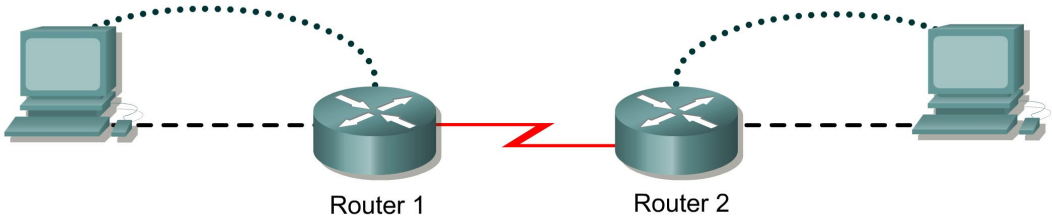
Lab 4.2.6 Troubleshooting IP Address Issues – Instructor Version 2500



Router designation	Router Name	Enable secret password	Enable, VTY and console password	Routing protocol	RIP network statements	
Router 1	GAD	class	cisco	RIP	192.168.14.0	192.168.15.0
Router 2	BHM	class	cisco	RIP	192.168.15.0	192.168.16.0

Router designation	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	192.168.16.1	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

Objective

- Configure two routers and two workstations in a small WAN.
- Troubleshoot problems introduced by incorrect configurations.

Background/Preparation

Cable 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: Work in teams of two. Team member 1 should configure the GAD router according to the table above and its attached workstation according to the instructions below. Team member 2 should configure the BHM router and its workstation. Both configurations have errors and will result in IP related communications problems. Team member 1 will then troubleshoot problems with the BHM router and workstations and Team member 2 will troubleshoot problems with the GAD router and workstations.

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. If there are any difficulties configuring hostname or passwords, refer to the Configuring Router Passwords lab. If there are any difficulties configuring interfaces or the routing protocol, refer to the Configuring Host Tables lab. This lab requires that the IP host tables are configured.

b. Verify the routers configurations by performing a **`show running-config`** on each router. If not correct, fix any configuration errors and verify.

Step 2 Configure the workstations

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	192.168.14.2

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

Step 3 Ping from the workstation

a. From a Windows host, click on **Start** > **Programs** > **Accessories** > **Command Prompt**. This will open a Command Prompt window.

b. Test that the TCP/IP stack and default gateway on the workstation are configured and work properly. Use the MS-DOS window to ping the routers. Issue the following command:

```
C:\>ping 192.168.14.1
```

The **`ping`** should respond with unsuccessful results. Check configurations on the host and routers.

c. There are two problems that were introduced into the configurations. Correct the configurations and ping all interfaces on the hosts and routers.

What were the problems? The default gateway for the host connected to the Gadsden router is incorrect. It should be 192.168.14.1.

The IP address configured on the Serial 0 interface of the Gadsden router is incorrect. It should be 192.168.15.1.

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(config)#reloadRouter#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.

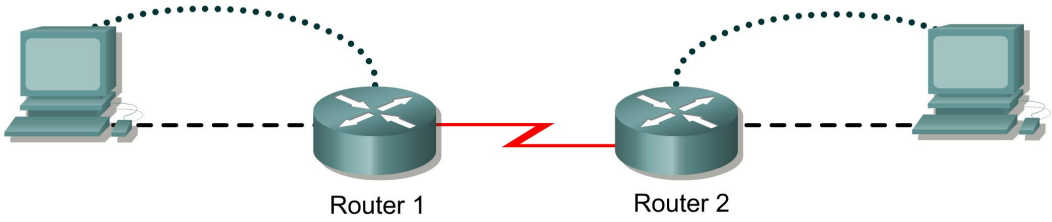
Router Interface Summary					
Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2	Interface #5
800 (806)	Ethernet 0 (E0)	Ethernet 1 (E1)			
1600	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)	
1700	FastEthernet 0 (FA0)	FastEthernet 1 (FA1)	Serial 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.					


```
GAD#show running-config
Building configuration...


Current configuration : 682 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname GAD

!
enable secret 5 $1$qcn7$VrQGYlNfN9K70T6pwzDyC0
enable password cisco
!
!
!
!
!
ip subnet-zero
ip host BHM 192.168.16.1 192.168.15.2
!

!
!
!
interface Ethernet0
 ip address 192.168.14.1 255.255.255.0
!
interface Serial0
 ip address 192.168.15.1 255.255.255.0
 clockrate 56000
!
interface Serial1
 no ip address
 shutdown
!
router rip
 network 192.168.14.0
 network 192.168.15.0
!
ip classless
ip http server
!
!
line con 0
 password cisco
 logging synchronous
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```


***** BAD CONFIG *****

```
GAD#show running-config
Building configuration...


Current configuration : 682 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname GAD
!
enable secret 5 $1$qcn7$VrQGYlNfN9K70T6pwzDyC0
enable password cisco
!
!
!
!
!
ip subnet-zero
ip host BHM 192.168.16.1 192.168.15.2
!
!
!
!
interface Ethernet0
 ip address 192.168.14.1 255.255.255.0
!
interface Serial0
 ip address 192.168.16.2 255.255.255.0
 clockrate 56000
!
interface Serial1
 no ip address
 shutdown
!
router rip
 network 192.168.14.0
 network 192.168.15.0
!
ip classless
ip http server
!
!
line con 0
 password cisco
 logging synchronous
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```


Lab 4.2.6 Troubleshooting IP Address Issues – Instructor Version 2600



Router designation	Router Name	Enable secret password	Enable, VTY and console password	Routing protocol	RIP network statements	
Router 1	GAD	class	cisco	RIP	192.168.14.0	192.168.15.0
Router 2	BHM	class	cisco	RIP	192.168.15.0	192.168.16.0

Router designation	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	192.168.16.1	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

Objective

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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. If there are any difficulties configuring hostname or passwords, refer to the Configuring Router Passwords lab. If there are any difficulties configuring interfaces or the routing protocol, refer to the Configuring Host Tables lab. This lab requires that the IP host tables are configured.

b. Verify the routers configurations by performing a **`show running-config`** on each router. If not correct, fix any configuration errors and verify.

Step 2 Configure the workstations

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	192.168.14.2

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

Step 3 Ping from the workstation

a. From a Windows host, click on **Start** > **Programs** > **Accessories** > **Command Prompt**. This will open a Command Prompt window.

b. Test that the TCP/IP stack and default gateway on the workstation are configured and work properly. Use the MS-DOS window to ping the routers. Issue the following command:

```
C:\>ping 192.168.14.1
```

The **`ping`** should respond with unsuccessful results. Check configurations on the host and routers.

c. There are two problems that were introduced into the configurations. Correct the configurations and ping all interfaces on the hosts and routers.

What were the problems?

The default gateway for the host connected to the Gadsden router is incorrect. It should be 192.168.14.1.

The IP address configured on the Serial 0/0 interface of the Gadsden router is incorrect. It should be 192.168.15.1.

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(config)#reloadRouter#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
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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.					


```
GAD#show running-config
Building configuration...

Current configuration : 830 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname GAD
!
enable secret 5 $1$YWQ3$9yxnEcyZyFuFQThPcqjdl/
enable password cisco
!
ip subnet-zero
!
!
ip host BHM 192.168.16.1 192.168.15.2
ip host GAD 192.168.14.1 192.168.15.1
!
call rsvp-sync
!
!
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 192.168.14.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0
 ip address 192.168.15.1 255.255.255.0
 no fair-queue
 clockrate 56000
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/1
 no ip address
!
router rip
 network 192.168.14.0
 network 192.168.15.0
!
ip classless
ip http server
!
!
dial-peer cor custom
!
!
```



```
!
!
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end

GAD#


BHM#show runnig-config
Building configuration...

Current configuration : 823 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname BHM
!
enable secret 5 $1$R4a2$fw5JOv1b753yRuXQo/JlJ1
enable password cisco
!
ip subnet-zero
!
!
ip host BHM 192.168.16.1 192.168.15.2
ip host GAD 192.168.14.1 192.168.15.1
!
call rsvp-sync
!
!
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 192.168.16.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/1
 no ip address
 shutdown
 no fair-queue
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
```



```
 speed auto
!
interface Serial0/0
 ip address 192.168.15.2 255.255.255.0
!
router rip
 network 192.168.15.0
 network 192.168.16.0
!
ip classless
ip http server
!
!
dial-peer cor custom
!
!
!
!
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end

BHM#
```

