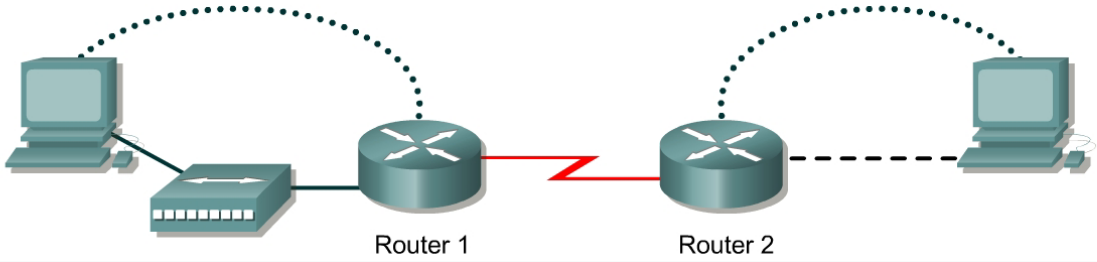
Lab 6.1.6 Configuring Static Routes



Router ID	Router Name	Enable secret password	Enable/VTY/ and Console passwords	Routing protocol	RIP network statements
Router 1	GAD	class	cisco	none	none
Router 2	BHM	class	cisco	none	none

Router ID	IP host name	Fast Ethernet 0 address	Interface type Serial 0	Serial 0 address	Interface type Serial 1	Serial 1 address	Subnet mask all addresses
Router 1	GAD	192.168.14.1	DCE	192.168.15.1	NA	No address	255.255.255.0
Router 2	BHM	192.168.16.1	DTE	192.168.15.2	NA	No address	255.255.255.0

Straight-through cable	
Serial cable	
Console (Rollover)	
Crossover cable	

Objective

- Configure static routes between routers to allow data transfer between routers without the use of dynamic routing protocols.

Background/Preparation

Setup a network similar to the one in the diagram. Any router that meets the interface requirements may be used. Possible routers include 800, 1600, 1700, 2500, 2600 routers, or a combination. 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. 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 both routers

a. 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 are any difficulties, refer to

the Configuring router passwords lab. Configure interfaces and IP host tables. If there are any difficulties, refer to the Configuring Host Tables lab. Do not configure a routing protocol.

Step 2 Configure the workstations

Configure the workstations with the proper IP address, subnet mask, and default gateway.

a. The configuration for the host connected to the GAD Router is:

IP Address 192.168.14.2

IP subnet mask 255.255.255.0

Default gateway 192.168.14.1

b. The configuration for the host connected to the BHM Router is:

IP Address 192.168.16.2

IP subnet mask 255.255.255.0

Default gateway 192.168.16.1

c. Check connectivity between the workstations using **ping**. From the workstation attached to the GAD router, ping the workstation attached to the BHM router.

```
C:\>ping 192.168.16.2
Pinging 192.168.16.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.16.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

d. Was the **ping** successful? _____

e. Why did the **ping** fail? _____

Step 3 Check interface status

a. Check the interfaces on both routers with the command **show ip interface brief**.

b. Are all the necessary interfaces up? _____

Step 4 Check the routing table entries

a. Using the command **show ip route**, view the IP routing table for GAD.

```
GAD>show ip route

output eliminated


Gateway of last resort is not set

C    192.168.14.0/24 is directly connected, FastEthernet0
C    192.168.15.0/24 is directly connected, Serial0
```


b. Use the command **show ip route**, view the IP routing table for BHM.

```
BHM>show ip route
```

Output eliminated.

```
Gateway of last resort is not set

C    192.168.15.0/24 is directly connected, Serial0
C    192.168.16.0/24 is directly connected, FastEthernet0
```

c. Are all of the routes needed in the routing tables? _____

d. "Based on the output from the show ip route command on the GAD and BHM routers, can a host on network 192.168.16.0 connect to a host on network 192.168.14.0?"_____

If a route is not in the routers to which the host is connected, the host cannot reach the destination host.

Step 5 Adding static routes

a. How can this situation be changed so that the hosts can **ping** each other?

Add static routes to each router or run a routing protocol.

b. In global configuration mode, add a static route on Router1 to network 192.168.16.0 and on Router2 to network 192.168.14.0.

```
GAD(config)#ip route 192.168.16.0 255.255.255.0 192.168.15.2
BHM(config)#ip route 192.168.14.0 255.255.255.0 192.168.15.1
```

c. Why is a static route needed on both routers? _____

Step 6 Verify the new routes

a. Use the command **show ip route**, view the IP routing table for GAD.

```
GAD>show ip route

output eliminated

Gateway of last resort is not set

C    192.168.14.0/24 is directly connected, FastEthernet0
C    192.168.15.0/24 is directly connected, Serial0
S    192.168.16.0/24 [1/0] via 192.168.15.2
```

b. Using the command **show ip route**, view the IP routing table for BHM.

```
BHM>show ip route
```

Output eliminated.

```
Gateway of last resort is not set

S    192.168.14.0/24 [1/0] via 192.168.15.1
C    192.168.15.0/24 is directly connected, Serial0
C    192.168.16.0/24 is directly connected, FastEthernet0
```


c. Are all of the routes needed in the routing tables? _____

d. Can a host on subnet 192.168.16.0 see a host on network 192.168.14.0? _____

Step 7 ping host to host again

a. Check connectivity between the workstations using **ping**. From the workstation attached to the GAD router, ping the workstation attached to the BHM router.

```
C:\>ping 192.168.16.2
Pinging 192.168.16.2 with 32 bytes of data:
Reply from 192.168.16.2: bytes=32 time=20ms TTL=254
Reply from 192.168.16.2: bytes=32 time=20ms TTL=254
Reply from 192.168.16.2: bytes=32 time=20ms TTL=254
Reply from 192.168.16.2: bytes=32 time=20ms TTL=254
Ping statistics for 192.168.16.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 20ms, Maximum = 20ms, Average = 20ms
```

b. If the **ping** was not successful, check routing table to make sure static routes are entered correctly.

Upon completion of the previous steps, logoff by typing **exit**. 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 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**.

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.					

