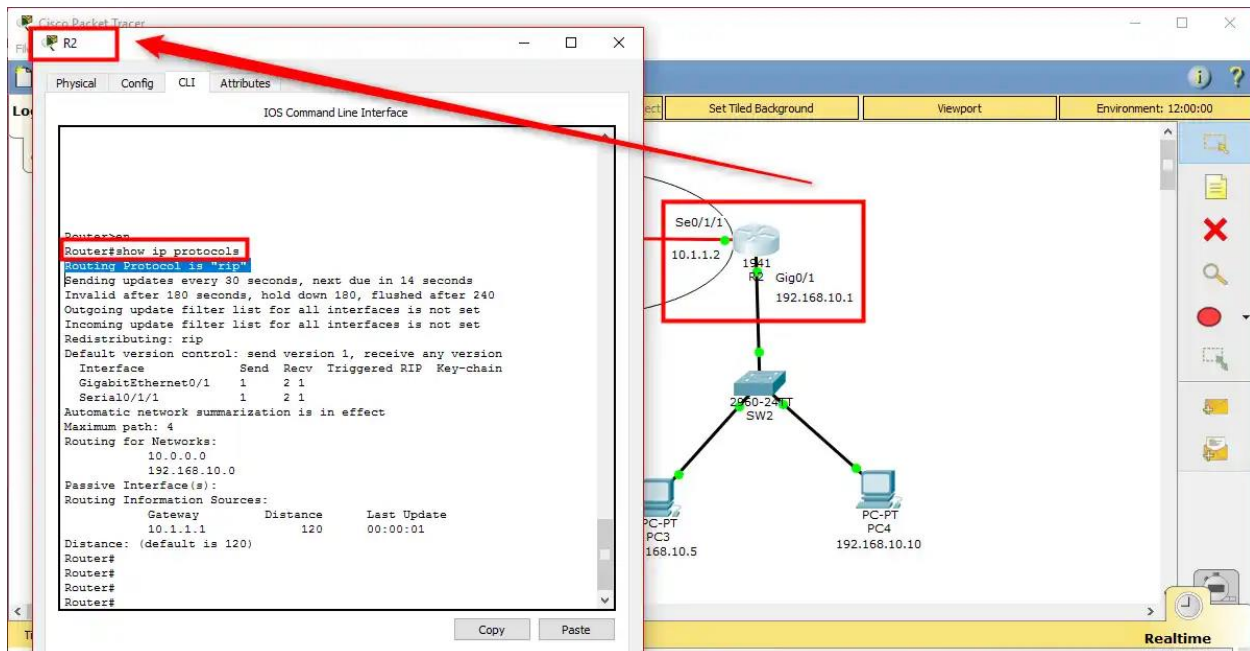
Also, you can figure out which Routing protocol is in use on the Router by using “show ip protocols.” If you run it in the CLI of the R1 device, you’ll get a notice like the one below.

The result of the command shows that the routing protocol is “rip.”



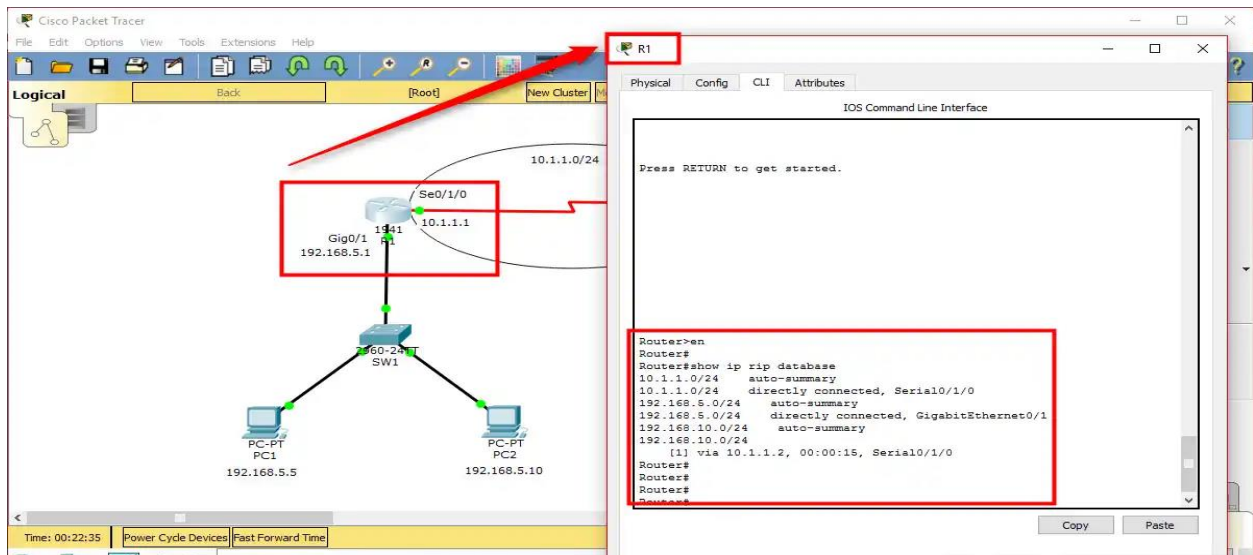
Step 2

Likewise, you can check which routing the R2 has.



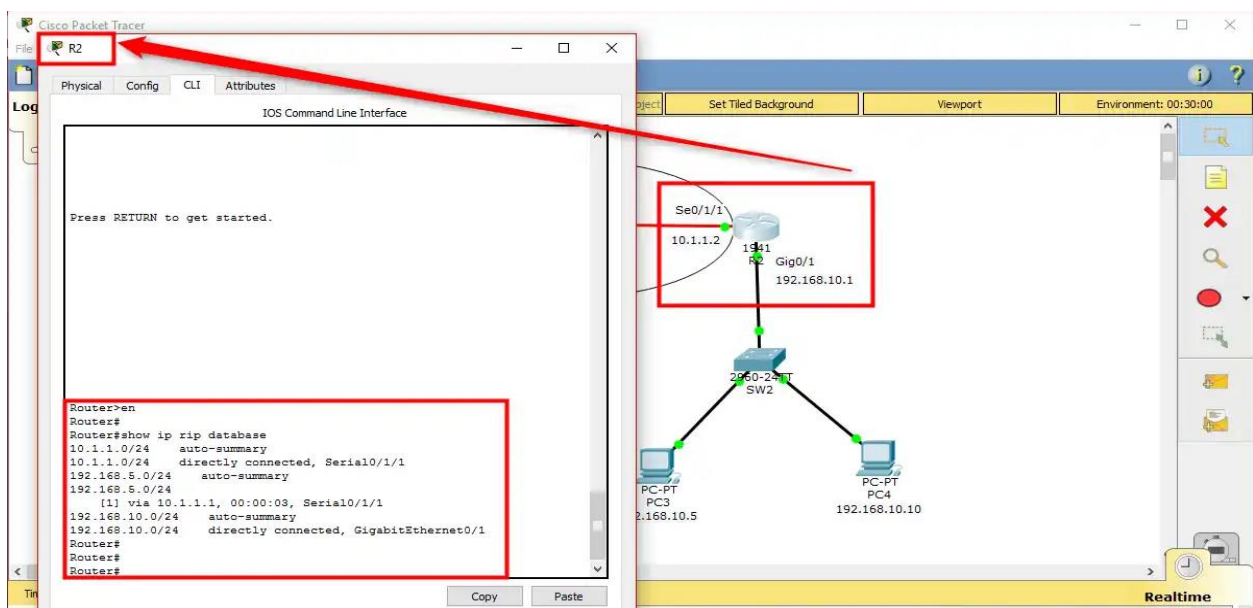
Step 3

You can also see detailed routes with the “show ip rip database” command on R1.



Step 4

Using the same command, check the RIP entries on R2.



c) show running-config

Finally, take a look at the current settings with “show running-config” in the CLI of both R1 and R2 routers.

```
R1#show running-config
Building configuration...

Current configuration : 823 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
no ip cef
no ipv6 cef
!
license udi pid CISC01941/K9 sn FTX1524N07E
!
spanning-tree mode pvst
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
shutdown
!
interface GigabitEthernet0/1
ip address 192.168.5.1 255.255.255.0
duplex auto
speed auto
!
interface Serial0/1/0
ip address 10.1.1.1 255.255.255.0
clock rate 2000000
!
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router rip
network 10.0.0.0
network 192.168.5.0
!
ip classless
!
ip flow-export version 9
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
end
R1#
```

```
R2#show running-config
Building configuration...

Current configuration : 805 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
no ip cef
no ipv6 cef
!
license udi pid CISC01941/K9 sn FTX15248JFW
!
spanning-tree mode pvst
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
shutdown
!
interface GigabitEthernet0/1
ip address 192.168.10.1 255.255.255.0
duplex auto
speed auto
!
interface Serial0/1/0
no ip address
clock rate 2000000
shutdown
!
interface Serial0/1/1
ip address 10.1.1.2 255.255.255.0
!
interface Vlan1
no ip address
shutdown
!
router rip
network 10.0.0.0
network 192.168.10.0
!
ip classless
!
ip flow-export version 9
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
end
R2#
```