Lab 7.3.5 Configuring IGRP
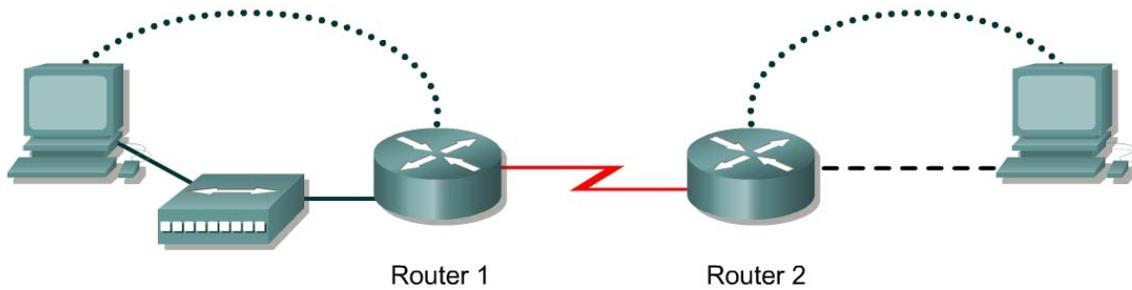
Router Designation	Router Name	Fast Ethernet 0 Address	Interface type	Serial 0 Address	Subnet mask for both interfaces	Enable secret password	Enable, VTY and console password
Router 1	GAD	192.168.20.1	DCE	192.168.22.1	255.255.255.0	class	cisco
Router 2	BHM	192.168.25.1	DTE	192.168.22.2	255.255.255.0	class	cisco

Straight-through cable	————————
Serial cable	———⟋———
Console (Rollover)	••••••••••••••••••••••
Crossover cable	– – – – – – – – – – –

Objective

- Setup IP an addressing scheme using class C networks.
- Configure IGRP on routers.

Background/Preparation

Cable a network similar to the one in the diagram. Any router that meets the interface requirements displayed in the above diagram, such as 800, 1600, 1700, 2500, and 2600 routers, or a combination, may 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 a slightly different output. The following steps are intended to be executed 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

a. On the routers, enter the global configuration mode and configure the hostname as shown in the chart. Then configure the console, virtual terminal, and enable passwords. If there is a problem doing this, refer to the Configuring Router Passwords lab. Next configure the interfaces according to the chart. If there is a problem doing this, refer to the Configuring Host Tables lab.

Step 2 Configure the routing protocol on the GAD router

a. Configure IGRP using AS 101 on GAD. Go to the proper command mode and enter the following:

```
GAD(config)#router igrp 101
GAD(config-router)#network 192.168.22.0
GAD(config-router)#network 192.168.20.0
```

Step 3 Save the GAD router configuration

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

Step 4 Configure the routing protocol on the BHM router

a. Configure IGRP using AS 101 on BHM. Go to the proper command mode and enter the following:

```
BHM(config)#router igrp 101
BHM(config-router)#network 192.168.25.0
BHM(config-router)#network 192.168.22.0
```

Step 5 Save the BHM router configuration

```
BHM#copy running-config startup-config
```

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

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

a. From the host attached to GAD, is it possible to ping the BHM host? _____

b. From the host attached to BHM, is it possible to ping the GAD host? _____

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 Show the routing tables for each router

a. From the enable or privileged exec mode do the following:

b. Examine the routing table entries by using the **show ip route** command on each router.

c. What are the entries in the GAD routing table?

_____

_____

_____

d. What are the entries in the BHM routing table?

_____

_____

_____

Step 9 Verify the routing protocol

a. Type **show ip protocol** on both routers to verify IGRP is running and that it is the only protocol running.

b. Is IGRP the only protocol running on GAD? _____

c. Is IGRP the only Protocol running on BHM? _____

Step 10 Verify IGRP statements in the running configuration of both routers

a. Use the **show run | begin igrp** command on both routers.

b. List the IGRP part of the configuration for GAD:

_____

_____

_____

Step 11 Verify IGRP routing updates

a. Type **debug ip igrp events** on the GAD router at the privileged exec mode.

b. Are routing updates being displayed? _____

c. Where are the updates being sent to? _____

d. Where are the updates being received from? _____

e. Turn off debugging.

Step 12 Verify IGRP routing updates

a. Type **debug ip igrp transactions** on the GAD router at the privileged exec mode.

b. How are the outputs of these two debug commands **debug ip igrp events** and **debug ip igrp transactions** different?

_____

_____

_____

c. Turn off debugging.

Step 13 Analyze specific routes

a. Type **show ip route 192.168.25.0** on the GAD router at the privileged exec mode

b. What is the total delay for this route? _____

c. What is the minimum bandwidth? _____

d. What is the Reliability of this route? _____

e. What is the minimum MTU size for this route? _____

f. f. Type show ip route 192.168.20.1 on the BHM router at the privileged EXEC mode.

g. What is the total delay for this route? _____

h. What is the minimum bandwidth? _____

i. What is the Reliability of this route? _____

j. What is the minimum MTU size for this route? _____

Upon completion of the previous steps, log off by typing **exit** and turn the router off.

Erasing and reloading the router

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

If prompted for a password, enter **class**. If "class" 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 **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 **Enter**.

The responding line prompt will be:

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

Press **Enter**.

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	Interface #5
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 the type of router as well as 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.					