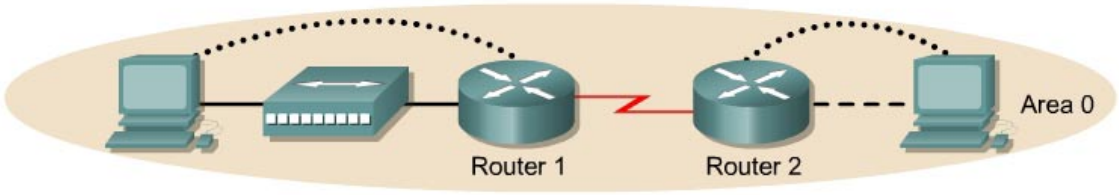
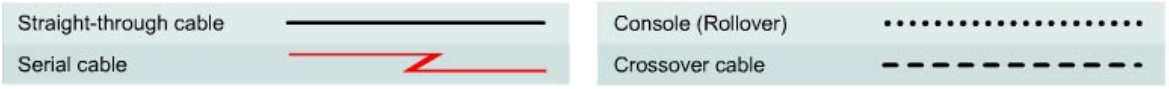
Lab 2.3.5 Configuring OSPF Timers – 2500 Series



Router Designation	Router Name	Enable Secret Password	Enable, VTY, and Console Passwords	Routing Protocol	Network Statements
Router 1	Sydney	class	cisco	OSPF	192.168.1.0
Router 2	Rome	class	cisco	OSPF	192.168.1.0 192.168.0.0

Router Designation	IP Host Table Entry	FastEthernet 0 Address/ Subnet Mask	Interface Type Serial 0	Serial 0 Address/Subnet Mask	Interface Type Serial 1	Loopback 0 Address/Subnet Mask
Router 1	Rome	192.168.1.129/26	DCE	192.168.1.1/30	NA	192.168.31.11/32
Router 2	Sydney	192.168.0.1/24	DTE	192.168.1.2/30	NA	192.168.31.22/32

Note: The IP Host Table Entry column contents indicate the name(s) of the other router(s) in the IP host table.



Objective

- Setup an IP addressing scheme for OSPF area.
- Configure and verify OSPF routing.
- Modify OSPF interface timers to adjust efficiency of network.

Background/Preparation

Cable a network similar to the one 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 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.

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, enter the global configuration mode and configure the hostname, console, virtual terminal and enable secret passwords. Next configure the interfaces and IP hostnames according to the chart. Do not configure the routing protocol until specifically told to. If there are any problems configuring the router basics, refer to the lab “Review of Basic Router Configuration with RIP”.

Router 1

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

Sydney(config)#enable secret class
Sydney(config)#line console 0
Sydney(config-line)#password cisco
Sydney(config-line)#login
Sydney(config-line)#line vty 0 4
Sydney(config-line)#password cisco
Sydney(config-line)#login
Sydney(config-line)#exit
Sydney(config)#interface loopback 0
Sydney(config-if)#ip address 192.168.31.11 255.255.255.255
Sydney(config-if)#interface serial 0
Sydney(config-if)#ip address 192.168.1.1 255.255.255.252
Sydney(config-if)#clockrate 64000
Sydney(config-if)#no shutdown
Sydney(config-if)#interface ethernet 0
Sydney(config-if)#ip address 192.168.1.129 255.255.255.192
Sydney(config-if)#no shutdown
Sydney(config-if)#exit
Sydney(config)#ip host Rome 192.168.0.1 192.168.1.2
Sydney(config)#exit
```

Router 2

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

Rome(config)#enable secret class
Rome(config)#line console 0
Rome(config-line)#password cisco
Rome(config-line)#login
Rome(config-line)#line vty 0 4
Rome(config-line)#password cisco
Rome(config-line)#login
Rome(config-line)#exit
Rome(config)#interface loopback 0
Rome(config-if)#ip address 192.168.31.22 255.255.255.255
Rome(config-if)#interface serial 0
Rome(config-if)#ip address 192.168.1.2 255.255.255.252
Rome(config-if)#no shutdown
Rome(config-if)#interface ethernet 0
Rome(config-if)#ip address 192.168.0.1  255.255.255.0
Rome(config-if)#no shutdown
Rome(config-if)#exit
Rome(config)#ip host Sydney 192.168.1.129 192.168.1.1
Rome(config)#exit
```


Step 2 Save the configuration information from the privileged EXEC command mode

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

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

Why save the running configuration to the startup configuration?

Saving the configuration will allow the router to keep the configuration after a reload or power down.

Step 3 Configure the hosts with the proper IP address, subnet mask, and default gateway

a. Each workstation should be able to ping the attached router. Troubleshoot as necessary. Remember to assign a specific IP address and default gateway to the workstation. If running Windows 9x/ME, check by using **Start** > **Run** > **winipcfg**. If running WindowsNT/2000/XP, check by using the **ipconfig** command in a DOS window.

b. At this point the workstations will not be able to communicate with each other. The following steps will demonstrate the process required to get communication working using OSPF as the routing protocol.

```
Host connected to router Sydney
IP Address:           192.168.1.130
Subnet mask:          255.255.255.192
Default gateway:      192.168.1.129

Host connected to router Rome
IP Address:           192.168.0.2
Subnet mask:          255.255.255.0
Default gateway:      192.168.0.1
```

Step 4 Verify connectivity

a. On a router, ping the serial interface of the other router.

b. What the ping successful? Yes

c. If the ping was not successful, troubleshoot the router configurations, until the ping is successful.

Step 5 Configure OSPF routing on both routers

a. Configure OSPF routing on each router. Use OSPF process number 1 and ensure all networks are in area 0. Refer to the lab, “Configuring Loopback Interfaces” for review on configuring OSPF routing if necessary.

```
Sydney(config)#router ospf 1
Sydney(config-router)#network 192.168.1.128 0.0.0.127 area 0
Sydney(config-router)#network 192.168.1.0 0.0.0.3 area 0
Sydney(config-router)#end

Rome(config)#router ospf 1
Rome(config-router)#network 192.168.0.0 0.0.0.255 area 0
Rome(config-router)#network 192.168.1.0 0.0.0.3 area 0
Rome(config-router)#end
```

b. Did the IOS version automatically add any lines under router OSPF 1? Yes

c. Show the routing table for the Sydney router.

```
Sydney#show ip route
```


d. Are there any entries in the routing table? Yes

Step 6 Test network connectivity

Ping the Sydney host from the Rome host. Was it successful? Yes

If not troubleshoot as necessary.

Step 7 Observe OSPF traffic

a. At the privileged EXEC mode type the command **debug ip ospf events** and observe the output.

b. How frequently are Hello messages sent? Every 10 seconds

c. Where are they coming from? Receive hello from 192.168.31.22 area 0 from Serial0 192.168.1.2

d. Turn off debugging by typing **no debug ip ospf events** or **undebug all**.

Step 8 Show interface timer information

a. Show the hello and dead interval timers on the Sydney router Ethernet and Serial interfaces by entering the command **show ip ospf interface** in privileged EXEC mode.

b. Record the Hello and Dead Interval timers for these interfaces

c. Hello Interval: 10

d. Dead Interval: 40

e. What is the purpose of the dead interval? The amount of time when a hello interval is not received before flagging the router as being down.

Step 9 Modify the OSPF timers

a. Modify the Hello and Dead-Interval timers to smaller values to try to improve performance. On the Sydney router only enter the commands **ip ospf hello-interval 5** and **ip ospf dead-interval 20** for interface Serial 0.

```
Sydney(config)#interface serial 0
Sydney(config-if)#ip ospf hello-interval 5
Sydney(config-if)#ip ospf dead-interval 20
```

b. Wait for a minute and then enter the command **show ip ospf neighbor**.

c. Are there any OSPF neighbors? No

Step 10 Examine the routing table

a. Examine the Sydney router routing table by entering **show ip route**.

b. Are there any OSPF routes in the table? No

c. Can the Sydney Host ping the Rome host? No

Step 11 Look at the OSPF data transmissions.

a. Enter the command **debug ip ospf events** in privileged EXEC mode.

b. Is there an issue that is identified? Yes

c. If there is, what is the issue? Hello and Dead intervals are mismatched.

Step 12 Check the Rome router routing table status.

a. On the Rome router check the routing table by typing **show ip route**.

b. Are there any OSPF routes in the table? No

Step 13 Set the Rome router interval timers

a. Match the timer values on the Rome Serial link with the Sydney router.

```
Rome(config)#interface serial 0
Rome(config-if)#ip ospf hello-interval 5
Rome(config-if)#ip ospf dead-interval 20
```

b. Verify the OSPF neighbor by entering **show ip ospf neighbor** command.

```
Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.31.11     1   FULL/  -        00:00:17    192.168.1.1     Serial0
```

c. Show the routing table by typing **show ip route**.

```
Rome#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

        192.168.31.0/32 is subnetted, 1 subnets
C       192.168.31.22 is directly connected, Loopback0
C       192.168.0.0/24 is directly connected, Ethernet0
        192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/30 is directly connected, Serial0
O       192.168.1.128/25 [110/782] via 192.168.1.1, 00:00:12, Serial0
```

d. Are there OSPF routes in the table? Yes

e. Ping the Rome host from Sydney. If this was not successful troubleshoot the configurations.

Step 14 Reset the routers interval timers to the default values

Use the no form of the **ip ospf hello-interval** and the **ip ospf dead-interval** to reset the OSPF timers back to their default values.

Step 15 Verify the interval timers are returned to the default values

a. Use the **show ip ospf interface** command to verify the timers are reset to their default values.

b. Are the values back to the default? Yes

c. If not, repeat step 13 and verify again.

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

Erasing and reloading the router

Enter into the privileged EXEC mode by typing **enable**.

If prompted for a password, enter **class**. If that does not work, ask the instructor for assistance.

```
Router>enable
```

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:

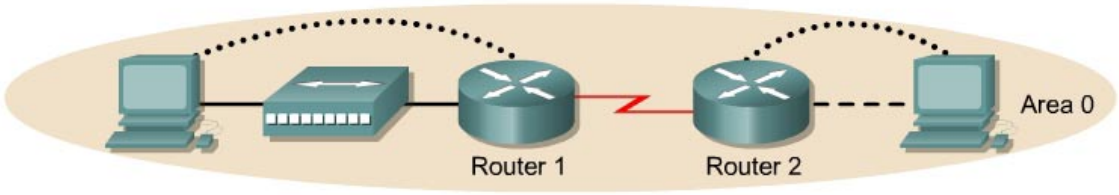
```
Press RETURN to get started!
```

Press **Enter**.

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

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.				

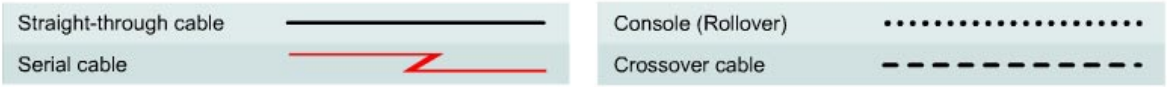
Lab 2.3.5 Configuring OSPF Timers – 2600 Series



Router Designation	Router Name	Enable Secret Password	Enable, VTY, and Console Passwords	Routing Protocol	Network Statements
Router 1	Sydney	class	cisco	OSPF	192.168.1.0
Router 2	Rome	class	cisco	OSPF	192.168.1.0 192.168.0.0

Router Designation	IP Host Table Entry	FastEthernet 0 Address/ Subnet Mask	Interface Type Serial 0	Serial 0 Address/Subnet Mask	Interface Type Serial 1	Loopback 0 Address/Subnet Mask
Router 1	Rome	192.168.1.129/26	DCE	192.168.1.1/30	NA	192.168.31.11/32
Router 2	Sydney	192.168.0.1/24	DTE	192.168.1.2/30	NA	192.168.31.22/32

Note: The IP Host Table Entry column contents indicate the name(s) of the other router(s) in the IP host table.



Objective

- Setup an IP addressing scheme for OSPF area.
- Configure and verify OSPF routing.
- Modify OSPF interface timers to adjust efficiency of network.

Background/Preparation

Cable a network similar to the one 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 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.

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, enter the global configuration mode and configure the hostname, console, virtual terminal and enable secret passwords. Next configure the interfaces and IP hostnames according to the chart. Do not configure the routing protocol until specifically told to. If there are any problems configuring the router basics, refer to the lab “Review of Basic Router Configuration with RIP”.

Router 1

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

Sydney(config)#enable secret class
Sydney(config)#line console 0
Sydney(config-line)#password cisco
Sydney(config-line)#login
Sydney(config-line)#line vty 0 4
Sydney(config-line)#password cisco
Sydney(config-line)#login
Sydney(config-line)#exit
Sydney(config)#interface loopback 0
Sydney(config-if)#ip address 192.168.31.11 255.255.255.255
Sydney(config-if)#interface serial 0/0
Sydney(config-if)#ip address 192.168.1.1 255.255.255.252
Sydney(config-if)#clockrate 64000
Sydney(config-if)#no shutdown
Sydney(config-if)#interface fastethernet 0/0
Sydney(config-if)#ip address 192.168.1.129 255.255.255.192
Sydney(config-if)#no shutdown
Sydney(config-if)#exit
Sydney(config)#ip host Rome 192.168.0.1 192.168.1.2
Sydney(config)#exit
```

Router 2

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

Rome(config)#enable secret class
Rome(config)#line console 0
Rome(config-line)#password cisco
Rome(config-line)#login
Rome(config-line)#line vty 0 4
Rome(config-line)#password cisco
Rome(config-line)#login
Rome(config-line)#exit
Rome(config)#interface loopback 0
Rome(config-if)#ip address 192.168.31.22 255.255.255.255
Rome(config-if)#interface serial 0/0
Rome(config-if)#ip address 192.168.1.2 255.255.255.252
Rome(config-if)#no shutdown
Rome(config-if)#interface fastethernet 0/0
Rome(config-if)#ip address 192.168.0.1  255.255.255.0
Rome(config-if)#no shutdown
Rome(config-if)#exit
Rome(config)#ip host Sydney 192.168.1.129 192.168.1.1
Rome(config)#exit
```

Step 2 Save the configuration information from the privileged EXEC command mode


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

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

Why save the running configuration to the startup configuration?

Saving the configuration will allow the router to keep the configuration after a reload or power down.

Step 3 Configure the hosts with the proper IP address, subnet mask, and default gateway

a. Each workstation should be able to ping the attached router. Troubleshoot as necessary. Remember to assign a specific IP address and default gateway to the workstation. If running Windows 9x/ME, check by using **Start** > **Run** > **winipcfg**. If running WindowsNT/2000/XP, check by using the **ipconfig** command in a DOS window.

b. At this point the workstations will not be able to communicate with each other. The following steps will demonstrate the process required to get communication working using OSPF as the routing protocol.

```
Host connected to router Sydney
IP Address:              192.168.1.130
Subnet mask:             255.255.255.192
Default gateway:         192.168.1.129

Host connected to router Rome
IP Address:              192.168.0.2
Subnet mask:             255.255.255.0
Default gateway:         192.168.0.1
```

Step 4 Verify connectivity

a. On a router, ping the serial interface of the other router.

b. What the ping successful? Yes

c. If the ping was not successful, troubleshoot the router configurations, until the ping is successful.

Step 5 Configure OSPF routing on both routers

a. Configure OSPF routing on each router. Use OSPF process number 1 and ensure all networks are in area 0. Refer to the lab, “Configuring Loopback Interfaces” for review on configuring OSPF routing if necessary.

```
Sydney(config)#router ospf 1
Sydney(config-router)#network 192.168.1.128 0.0.0.127 area 0
Sydney(config-router)#network 192.168.1.0 0.0.0.3 area 0
Sydney(config-router)#end

Rome(config)#router ospf 1
Rome(config-router)#network 192.168.0.0 0.0.0.255 area 0
Rome(config-router)#network 192.168.1.0 0.0.0.3 area 0
Rome(config-router)#end
```

b. Did the IOS version automatically add any lines under router OSPF 1? Yes

c. Show the routing table for the Sydney router.

```
Sydney#show ip route
```


d. Are there any entries in the routing table? Yes

Step 6 Test network connectivity

Ping the Sydney host from the Rome host. Was it successful? Yes

If not troubleshoot as necessary.

Step 7 Observe OSPF traffic

a. At the privileged EXEC mode type the command **debug ip ospf events** and observe the output.

b. How frequently are Hello messages sent? Every 10 seconds

c. Where are they coming from?

Receive hello from 192.168.31.22 area 0 from Serial0/0 192.168.1.2.

d. Turn off debugging by typing **no debug ip ospf events** or **undebug all**.

Step 8 Show interface timer information

a. Show the hello and dead interval timers on the Sydney router Ethernet and Serial interfaces by entering the command **show ip ospf interface** in privileged EXEC mode.

b. Record the Hello and Dead Interval timers for these interfaces

c. Hello Interval: 10

d. Dead Interval: 40

e. What is the purpose of the dead interval?

The amount of time when a hello interval is not received before flagging the router as being down.

Step 9 Modify the OSPF timers

a. Modify the Hello and Dead-Interval timers to smaller values to try to improve performance. On the Sydney router only enter the commands **ip ospf hello-interval 5** and **ip ospf dead-interval 20** for interface Serial 0.

```
Sydney(config)#interface serial 0/0
Sydney(config-if)#ip ospf hello-interval 5
Sydney(config-if)#ip ospf dead-interval 20
```

b. Wait for a minute and then enter the command **show ip ospf neighbor**.

c. Are there any OSPF neighbors? No

Step 10 Examine the routing table

a. Examine the Sydney router routing table by entering **show ip route**.

b. Are there any OSPF routes in the table? No

c. Can the Sydney Host ping the Rome host? No

Step 11 Look at the OSPF data transmissions.

a. Enter the command **debug ip ospf events** in privileged EXEC mode.

b. Is there an issue that is identified? Yes

c. If there is, what is the issue? Hello and Dead intervals are mismatched.

Step 12 Check the Rome router routing table status.

a. On the Rome router check the routing table by typing **show ip route**.

b. Are there any OSPF routes in the table? No

Step 13 Set the Rome router interval timers

a. Match the timer values on the Rome Serial link with the Sydney router.

```
Rome(config)#interface serial 0/0
Rome(config-if)#ip ospf hello-interval 5
Rome(config-if)#ip ospf dead-interval 20
```

b. Verify the OSPF neighbor by entering **show ip ospf neighbor** command.

```
Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.31.11     1   FULL/ -         00:00:17    192.168.1.1     Serial0/0
```

c. Show the routing table by typing **show ip route**.

```
Rome#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

        192.168.31.0/32 is subnetted, 1 subnets
C       192.168.31.22 is directly connected, Loopback0
C       192.168.0.0/24 is directly connected, FastEthernet0/0
        192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/30 is directly connected, Serial0/0
O       192.168.1.128/25 [110/782] via 192.168.1.1, 00:00:12, Serial0/0
```

d. Are there OSPF routes in the table? Yes

e. Ping the Rome host from Sydney. If this was not successful troubleshoot the configurations.

Step 14 Reset the routers interval timers to the default values

Use the no form of the **ip ospf hello-interval** and the **ip ospf dead-interval** to reset the OSPF timers back to their default values.

Step 15 Verify the interval timers are returned to the default values

a. Use the **show ip ospf interface** command to verify the timers are reset to their default values.

b. Are the values back to the default? Yes

c. If not, repeat step 13 and verify again.

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

Erasing and reloading the router

Enter into the privileged EXEC mode by typing **enable**.

If prompted for a password, enter **class**. If that does not work, ask the instructor for assistance.

```
Router>enable
```

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.

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.				

