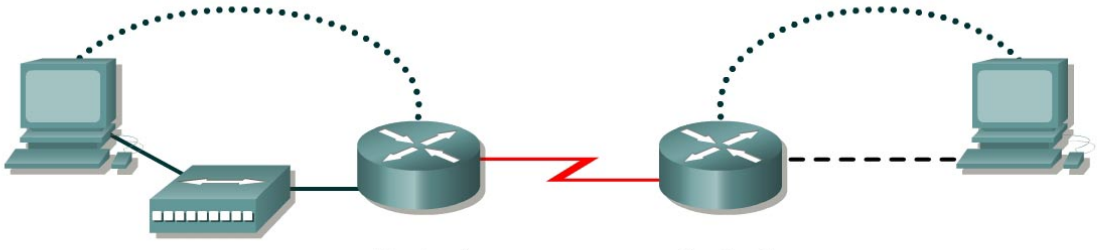
Lab 4.2.2 Establishing and Verifying a Telnet Connection – Instructor Version 2500



Router ID	Router Name	Ethernet 0 Address	Interface type	Serial 0 Address	Subnet mask	Routing protocol	Enable secret password	Enable, VTY and console password
Router 1	GAD	192.168.14.1	DCE	192.168.15.1	255.255.255.0	RIP	class	cisco
Router 2	BHM	192.168.16.1	DTE	192.168.15.2	255.255.255.0	RIP	class	cisco

Objective

- Establish a Telnet connection to a remote router.
- Verify that the application layer between source and destination is working properly.
- Retrieve information about remote routers using **`show`** commands.
- Retrieve CDP information from routers not directly connected.

Background/Preparation

This lab focuses on the Telnet (remote terminal) utility to access routers remotely. Telnet is used to connect from a local router to another remote router in order to simulate being at the console on the remote router. The local router acts as a Telnet client and the remote router acts as a Telnet server. Telnet is a good testing or troubleshooting tool since it is an application layer utility. A successful Telnet demonstrates that the entire TCP/IP protocol stack on both the client and server are functioning properly. Telnet from the workstation as a client into any router with IP connectivity on the network. In addition, Telnet into an Ethernet switch if an IP address has been assigned.

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: 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.

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

Step 2 Login to Router 1 and verify the connection to Router 2

a. Login to the GAD router in user mode.

b. Verify the connection between the two routers. Ping the serial 0 interface of the BHM router. If the ping is not successful, return to Step 1 and troubleshoot the configuration.

Step 3 Use help with the `telnet` command

a. Enter **`telnet ?`** at either the user EXEC or the privileged EXEC router prompt.

b. What did the router reply with?

WORD IP address or hostname of a remote system

Step 4 Telnet to a remote router

a. Enter **`telnet`** *`router-name`* `if IP host tables were configured.` Otherwise, enter **`telnet`** *`ip address`* at the router prompt to connect to a remote router.

b. What prompt did the router display? `BHM>`

Step 5 Look at the interfaces on the remote router

a. Enter **`show interface`** at the router prompt.

b. List the interfaces, their IP address and subnet masks:

Interface	IP Address	Subnet mask
Ethernet 0	192.168.16.1	255.255.255.0
Serial 0	192.168.15.2	255.255.255.0

Step 6 Display the protocols on the remote router

a. Enter **`show protocols`** at the router prompt.

b. Fill in the following table with the information that was generated by the remote access router.

Interface	Is there a Carrier Detect signal?	Are the keepalive messages being received?
Ethernet 0	Yes	Yes
Serial 1	No	No
Serial 0	Yes	Yes

Step 7 Enter privileged EXEC mode

a. Enter **enable** at the command prompt. Enter the password **class**.

b. What prompt did the router display? BHM#

What mode is this? This is privileged EXEC mode.

Step 8 Look at the running configuration

a. Enter **show running-config** at the remote router prompt.

b. What file is being viewed on the remote router? Where is this file stored?

The **running-config** on the BHM router is being viewed. This file is stored in RAM.

Step 9 Look at the saved configuration

a. Enter **show startup-config** at the router prompt.

b. What file is being viewed on the remote router? Where is this file stored?

The startup configuration file of the BHM router is being viewed. The startup-config file is stored in NVRAM.

c. What information is seen concerning the line VTY connections?

Telnet access is enabled and the password is “cisco”.

Step 10 Look at the neighbor configuration

a. Enter **show cdp neighbors** command at the router prompt.

b. List all device IDs that are connected to the remote router with a Telnet session.

GAD is connected.

Note CDP will not show the switch from BHM as it is not directly connected to BHM

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#telnet ?
  WORD  IP address or hostname of a remote system
  <cr>


GAD#telnet 192.168.15.2
Trying 192.168.15.2 ... Open


User Access Verification

Password:
BHM>



BHM>show protocols
Global values:
  Internet Protocol routing is enabled
BRI0 is administratively down, line protocol is down
BRI0:1 is administratively down, line protocol is down
BRI0:2 is administratively down, line protocol is down
Ethernet0 is up, line protocol is up
  Internet address is 192.168.16.1/24
Serial1 is down, line protocol is down
Serial0 is up, line protocol is up
  Internet address is 192.168.15.2/24



BHM>enable
Password:



BHM#show running-config
Building configuration...

Current configuration : 638 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname BHM
!
enable secret 5 $1$1jLu$0Kyymtnex1jGnNLXeBbyl0
enable password cisco
!
ip subnet-zero
!
interface Ethernet0
```

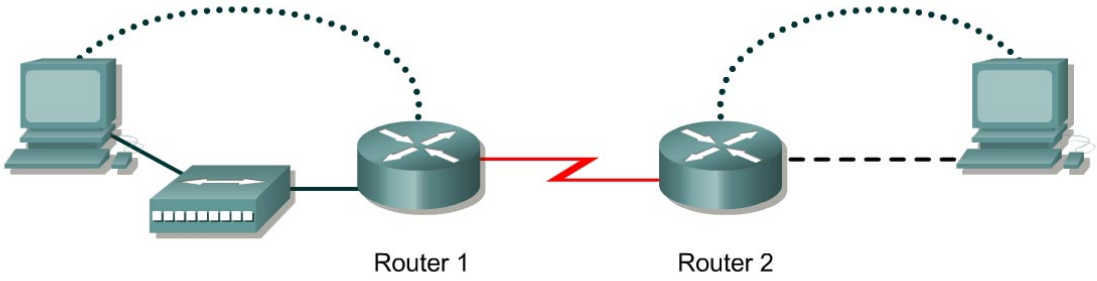


```
 ip address 192.168.16.1 255.255.255.0
!
interface Serial1
 no ip address
!
interface Serial0
 ip address 192.168.15.2 255.255.255.0
!
interface BRI0
 no ip address
 shutdown
!
router rip
 network 192.168.15.0
 network 192.168.16.0
!
ip classless
ip http server
!
!
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```

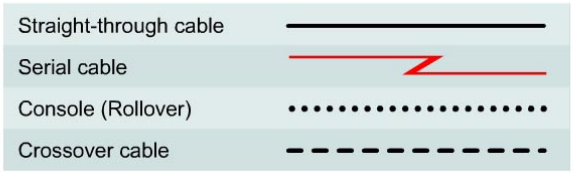
```
BHM#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
Switch           Eth 0               166          T S       WS-C2950-1Fas 0/3
GAD              Ser 0               163           R        2500      Ser 0
```


Lab 4.2.2 Establishing and Verifying a Telnet Connection – Instructor Version 2600



Router ID	Router Name	Ethernet 0 Address	Interface type	Serial 0 Address	Subnet mask	Routing protocol	Enable secret password	Enable, VTY and console password
Router 1	GAD	192.168.14.1	DCE	192.168.15.1	255.255.255.0	RIP	class	cisco
Router 2	BHM	192.168.16.1	DTE	192.168.15.2	255.255.255.0	RIP	class	cisco



Objective

- Establish a Telnet connection to a remote router.
- Verify that the application layer between source and destination is working properly.
- Retrieve information about remote routers using **`show`** commands.
- Retrieve CDP information from routers not directly connected.

Background/Preparation

This lab focuses on the Telnet (remote terminal) utility to access routers remotely. Telnet is used to connect from a local router to another remote router in order to simulate being at the console on the remote router. The local router acts as a Telnet client and the remote router acts as a Telnet server. Telnet is a good testing or troubleshooting tool since it is an application layer utility. A successful Telnet demonstrates that the entire TCP/IP protocol stack on both the client and server are functioning properly. Telnet from the workstation as a client into any router with IP connectivity on the network. In addition, Telnet into an Ethernet switch if an IP address has been assigned.

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: 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.

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

Step 2 Login to Router 1 and verify the connection to Router 2

a. Login to the GAD router in user mode.

b. Verify the connection between the two routers. Ping the serial 0 interface of the BHM router. If the ping is not successful, return to Step 1 and troubleshoot the configuration.

Step 3 Use help with the `telnet` command

a. Enter **`telnet ?`** at either the user EXEC or the privileged EXEC router prompt.

b. What did the router reply with? WORD IP address or hostname of a remote system.

Step 4 Telnet to a remote router

a. Enter **`telnet`** *`router-name`* `if IP host tables were configured.` Otherwise, enter **`telnet`** *`ip address`* at the router prompt to connect to a remote router.

b. What prompt did the router display? `BHM>`

Step 5 Look at the interfaces on the remote router

a. Enter **`show interface`** at the router prompt.

b. List the interfaces, their IP address and subnet masks:

Interface	IP Address	Subnet mask
FastEthernet 0/0	192.168.16.1	255.255.255.0
Serial 0/0	192.168.15.2	255.255.255.0

Step 6 Display the protocols on the remote router

a. Enter **`show protocols`** at the router prompt.

b. Fill in the following table with the information that was generated by the remote access router.

Interface	Is there a Carrier Detect signal?	Are the keepalive messages being received?
FastEthernet 0/0	Yes	Yes
Serial 0/1	No	No
Serial 0/0	Yes	Yes

Step 7 Enter privileged EXEC mode

a. Enter **enable** at the command prompt. Enter the password **class**.

b. What prompt did the router display? BHM#

What mode is this? This is privileged EXEC mode.

Step 8 Look at the running configuration

a. Enter **show running-config** at the remote router prompt.

b. What file is being viewed on the remote router? Where is this file stored?

The **running-config** on the BHM router is being viewed. This file is stored in RAM.

Step 9 Look at the saved configuration

a. Enter **show startup-config** at the router prompt.

b. What file is being viewed on the remote router? Where is this file stored?

The startup configuration file of the BHM router is being viewed. The startup-config file is stored in NVRAM.

c. What information is seen concerning the line VTY connections? 5 ports configured.

Step 10 Look at the neighbor configuration

a. Enter **show cdp neighbors** command at the router prompt.

b. List all device IDs that are connected to the remote router with a Telnet session.

GAD is connected.

Note CDP will not show the switch as it is not directly connected to BHM.

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 : 767 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname GAD
!
enable secret 5 $1$V1t2$jS8bDYl13gd9YBGxGPglt0
enable password cisco
!
ip subnet-zero
!
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
 shutdown
!
router rip
 network 192.168.14.0
 network 192.168.15.0
!
ip classless
no 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#telnet ?
  WORD  IP address or hostname of a remote system
  <cr>


GAD#telnet 192.168.15.2
Trying 192.168.15.2 ... Open


User Access Verification

Password:
BHM>
```



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

Current configuration : 750 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname BHM
!
enable secret 5 $1$g3d6$a4Gly3e4kAm4RgRQhwdvr.
enable password cisco
!
ip subnet-zero
!
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
no ip http server
!
!
dial-peer cor custom
!
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```

