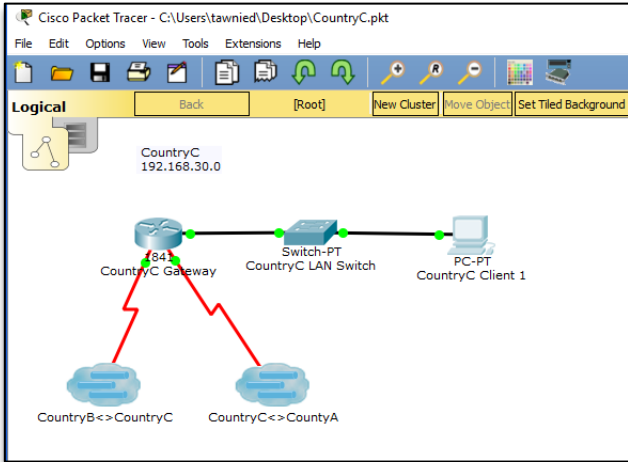
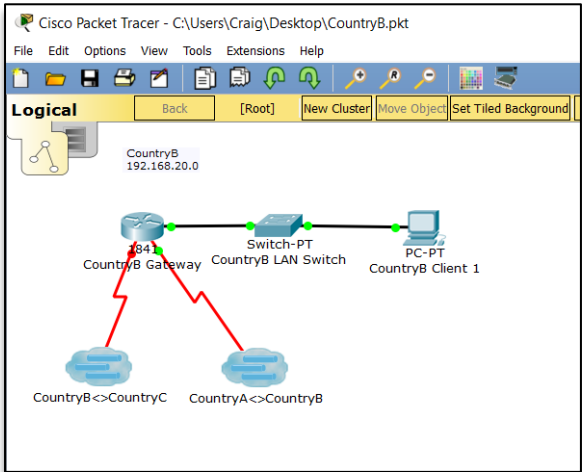
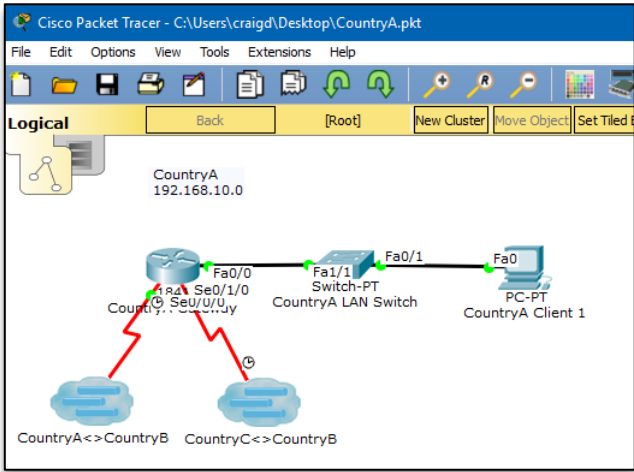


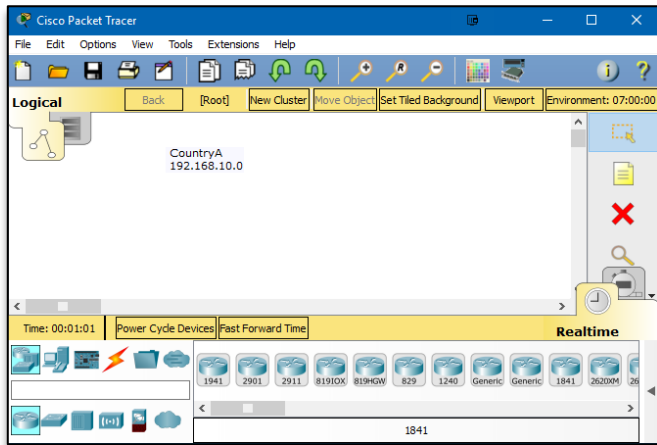
# Packet Tracer Mini-Lab 14: Supplement Using Multiuser to Connect 3 LANs to WAN

## Mini-Lab 14 Objective

The lab provides further practice in a simulated environment using **Cisco's Packet Tracer** application. It will demonstrate how to setup three (3) LANS and interconnect to a common WAN using the Multiuser application.



1. On a separate Host PC, open an instance of Packet Tracer to be used for the **CountryA** LAN. Using the **Place Note** tool, label it **CountryA** with a network address of **192.168.10.0**



2. Add the following three (3) devices to make up the **CountryA** LAN:

**PC:** Generic/PC-PT

**Switch:** Generic/Switch-PT

**Router:** Generic/1841 ←NOTE THE MODEL NUMBER

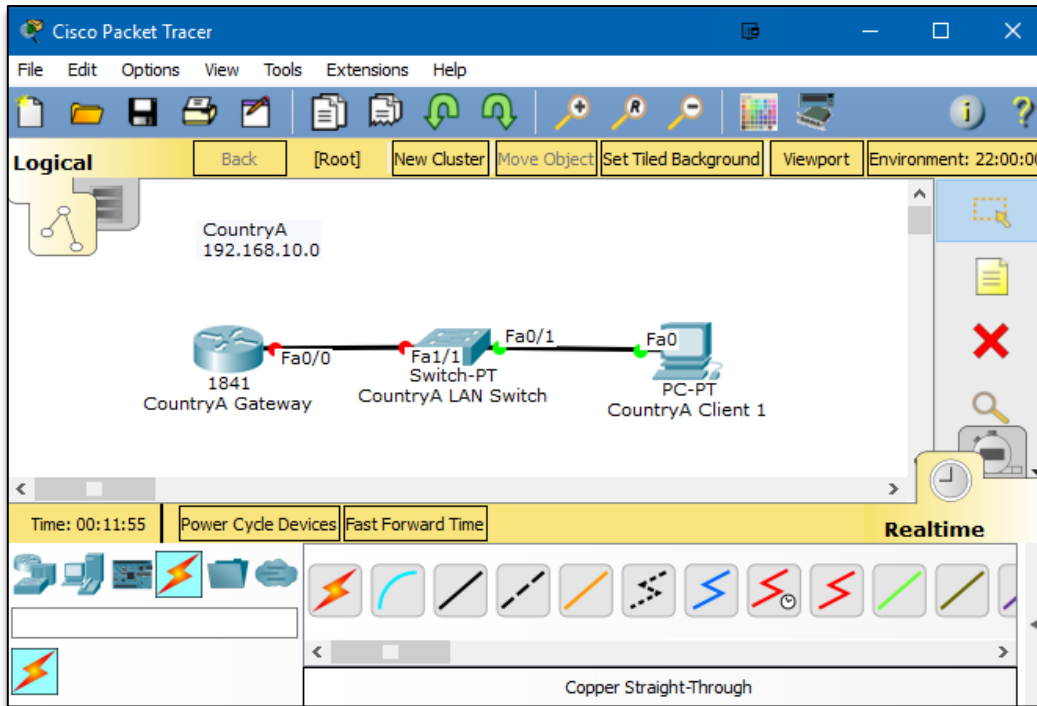
Label each device:

**PC:** CountryA Client 1

**Switch:** CountryA LAN Switch

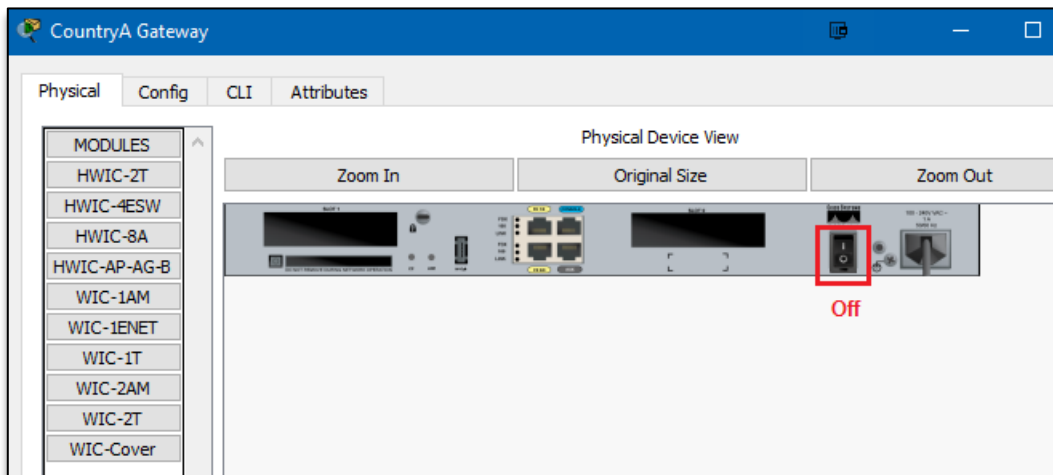
**Router:** CountryA Gateway

Attach the appropriate media to connect the three devices (e.g., copper straight-through).

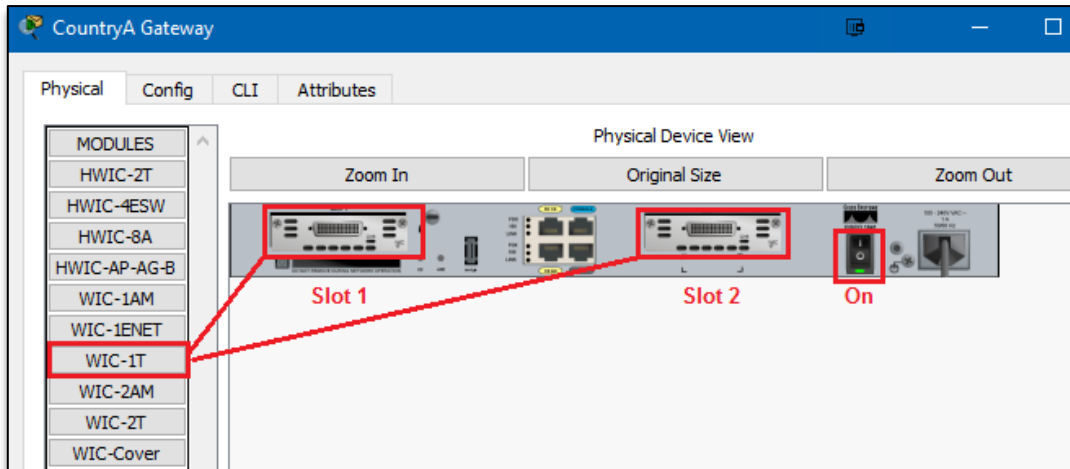


Note the Ethernet **port numbers** used in the screen cap above (**FA0/0** in the **Router** and **Fa0** in the **PC**).

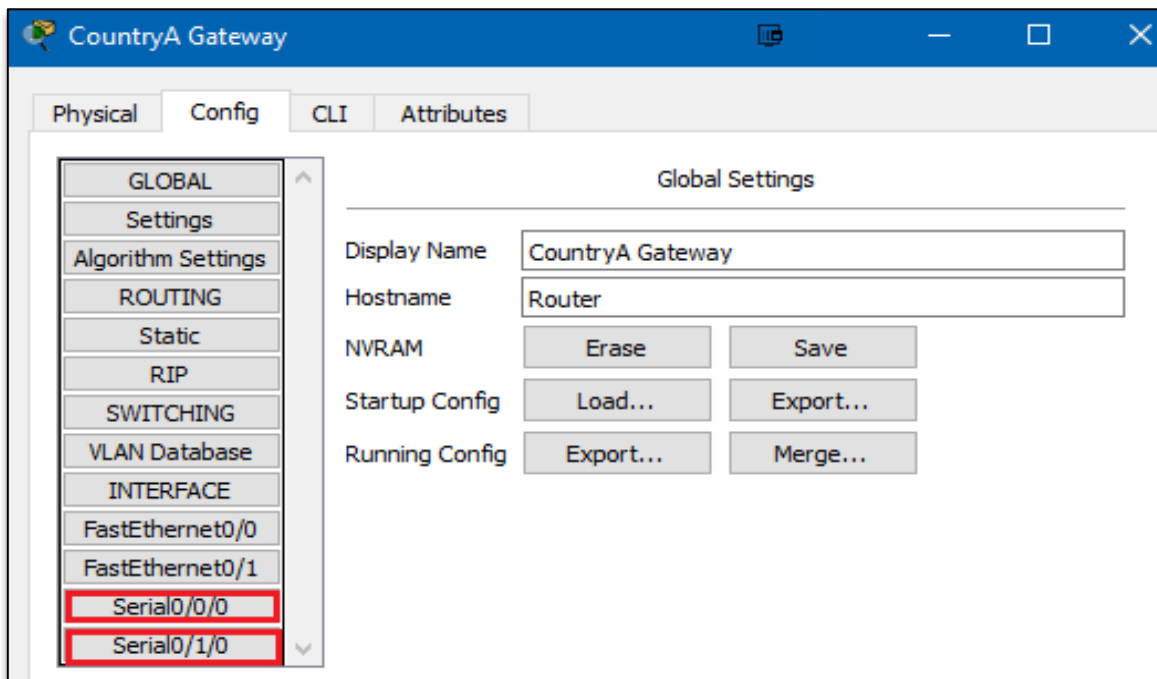
3. Open the **Router**, select the **Physical** tab, and turn it off.



4. From the **Modules** column, drag-and-drop a **WIC-1T** module to **Slot 1** and **Slot 2**, then turn the **Router** back on.



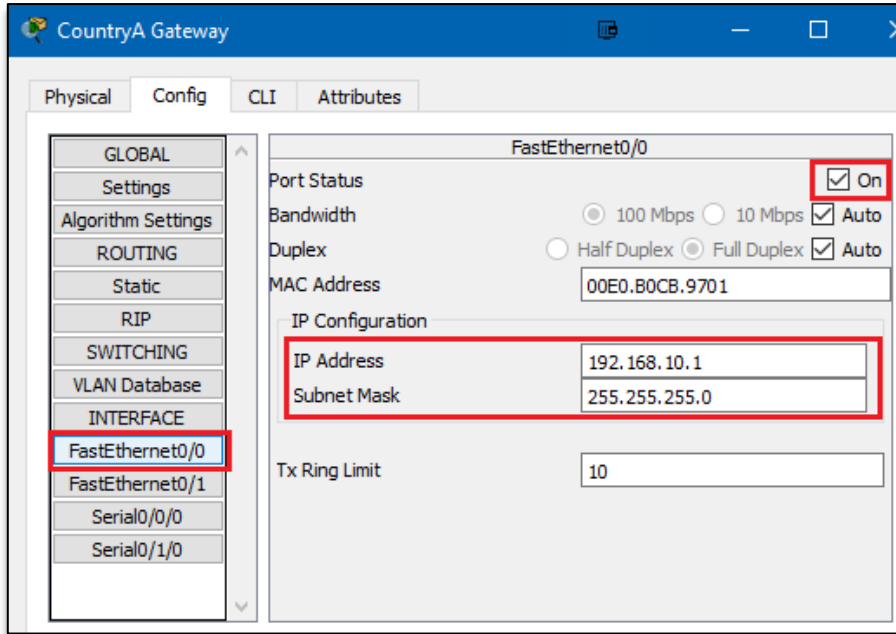
This will add **Serial0/0/0** and **Serial 0/1/0** to the INTERFACE under the **Config** tab.



5. Still in the **Router**, select the **Config** tab, and open FastEthernet0/0. Turn on **Port Status**, then enter the following for the **IP Configuration**:

**IP Address:** 192.168.10.1

**Subnet Mask:** 255.255.255.0

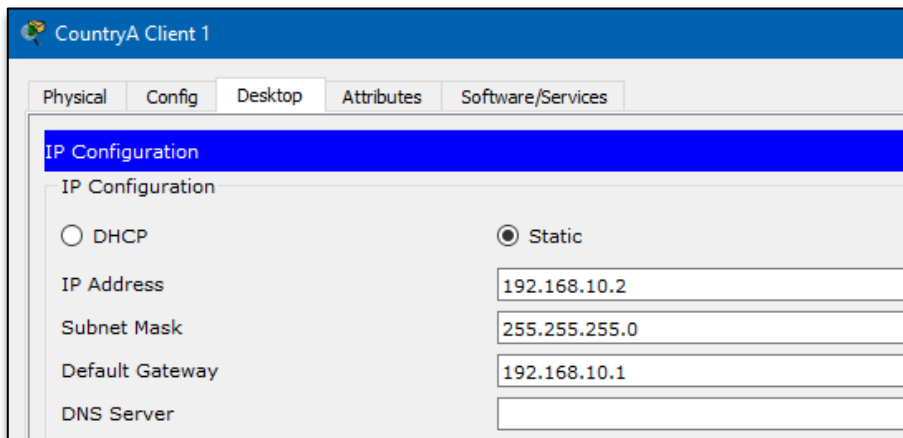


6. Open the **PC**, select **Desktop**, then **IP Configuration**, then add the following **IP Configuration**:

**IP Address:** 192.168.10.2

**Subnet Mask:** 255.255.255.0

**Default Gateway:** 192.168.10.1



At this point you should be able to successfully ping the Router (Gateway) port number from the PC.

```
Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

7. On a different Host, repeat the above process, but for a second LAN called **CountryB** with a network address of **192.168.20.0**

Name the devices according to the **CountryB** schema, and set the port numbers to reflect the **CountryB** network address of **192.168.20.0** (when finished make sure all the ports are turned on):

**Router**

**IP Address:** 192.168.20.1

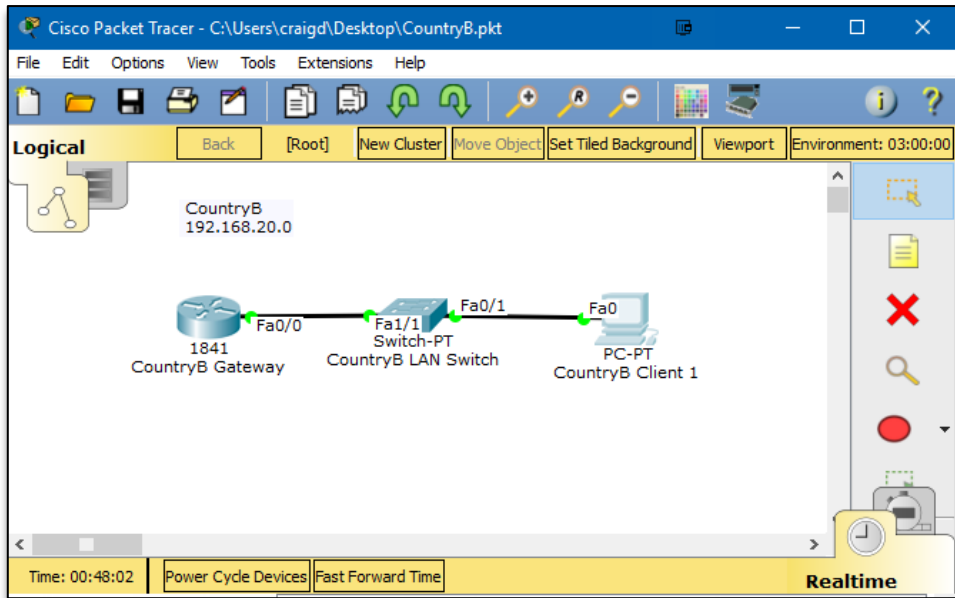
**Subnet Mask:** 255.255.255.0

**PC**

**IP Address:** 192.168.20.2

**Subnet Mask:** 255.255.255.0

**Default Gateway:** 192.168.20.1



At this point you should be able to successfully ping the Router (Gateway) port number from the PC.

```
C:\>ping 192.168.20.1

Pinging 192.168.20.1 with 32 bytes of data:

Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time=2ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

8. On a different Host, repeat the above process, but for a third LAN called **CountryC** with a network address of **192.168.30.0**

Name the devices according to the **CountryC** schema, and set the port numbers to reflect the **CountryC** network address of **192.168.30.0** (when finished make sure all the ports are turned on):

#### Router

**IP Address:** 192.168.30.1

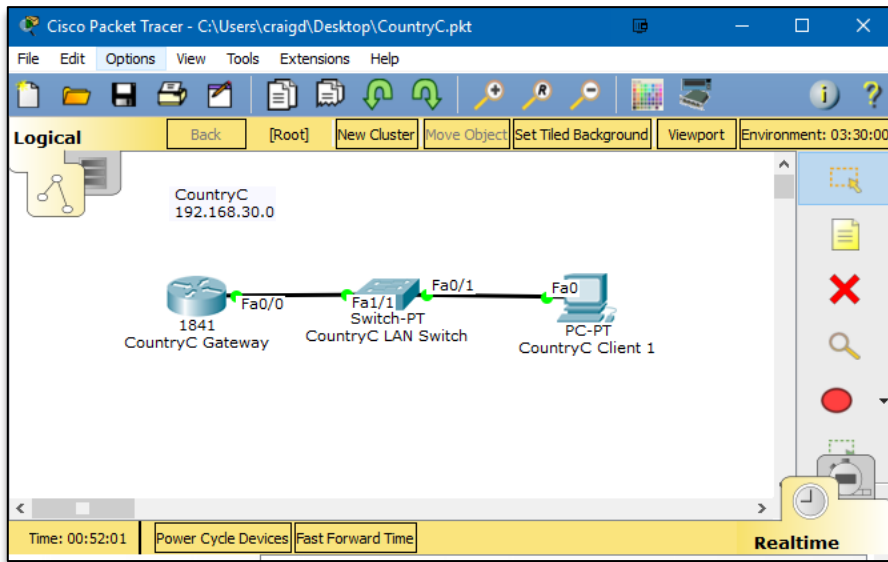
**Subnet Mask:** 255.255.255.0

#### PC

**IP Address:** 192.168.30.2

**Subnet Mask:** 255.255.255.0

**Default Gateway:** 192.168.30.1



At this point you should be able to successfully ping the Router (Gateway) port number from the PC.

```
C:\>ping 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:

Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

At this point you should have three operational LANS, *CountryA* 192.168.10.0, *CountryB* 192.168.20.0, and *CountryC* 192.168.30.0, ready to interconnect into a common WAN. In order to do this you will need to setup and configure the three routers with their own interior network schemes.

For this mini-lab I have come up with the following three router network schemes:

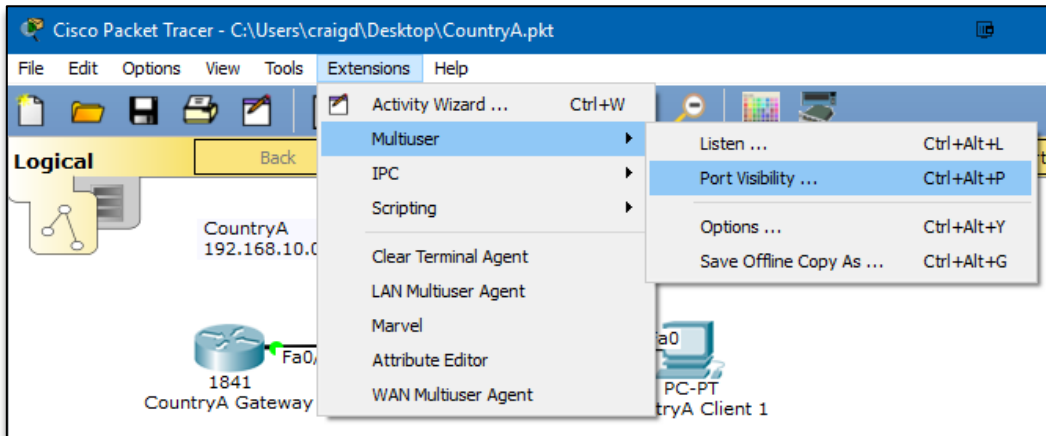
**CountryA <> CountryB:** 192.168.40.0 (Serial0/0/0 192.168.40.1, Serial0/1/0 192.168.40.2)

**CountryB <> CountryC:** 192.168.50.0 (Serial0/0/0 192.168.50.1, Serial0/1/0 192.168.50.2)

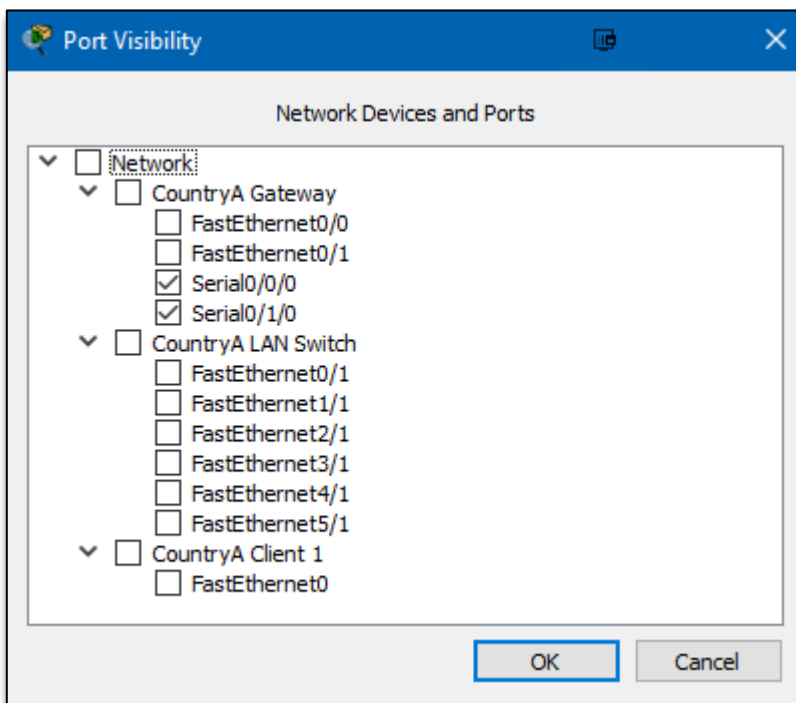
**CountryC <> CountryA:** 192.168.60.0 (Serial0/0/0 192.168.60.1, Serial0/1/0 192.168.60.2)



9. In the **CountryA** LAN, select **Extensions** from the menu bar and select **Multuser**, then **Port Visibility...**



10. In **Network Devices and Ports**, check **Serial0/0/0** and **Serial 0/1/0**, then **OK**



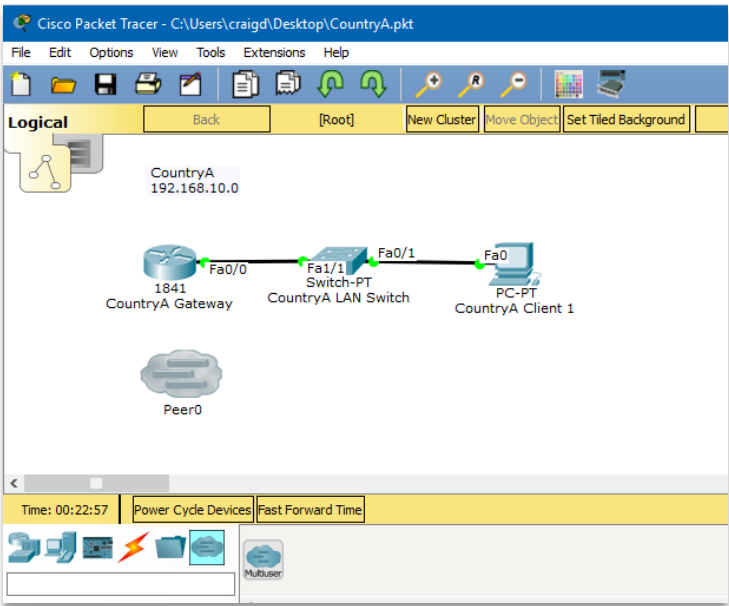
11. Repeat this process in **CountryB** and **CountryC**.
12. Back in **CountryA**, open the **Router(Gateway)**, select the **Config** tab, and select **Serial0/0/0** then enter an IP address based on the **CountryA<>CountryB** network scheme of **192.168.40.0** (for example, **192.168.40.1**). Make sure to turn the **Port Status** to on.


- In **CountryB**, open the **Router(Gateway)**, select the **Config** tab, and select **Serial0/1/0** then enter an IP address based on the **CountryA<>CountryB** network scheme of **192.168.40.0** (for example, **192.168.40.2**). Make sure to turn the **Port Status** to on.
- On the **Host** machine (not in Packet Tracer) that has **CountryB**, invoke a **Command Prompt** and run **ipconfig** to get its **IP Address** (on my second host machine it is **192.168.1.6**). Write this down, because it will be used to setup **Multuser**.

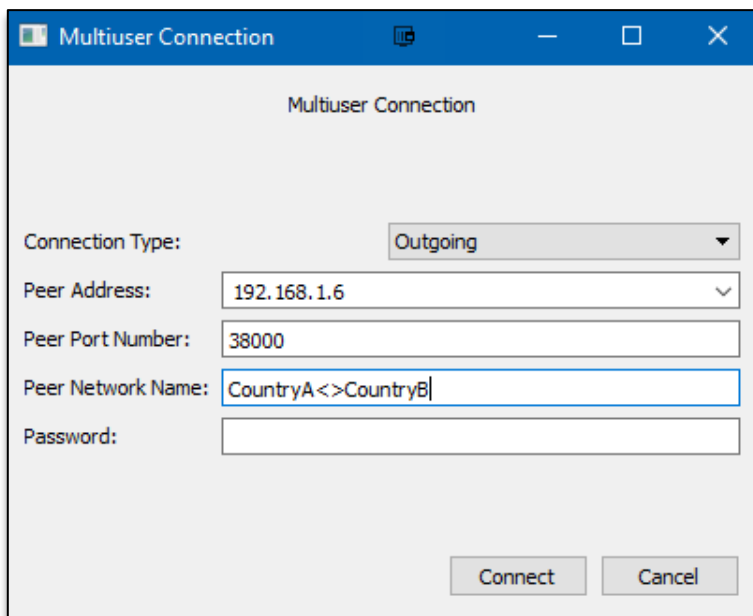
```

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::692d:54a:653a:10f0%7
IPv4 Address. . . . . : 192.168.1.6
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1
  
```

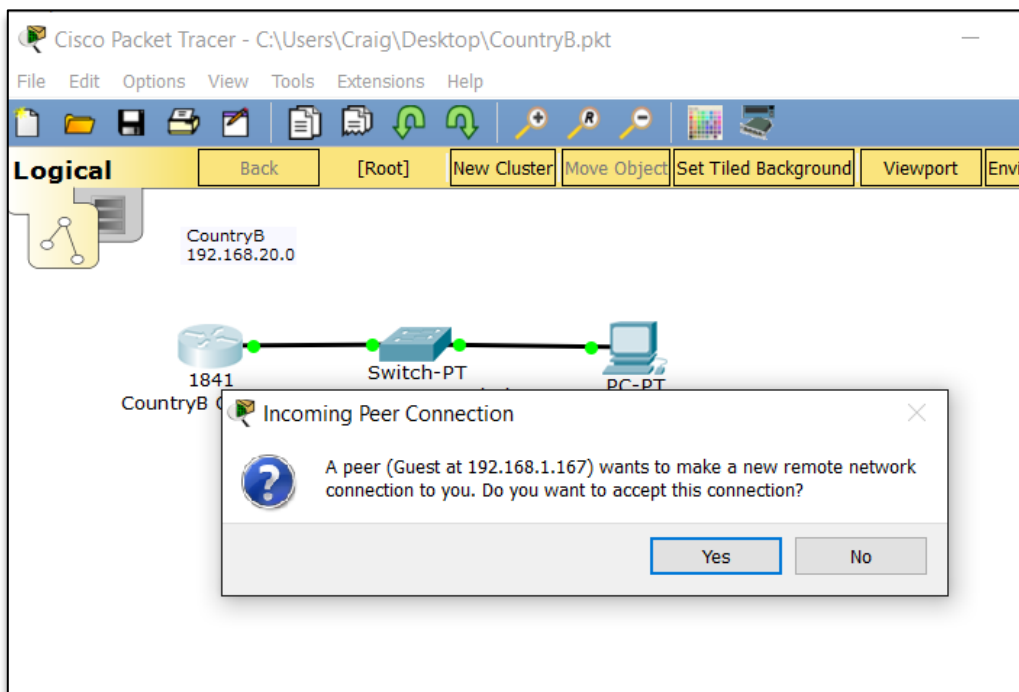
- Select the **Multuser Connect** cloud and drag it into the **LAN**.



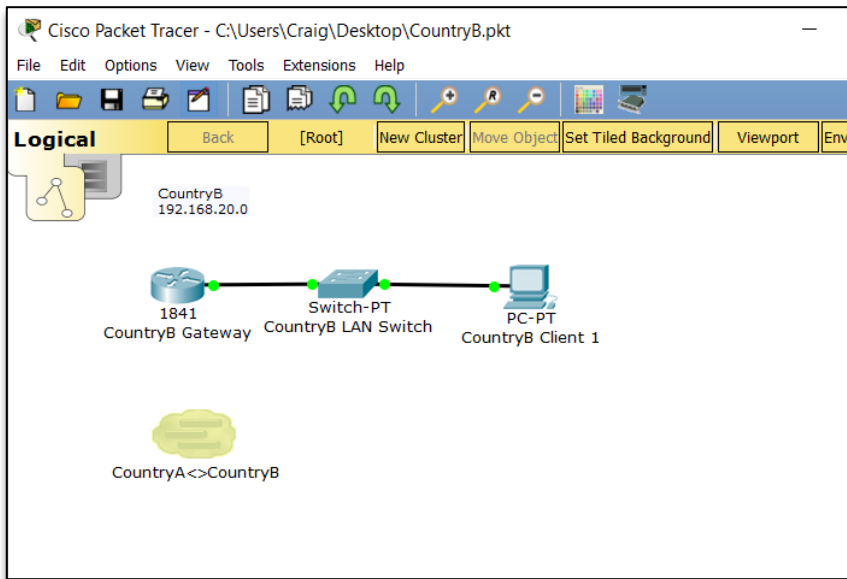
- Select the lightning bolt **Connections** icon, then attach the **Serial DCE** cable  to port **Serial0/0/0** in the **Router(Gateway)**
- In **CountryB**, select **Extensions** from the menu bar, then **Multuser**, then **Listen...** and remove the **Password** from the text box, and select **Prompt** for both **Existing Remote Networks** and **New Remote Networks**, then **OK**.
- In **CountryA**, click on the **cloud**, select **Outgoing**, and in **Peer Address** enter the **IP Address** of the second **Host** machine that is running **CountryB** (in my case it is 192.168.1.6, yours will be different). You might even give this **Peer Network** a meaningful name, then click **Connect**.



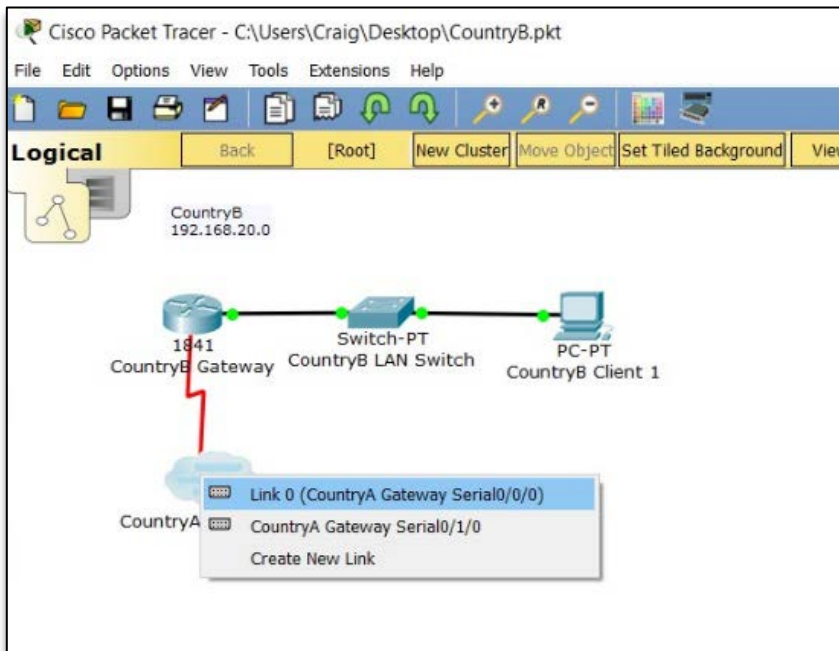
19. In **CountryB**, a prompt will appear asking if you want to accept a connection from the host machine that is running **CountryA** (in my case this is **192.168.1.167**). Select **Yes**.



20. In **CountryB**, a yellow cloud will appear in the LAN, and in **CountryA** the **cloud** will turn blue.

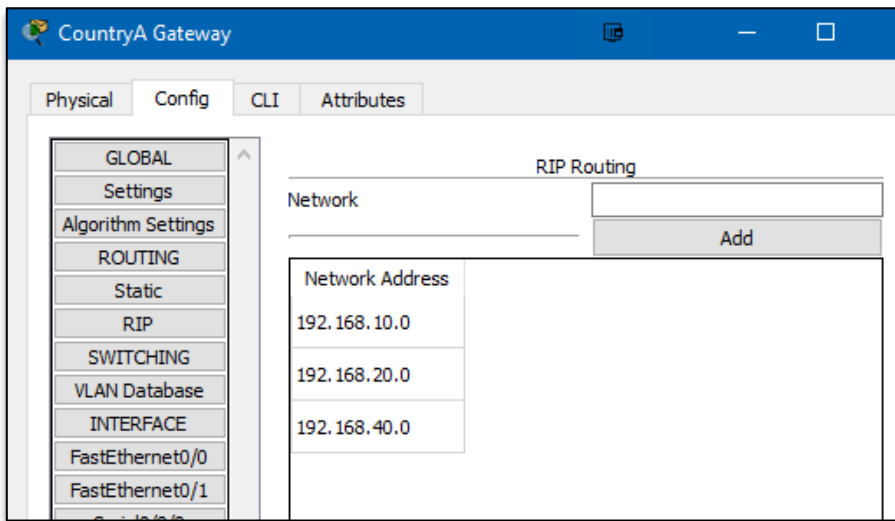


21. In **CountryB**, under the lightning bolt **Connections** icon, select the **Serial DTE** cable and connect it to **Serial0/1/0** in the **Router(Gateway)** and to the yellow cloud, making sure to select the **Link0** connection. After the connection is made the yellow cloud will turn blue too.



**NOTE:** At this point you could try pinging the **CountryB** Gateway from the **CountryA** PC, but it isn't going to work because we haven't yet set up **RIP** on the two Routers.

22. In **CountryA**, open the **Router(Gateway)**, select **Config** tab, then **RIP**, and add the network numbers of the **CountryA LAN**, **CountryB LAN**, and the **CountryA<>CountryB** router network:



23. Repeat this same process in the **CountryB** Router(Gateway).

**NOTE:** When you add the RIP, the clouds will show a red exclamation point. You will need to go into the **CountryA** cloud again and reconnect, and in **CountryB** re-accept the connection prompt.

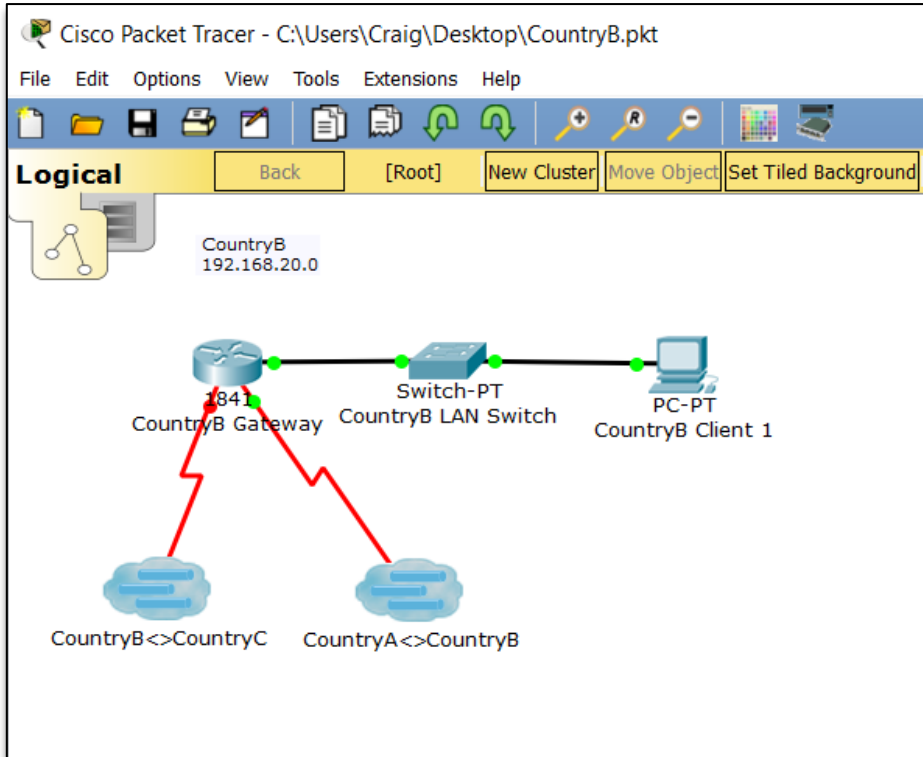
24. Now you can test your connection by pinging the CountryB Client PC from the CountryA Client PC, and *vice versa*.

```
Pinging 192.168.20.2 with 32 bytes of data:

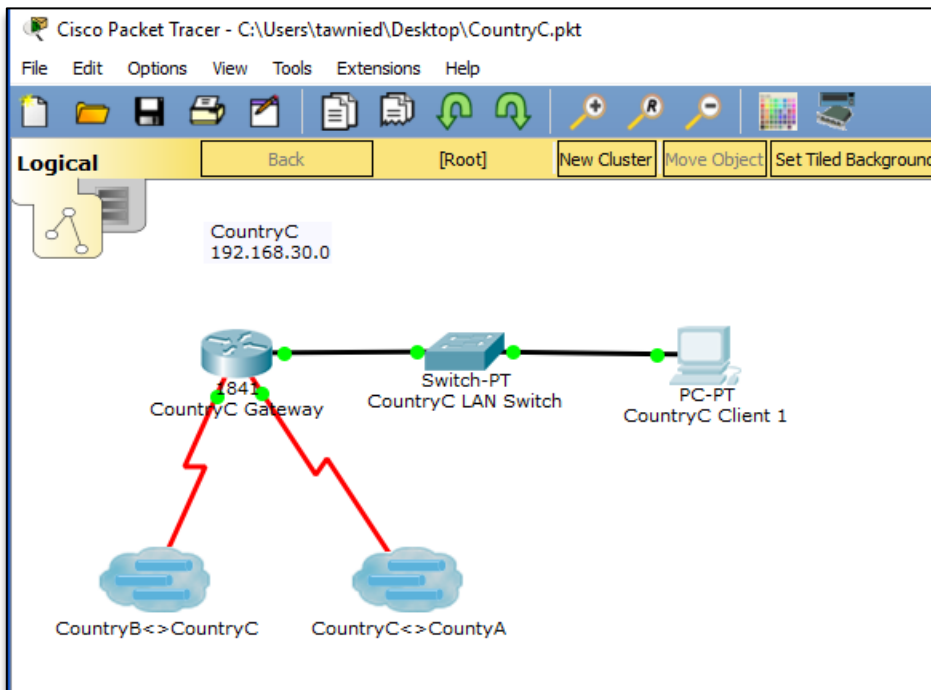
Reply from 192.168.20.2: bytes=32 time=18ms TTL=126
Reply from 192.168.20.2: bytes=32 time=20ms TTL=126
Reply from 192.168.20.2: bytes=32 time=16ms TTL=126
Reply from 192.168.20.2: bytes=32 time=18ms TTL=126

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 16ms, Maximum = 20ms, Average = 18ms
```

25. Repeat the above steps to connect **CountryB** to **CountryC** using the **192.168.50** router network schema, making sure to turn on your serial ports and to set them up with the proper IP address AND add **RIP** for all the interconnected networks.



26. Repeat the above steps to connect **CountryC** to **CountryA** using the **192.168.60** router network schema, making sure to turn on your serial ports and to set them up with the proper IP address AND add **RIP** for all the interconnected networks.



27. When the WAN setup is completed every PC should be able to successfully **ping** every other PC throughout the LAN 😊

**END OF MINI-LAB 14**