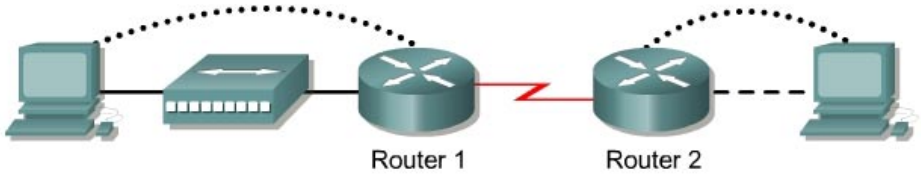
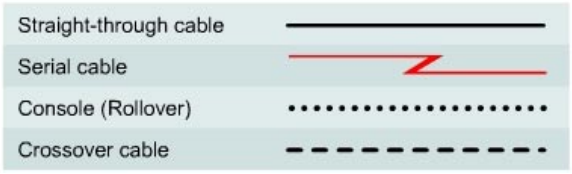
Lab 1.2.4 Converting RIP v1 to RIP v2 – 2500 Series



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



Objective

- Configure RIP v1 on routers.
- Convert to RIP v2 on routers.

Background/Preparation

Cable a network similar to the shown in the diagram. Any router that meets the interface requirements displayed on the above diagram may be used. For example, router series 800, 1600, 1700, 2500 and 2600 or any such combination can be used. Please refer to the chart at the end of the lab to correctly identify the interface identifiers to be used based on the equipment in the lab. The configuration output used in this lab is produced from 1721 series routers. Any other router used may produce slightly different output. Perform the following steps on each router unless specifically instructed otherwise.

Start a HyperTerminal session as performed in the Establishing a HyperTerminal session lab.

Note: Go to the erase and reload instructions at the end of this lab. Perform those steps on all routers in this lab assignment before continuing.

Step 1 Configure the routers

On the routers, configure the hostnames as well as the console, virtual terminal, and enable secret passwords. Next configure the serial IP address and clock rate and the Fast Ethernet IP address interfaces. Finally configure IP host names. If there are problems performing the basic configuration, refer to the "Review of Basic Router Configuration with RIP" lab. Optional interface descriptions and message of the day banners may also be configured. Be sure to save the configurations just created.

Router 1

```
Router>enable
Router#configure terminal
Router(config)#hostname GAD
```

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```
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)#interface serial 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
GAD(config)#interface ethernet 0
GAD(config-if)#ip address 172.16.0.1 255.255.0.0
GAD(config-if)#no shutdown
GAD(config-if)#exit
GAD(config)#ip host BMH 172.18.0.1 172.17.0.2
```

Router 2

```
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
BHM(config)#interface serial 0
BHM(config-if)#ip address 172.17.0.2 255.255.0.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#interface ethernet 0
BHM(config-if)#ip address 172.18.0.1 255.255.0.0
BHM(config-if)#no shutdown
BHM(config-if)#exit

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

Step 2 Configure the routing protocol on the GAD router

Go to the proper command mode and configure RIP routing on the GAD router according to the chart.

```
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 3 Save the GAD router configuration

Any time that changes are correctly made to the running configuration, they should be saved to the startup configuration. Otherwise, if the router is reloaded or power cycled, the changes that are not saved in the startup configuration will be lost.

```
GAD#copy running-config startup-config
```

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```
Destination filename [startup-config]?[Enter]
```

Step 4 Configure the routing protocol on the BHM router

Go to the proper command mode and configure RIP routing on the BHM router according to the chart.

```
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 5 Save the BHM router configuration

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

Step 6 Configure the hosts with the proper IP address, subnet mask, and default gateway

```
Host connected to router GAD
IP Address:         172.16.0.2
Subnet mask:        255.255.0.0
Default gateway:    172.16.0.1

Host connected to router BHM
IP Address:         172.18.0.2
Subnet mask:        255.255.0.0
Default gateway:    172.18.0.1
```

Step 7 Verify that the internetwork is functioning by pinging the FastEthernet interface of the other router

a. From the host attached to GAD, ping the other host attached to the BHM router. Was the ping successful? Yes

b. From the host attached to BHM, ping the other host attached to the GAD router. Was the ping successful? Yes

a. 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.

Step 8 Enable RIP version 2 routing

a. Enable version 2 of the RIP routing protocol on both of the routers GAD and BHM.

```
GAD(config)#router rip
GAD(config-router)#version 2
GAD(config-router)#exit
GAD(config)#exit

BHM(config)#router rip
BHM(config-router)#version 2
BHM(config-router)#exit
BHM(config)#exit
```

Step 9 Ping all of the interfaces on the network from each host

a. Were all of the interfaces still able to be pinged? Yes

b. If not, troubleshoot the network and ping again.

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Once the previous steps are completed, logoff by typing **exit**, and turn the router off. Then remove and store the cables and adapter.

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Erasing and reloading the router

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 assigned lab to be performed.

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Router Interface Summary				
Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2
800 (806)	Ethernet 0 (E0)	Ethernet 1 (E1)		
1600	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
1700	FastEthernet 0 (FA0)	FastEthernet 1 (FA1)	Serial 0 (S0)	Serial 1 (S1)
2500	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
2600	FastEthernet 0/0 (FA0/0)	FastEthernet 0/1 (FA0/1)	Serial 0/0 (S0/0)	Serial 0/1 (S0/1)
In order to find out exactly how the router is configured, look at the interfaces. This will identify what type and how many interfaces the router has. There is no way to effectively list all of the combinations of configurations for each router class. What is provided are the identifiers for the possible combinations of interfaces in the device. This interface chart does not include any other type of interface even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in IOS command to represent the interface.				

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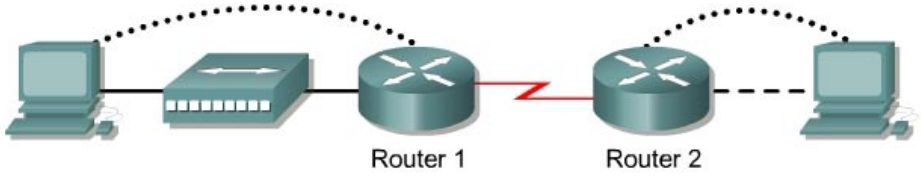
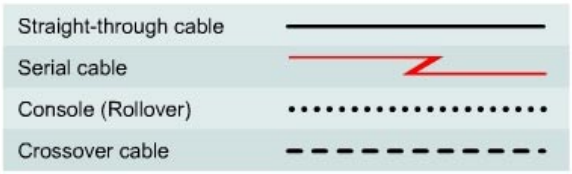
Lab 1.2.4 Converting RIP v1 to RIP v2 – 2600 Series



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



Objective

- Configure RIP v1 on routers.
- Convert to RIP v2 on routers.

Background/Preparation

Cable a network similar to the shown in the diagram. Any router that meets the interface requirements displayed on the above diagram may be used. For example, router series 800, 1600, 1700, 2500 and 2600 or any such combination can be used. Please refer to the chart at the end of the lab to correctly identify the interface identifiers to be used based on the equipment in the lab. The configuration output used in this lab is produced from 1721 series routers. Any other router used may produce slightly different output. Perform the following steps on each router unless specifically instructed otherwise.

Start a HyperTerminal session as performed in the Establishing a HyperTerminal session lab.

Note: Go to the erase and reload instructions at the end of this lab. Perform those steps on all routers in this lab assignment before continuing.

Step 1 Configure the routers

On the routers, configure the hostnames as well as the console, virtual terminal, and enable secret passwords. Next configure the serial IP address and clock rate and the Fast Ethernet IP address interfaces. Finally configure IP host names. If there are problems performing the basic configuration, refer to the “Review of Basic Router Configuration with RIP” lab. Optional interface descriptions and message of the day banners may also be configured. Be sure to save the configurations just created.

Router 1

```
Router>enable
Router#configure terminal
Router(config)#hostname GAD
```

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```
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)#interface serial 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
GAD(config)#interface fastEthernet 0/0
GAD(config-if)#ip address 172.16.0.1 255.255.0.0
GAD(config-if)#no shutdown
GAD(config-if)#exit
GAD(config)#ip host BMH 172.18.0.1 172.17.0.2
```

Router 2

```
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
BHM(config)#interface serial 0/0
BHM(config-if)#ip address 172.17.0.2 255.255.0.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#interface fastEthernet 0/0
BHM(config-if)#ip address 172.18.0.1 255.255.0.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#ip host GAD 172.16.0.1 172.17.0.1
```

Step 2 Configure the routing protocol on the GAD router

Go to the proper command mode and configure RIP routing on the GAD router according to the chart.

```
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 3 Save the GAD router configuration

Any time that changes are correctly made to the running configuration, they should be saved to the startup configuration. Otherwise, if the router is reloaded or power cycled, the changes that are not saved in the startup configuration will be lost.

```
GAD#copy running-config startup-config
```

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```
Destination filename [startup-config]?[Enter]
```

Step 4 Configure the routing protocol on the BHM router

Go to the proper command mode and configure RIP routing on the BHM router according to the chart.

```
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 5 Save the BHM router configuration

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

Step 6 Configure the hosts with the proper IP address, subnet mask, and default gateway

```
Host connected to router GAD
IP Address:        172.16.0.2
Subnet mask:       255.255.0.0
Default gateway:   172.16.0.1

Host connected to router BHM
IP Address:        172.18.0.2
Subnet mask:       255.255.0.0
Default gateway:   172.18.0.1
```

Step 7 Verify that the internetwork is functioning by pinging the FastEthernet interface of the other router

a. From the host attached to GAD, ping the other host attached to the BHM router. Was the ping successful? Yes

b. From the host attached to BHM, ping the other host attached to the GAD router. Was the ping successful? Yes

c. 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.

Step 8 Enable RIP version 2 routing

a. Enable version 2 of the RIP routing protocol on both of the routers GAD and BHM.

```
GAD(config)#router rip
GAD(config-router)#version 2
GAD(config-router)#exit
GAD(config)#exit

BHM(config)#router rip
BHM(config-router)#version 2
BHM(config-router)#exit
BHM(config)#exit
```

Step 9 Ping all of the interfaces on the network from each host

a. Were all of the interfaces still able to be pinged? Yes

b. If not, troubleshoot the network and ping again.

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Once the previous steps are completed, logoff by typing **exit**, and turn the router off. Then remove and store the cables and adapter.

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Erasing and reloading the router

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 assigned lab to be performed.

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Router Interface Summary				
Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2
800 (806)	Ethernet 0 (E0)	Ethernet 1 (E1)		
1600	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
1700	FastEthernet 0 (FA0)	FastEthernet 1 (FA1)	Serial 0 (S0)	Serial 1 (S1)
2500	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
2600	FastEthernet 0/0 (FA0/0)	FastEthernet 0/1 (FA0/1)	Serial 0/0 (S0/0)	Serial 0/1 (S0/1)
In order to find out exactly how the router is configured, look at the interfaces. This will identify what type and how many interfaces the router has. There is no way to effectively list all of the combinations of configurations for each router class. What is provided are the identifiers for the possible combinations of interfaces in the device. This interface chart does not include any other type of interface even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in IOS command to represent the interface.				

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