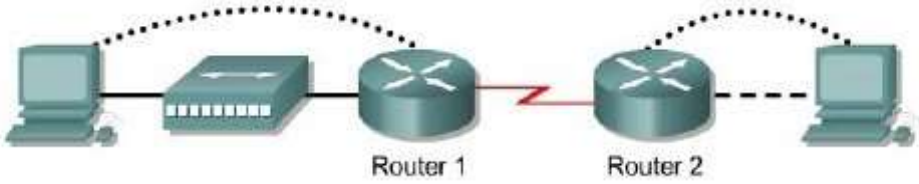
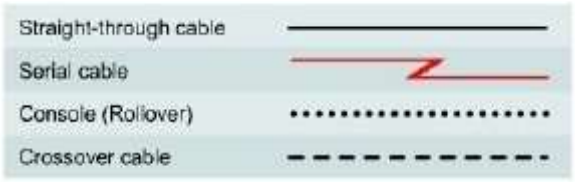
Lab – Basic router configuration



Router Designation	Router Name	FastEthernet 0 Address	Interface Type	Serial 0 Address	Subnet Mask for Both Interfaces	Enable Secret Password	Enable, VTY, and Console Passwords
Router 1	GAD	172.16.0.1	DCE	172.17.0.1	255.255.0.0	class	cisco
Router 2	BHM	172.18.0.1	DTE	172.17.0.2	255.255.0.0	class	cisco



Objectives

- Configure workstations and routers
- Setup IP addressing scheme using Class B networks
- Configure Routing Information Protocol (RIP) on routers

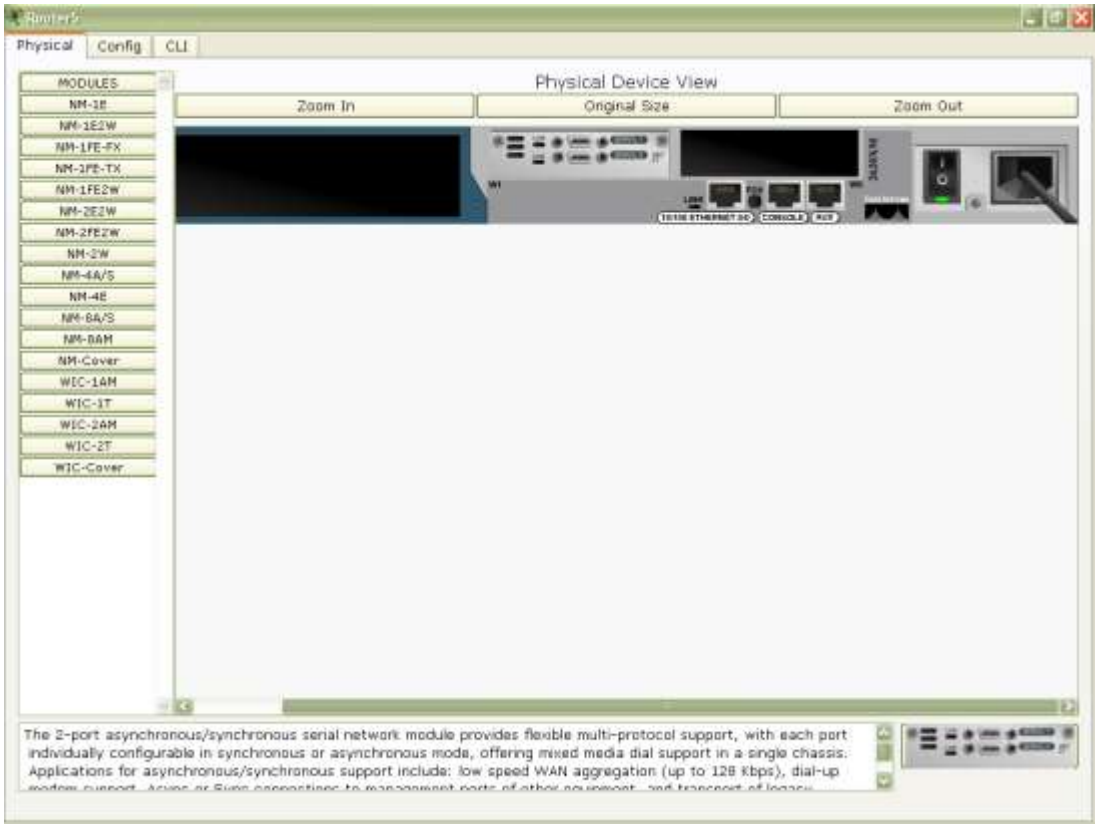
Background / Scenario

By using Packet Tracer, draw a network similar to the one shown in the diagram. Choose router 1941, since this router meets the interface requirements displayed on the above diagram. Perform the following steps on each router unless specifically instructed otherwise.

IMPORTANT! Start your drawing from the 2 routers (1941 family).

Double click on the first router and a configuration window will pop up. On **Physical tab**, choose **WIC-2T** as the interface of the router. You only need to drag and drop the interface to the available slot. Repeat the same step for the second router.

Hint: you have to make sure the router is **"Off"** before you slot in the interface and switch it on back right after you slot in the interface.



Then, choose switch (2960) and drag 2 PCs. Connect the devices with the right cables and configure the workstation IP address.

Workstation	IP address	Subnet mask	Default Gateway
PC-1 on router 1	172.16.0.2	255.255.0.0	172.16.0.1
PC-2 on router 2	172.18.0.2	255.255.0.0	172.18.0.1

Verify that PCs can communicate across the WAN (via serial connection)

a. Test connectivity

Ping the IP address of the computer on the other LAN. Enter the following command at the command prompt on PC-2.

C:>ping 172.18.0.2

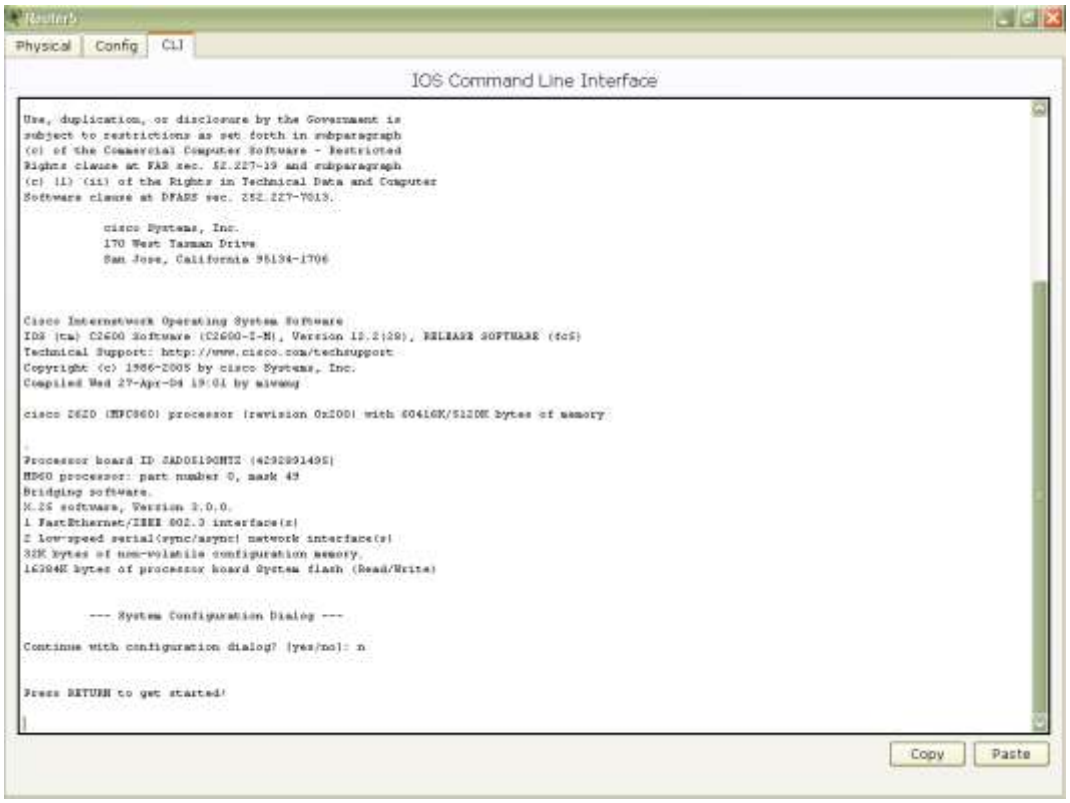
Enter the following command at the command prompt on PC-1.

C:>ping 172.16.0.2

This will test IP connectivity from one workstation through its switch and router across the WAN link and through the other router and to the other PC.

b. What was the ping result? Why is the output like that?

Now, go to CLI tab of the window. This is actually the IOS Command Line Interface of this router where you type all necessary commands to configure a router.



General Configuration Tips

a. Use the question mark (?) and arrow keys to help enter commands.

b. Each command mode restricts the set of available commands. If there is difficulty entering a command, check the prompt and then enter the question mark (?) for a list of available commands. The problem might be a wrong command mode or using the wrong syntax.

c. To disable a feature, enter the keyword no before the command.

d. There are some important information you need to know pertaining to configuring a router especially on the Router Command Mode. Please refer the table attached.

Router Command Modes			
Command Mode	**Access Method**	**Router Prompt Displayed**	**Exit Method**
User EXEC	Log in.	`Router>`	Use the **logout** command.
Privileged EXEC	From user EXEC mode, enter the **enable** command.	`Router#`	To exit to user EXEC mode, use the **disable**, **exit**, or **logout** command.
Global configuration	From the privileged EXEC mode, enter the **configure terminal** command.	`Router(config)#`	To exit to privileged EXEC mode, use the **exit** or **end** command, or press Ctrl-z.
Interface configuration	From the global configuration mode, enter the **interface** *type number* command, such as **interface serial 0**.	`Router(config-if)#`	To exit to global configuration mode, use the **exit** command.

Step 1 : Configure the hostname and passwords on the router GAD

Press **Enter** button of your keyboard Enter enable at the user mode prompt.

Hint: User mode prompt is where you see Router> Follow the command listed below:

```
Router>enable
Router#configure terminal
Router(config)#hostname GAD
GAD(config)#enable secret class
GAD(config)#line console 0
GAD(config-line)#password cisco
GAD(config-line)#login
GAD(config-line)#line vty 0 4
GAD(config-line)#password cisco
GAD(config-line)#login
GAD(config-line)#exit
GAD(config)#
```

Step 2 : Configure serial interface Serial 0 on router GAD

a. From the global configuration mode, configure interface Serial 0 on router GAD.

```
GAD(config)#interface serial 0/0/0
GAD(config-if)#ip address 172.17.0.1 255.255.0.0
GAD(config-if)#clock rate 64000
GAD(config-if)#no shutdown
GAD(config-if)#exit
```

Step 3 : Configure the fastethernet 0 interface on router GAD

```
GAD(config)#interface fastethernet 0/0/0
GAD(config-if)#ip address 172.16.0.1 255.255.0.0
GAD(config-if)#no shutdown
GAD(config-if)#exit
```

Step 4 : Configure the IP host statements on router GAD

```
GAD(config)#ip host BHM 172.18.0.1 172.17.0.2
```

Step 5 : Configure RIP routing on router GAD

```
GAD(config)#router rip
GAD(config-router)#network 172.16.0.0
GAD(config-router)#network 172.17.0.0
GAD(config-router)#exit
GAD(config)#exit
```

Step 6 : Save the GAD router configuration

```
GAD#copy running-config startup-config
Destination filename [startup-config]?[Enter]
```

Step 7 : Configure hostname and passwords on the router BHM

a. Type the following commands on CLI of second router.

b. Enter enable at the user mode prompt.

```
Router>enable
 Router#configure terminal
Router(config)#hostname BHM
BHM(config)#enable secret class
BHM(config)#line console 0
BHM(config-line)#password cisco
BHM(config-line)#login
BHM(config-line)#line vty 0 4
BHM(config-line)#password cisco
BHM(config-line)#login
BHM(config-line)#exit B
HM(config)#
```

Step 8 : Configure serial interface Serial 0 on router BHM

a. From the global configuration mode, configure interface Serial 0 on router BHM.

```
BHM(config)#interface serial 0/0/0
BHM(config-if)#ip address 172.17.0.2 255.255.0.0 BHM(con-
fig-if)#no shutdown
 BHM(config-if)#exit
```

Step 9 : Configure the fastethernet 0 interface on router BHM

```
BHM(config)#interface fastethernet 0
BHM(config-if)#ip address 172.18.0.1 255.255.0.0 BHM(con-
fig-if)#no shutdown
BHM(config-if)#exit
```

Step 10 : Configure the IP host statements on router BHM

```
BHM(config)#ip host GAD 172.16.0.1 172.17.0.1
```

Step 11 : Configure RIP routing on router BHM

```
BHM(config)#router rip
BHM(config-router)#network 172.18.0.0
BHM(config-router)#network 172.17.0.0
BHM(config-router)#exit
BHM(config)#exit
```

Step 12 : Save the BHM router configuration

```
BHM#copy running-config startup-config
Destination filename [startup-config]?[Enter]
```

Step 13 : Verify that the internetwork is functioning by pinging the FastEthernet interface of the other router.

From the host attached to GAD, ping the BHM router FastEthernet interface. Was the ping successful? _____

From the host attached to BHM, ping the GAD router FastEthernet interface. Was the ping successful? _____

If the answer is no for either question, troubleshoot the router configurations to find the error. Then do the pings again until the answer to both questions is yes. Then ping all interfaces in the network.

Step 15 : Show the routing tables for each router
From the enable privileged EXEC mode: Examine the routing table entries, using the show ip route command on each router.

What are the entries in the GAD routing table?

_____

What are the entries in the BHM routing table?

_____

Appendix 1: Erasing and reloading the router – this is where you what to erase all the configuration done before:

Enter into the privileged EXEC mode by typing enable.

```
Router>enable
```

If prompted for a password, enter class. If that does not work, ask the instructor for assistance. At the privileged EXEC mode, enter the command erase startup-config.

```
Router#erase startup-config
```

The responding line prompt will be:

```
Erasing the nvram filesystem will remove all files! Continue? [confirm]
```

Press **Enter** to confirm. The response should be:

```
Erase of nvram: complete
```

Now at the privileged EXEC mode, enter the command reload.

```
Router#reload
```

The responding line prompt will be:

```
System configuration has been modified. Save? [yes/no]:
```

Type **n** and then press **Enter**. The responding line prompt will be:

```
Proceed with reload? [confirm]
```

Press **Enter** to confirm. In the first line of the response will be: Reload requested by console. After the router has reloaded the line prompt will be:

```
Would you like to enter the initial configuration dialog?

[yes/no]:
```

Type **n** and then press **Enter**. The responding line prompt will be:

```
Press RETURN to get started!
```

Press Enter. Now the router is ready for the other assigned lab to be performed.

Appendix 2: Three routing table principles

Principle #1: Each router makes a routing decision solely based on information in its own routing table.

Principle #2: Just because the local router has a route in its table does not mean that other routers have the same route.

Principle #3: Even though a router can route to the destination does not mean that the same router can route a response back to the originating source.