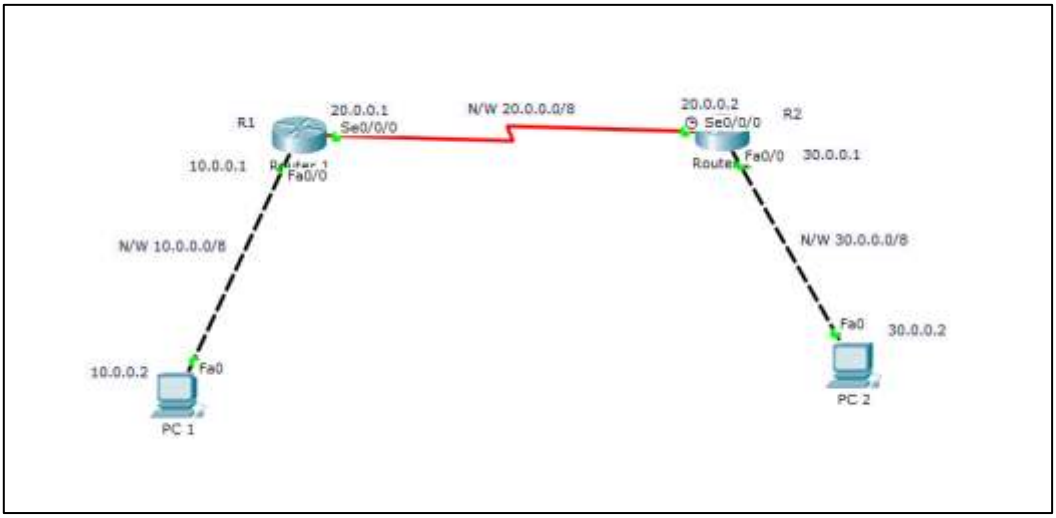
- **Configuring RIP in Packet Tracer:**

1. Build the network topology.



2. Configure IP addresses on the PCs and the routers.

Router 1:

R1(config)#

R1(config)#int fa0/0

R1(config-if)#ip address 10.0.0.1 255.0.0.0

R1(config-if)#no shut

R1(config-if)#

R1(config-if)#int serial 0/0/0

R1(config-if)#ip add 20.0.0.1 255.0.0.0

R1(config-if)#no shut

Router 2:

R2(config)#

R2(config)#int fa0/0

R2(config-if)#ip add 30.0.0.1 255.0.0.0

R2(config-if)#no shut

R2(config-if)#

R2(config-if)#int serial 0/0/0

R2(config-if)#ip add 20.0.0.2 255.0.0.0

R2(config-if)#no shut

IP configuration on PCs

Click PC->Desktop->IP Configuration. On each PC assign these addresses:

PC1: IP address: 10.0.0.2 Subnet mask 255.0.0.0 Default Gateway 10.0.0.1

PC2: IP address: 30.0.0.2 Subnet mask 255.0.0.0 Default Gateway 30.0.0.1

3. Configure RIPv2 on the routers

Router 1

R1(config)#

R1(config)#router rip

R1(config-router)#version 2

R1(config-router)#network 10.0.0.0

R1(config-router)#network 20.0.0.0

Router 2

R2(config)#

R2(config)#router rip

R2(config-router)#version 2

R2(config-router)#network 20.0.0.0

R2(config-router)#network 30.0.0.0

As you can see,to configure rip on each router,we enable enable RIP using *router rip* command then advertise the networks directly connected to the router interfaces using *network* command.

4. We'll now verify RIP configuration.

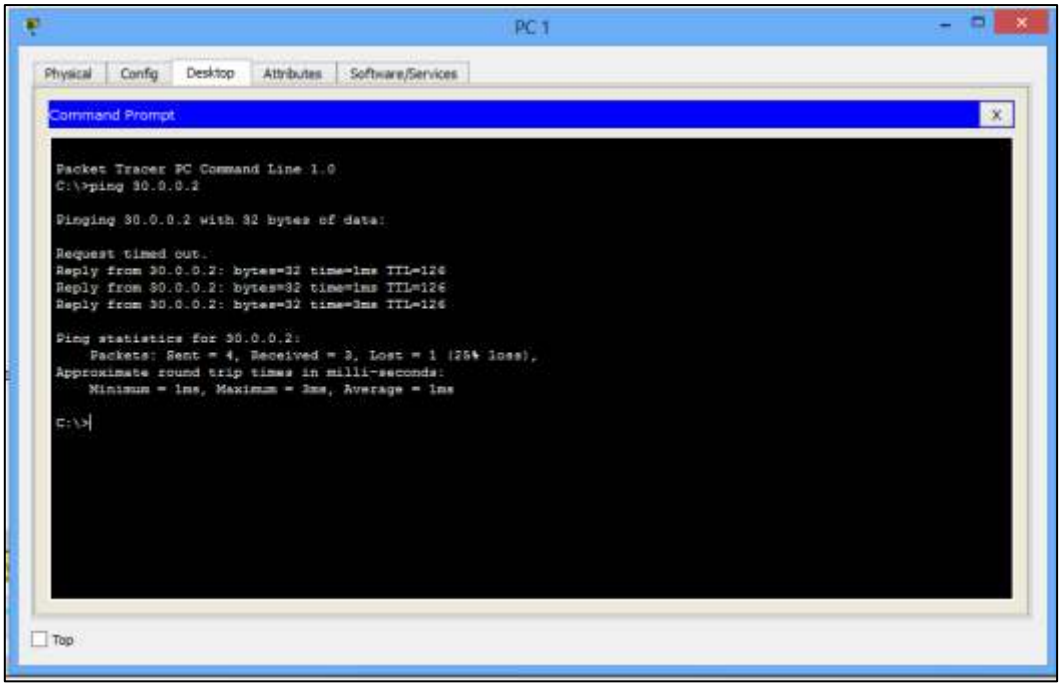
To verify that RIP is in deed advertising routes,we can use the *show ip route* command on R1.

```
R1#
R1#show ip route
Codes: C - connected, S - static, I - IGRP, 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 inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    20.0.0.0/8 is directly connected, Serial0/0/0
R    30.0.0.0/8 [120/1] via 20.0.0.2, 00:00:17, Serial0/0/0
```

You can see that R1 has learned about the 30.0.0/8 network. The letter R indicates that the route was learned using RIP.

To specifically display routes learnt through RIP use *show ip route rip* command on the router.

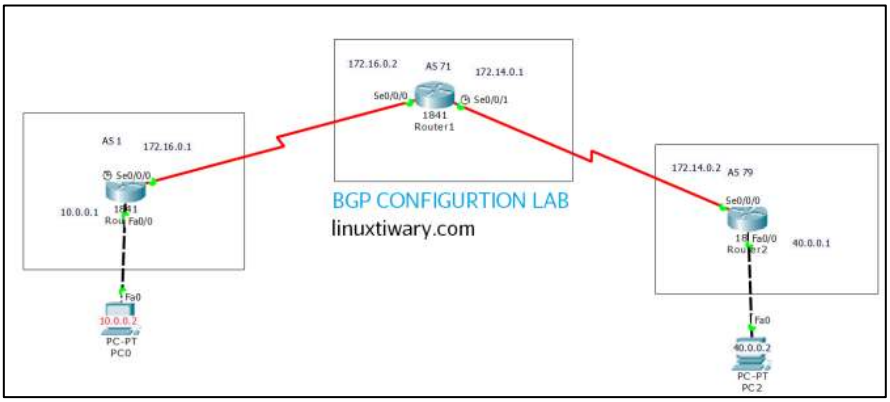
Now lets Ping PC2 from PC1 to further confirm that connectivity is really established between the two subnets.



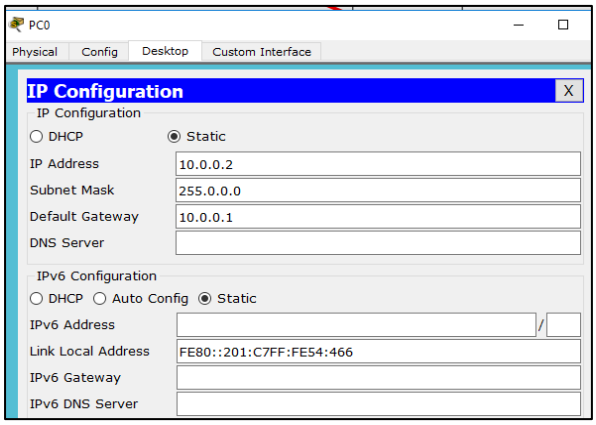
Ping test succeeded.

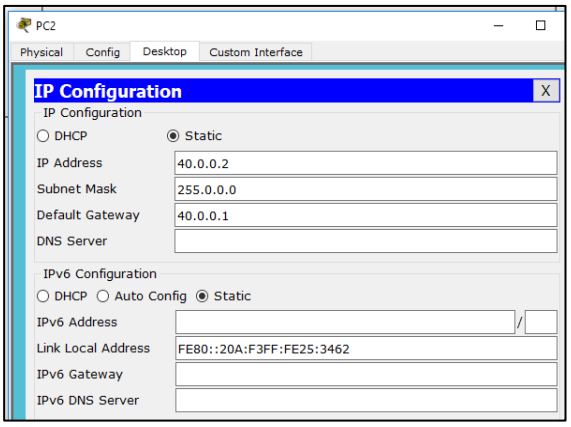
- **BGP configuration:**

Step 1:Draw BGP Topology Diagram.



Step 2: Assign ip address on each device as mentioned in Diagram.





Step 3: bgp configuration on Router R1:

R1(config)#router bgp 1

R1(config-router)#neighbor 172.16.0.2 remote-as 71

R1(config-router)#network 10.0.0.0 mask 255.0.0.0

R1(config-router)#exit

R1(config)#do write

Building configuration...[OK]

R1(config)#

Step 4: bgp configuration on Router R2:

R2(config)#router bgp 71

R2(config-router)#neighbor 172.16.0.1 remote-as 1

R2(config-router)#neighbor 172.14.0.2 remote-as 79

R2(config-router)#network 40.0.0.0 mask 255.0.0.0

R2(config-router)#exit

R2(config)#do write

Building configuration...[OK]

R2(config)#

Step 5: bgp configuration on Router R3:

R3(config)#router bgp 79

R3(config-router)#neighbor 172.14.0.1 remote-as 71

R3(config-router)#network 40.0.0.0 mask 255.0.0.0

R3(config-router)#exit

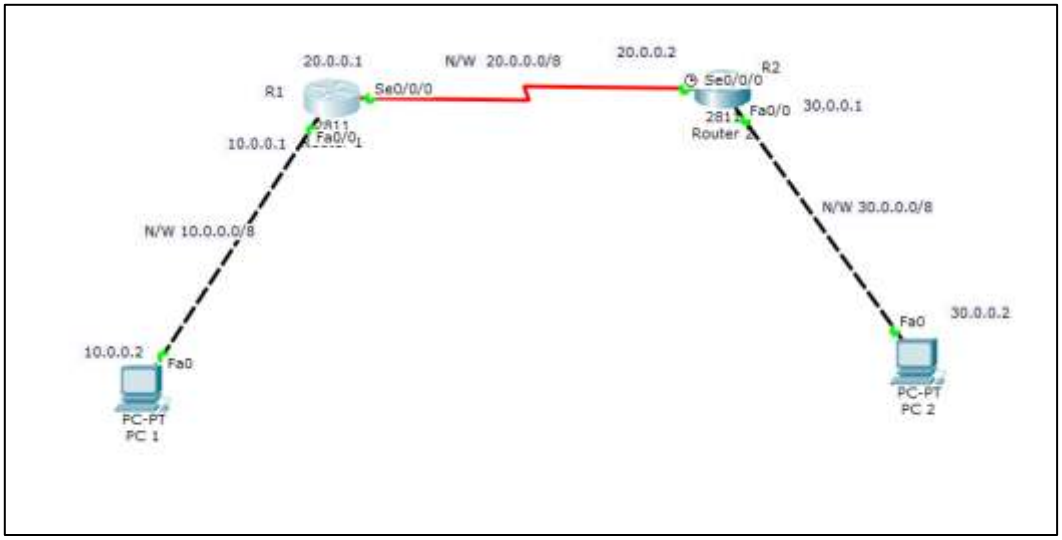
R3(config)#do write

Building configuration...[OK

R3(config)#

- **OSPF configuration.**

1. Build the network topology.



2.Configure IP addresses on PCs and router interfaces.

Router 1

R1(config)#int fa 0/0

R1(config-if)#ip add 10.0.0.1 255.0.0.0

R1(config-if)#no shut

R1(config-if)#

R1(config-if)#int serial 0/0/0

R1(config-if)#ip add 20.0.0.1 255.0.0.0

R1(config-if)#no shut

Router 2

R2(config-if)#int fa0/0

R2(config-if)#ip add 30.0.0.1 255.0.0.0

R2(config-if)#no shut

R2(config-if)#

R2(config-if)#int serial0/0/0

R2(config-if)#ip address 20.0.0.2 255.0.0.0

R2(config-if)#no shut

Now do IP configurations for the PCs.

PC1 IP add 10.0.0.2 Subnet mask 255.0.0.0 Default gateway 10.0.0.1

PC2 IP add 30.0.0.2 Subnet mask 255.0.0.0 Default gateway 30.0.0.1

3. Configure OSPF on the routers.

The configuration is pretty simple and requires only two major steps:

1. Enable OSPF on a router using the *router ospf PROCESS_ID* in the global configuration mode.

2.Define on which interfaces OSPF will run and what networks will be advertised using *network IP_ADDRESS WILCARD_MASK AREA* command in the OSPF configuration mode.

Router 1

R1(config)#

R1(config)#router ospf 1

R1(config-router)#network 10.0.0.0 0.255.255.255 area 0

R1(config-router)#network 20.0.0.0 0.255.255.255 area 0

Router 2

R2(config)#

R2(config)#router ospf 2

R2(config-router)#network 20.0.0.0 0.255.255.255 area 0

R2(config-router)#network 30.0.0.0 0.255.255.255 area 0

4. Verify OSPF configuration

First, let's verify that the routers have established a neighbor relationship by typing the *show ip ospf neighbor* command on **R1**:

```
R1#
R1#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address
Interface
30.0.0.1          0   FULL/  -        00:00:30    20.0.0.2
Serial0/0/0
```

Next, to verify that R1 has learnt the route to 30.0.0.0/8 network, we'll use *show ip route ospf* command on **R1**:

```
R1#
R1#show ip route ospf
O    30.0.0.0 [110/65] via 20.0.0.2, 00:20:50, Serial0/0/0
```

Note that the letter **O** indicates OSPF routes.

Lastly, verify connectivity. Ping **PC2** from **PC1**. Ping should be successful.