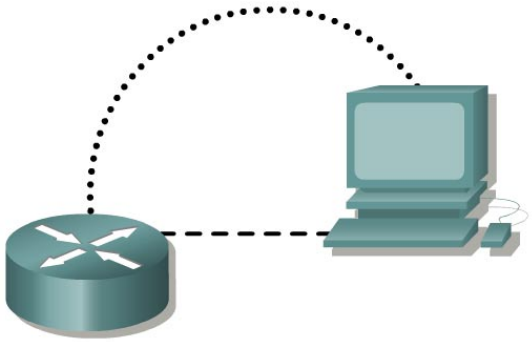
Lab 10.2.5 Well-Known Port Numbers and Multiple Sessions – Instructor Version 2500



Router designation	Router name	FA0/0 Address	Subnet mask	Enable secret password	Enable/VTY/ and Console passwords
Router 1	GAD	192.168.14.1	255.255.255.0	class	cisco

Objective

- Enable HTTP services on a router.
- Show multiple HTTP and Telnet sessions on a single host.
- Observe well-known TCP port numbers on the host and router.

Background/Preparation

Cable a network similar to one of the diagram. Any router that meets the interface requirements displayed on the above diagram, such as 800, 1600, 1700, 2500, 2600 routers, 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 hostname, passwords and interface on the GAD router

a. On the GAD router, enter the global configuration mode and configure the hostname as shown in the chart. Then configure the console, virtual terminal, and enable passwords. Configure the Ethernet interface.

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

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

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

Step 4 Allow HTTP access to the router

a. Allow HTTP access by issuing the **ip http server** command in global configuration mode.

Step 5 Use the workstation browser to access the router

a. Open a browser on Host 1 and type `http://`*ip-address of Router GAD*. Then there will be a prompt a username and the enable password of the router. The username can be left blank; only the password is required.

Step 6 Telnet to the Ethernet interface on the router from the host

Step 7 Start a second Telnet session to router

Step 8 Start a third Telnet session to router by opening another command prompt

Step 9 Start a fourth Telnet session to router by opening another command prompt

Step 10 Check the number of sessions on the host

a. Open another command prompt on the host and type **netstat /?** at the DOS prompt.

b. What options are available for the **netstat** command? -a -n -s -p -r interval

c. Now type **netstat –n**.

d. How many open sessions are there? 4

e. What are the open sessions? Telnet

f. What are the port numbers? Answers will vary.

Step 11 Check the number of sessions on the Router

a. At the privileged EXEC mode type **show tcp**.

b. How many open sessions are there? 4

c. What are the open sessions? Telnet or vty

d. What are the port numbers on the sessions? Answers will vary.

e. Why can all the sessions use port 23 (under Local Address)?

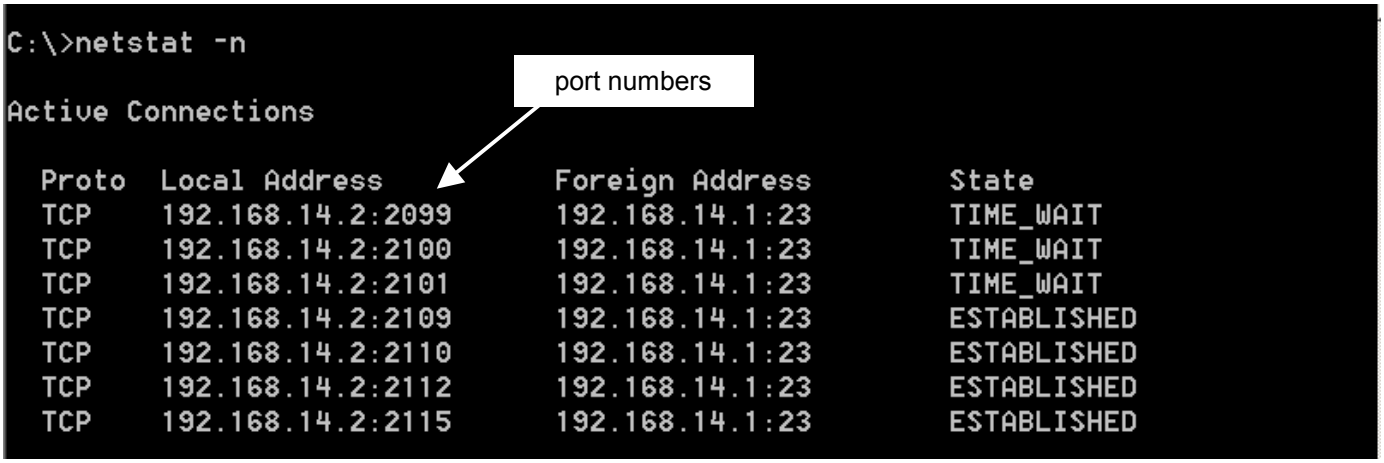
Because they are all using a different port number on the local machine

f. List some of the Local Address port numbers (number after the colon following the IP address).

2099, 2100, 2101

g. Why are all of the Local Address port numbers different?

Establishing data ports for each connection



Upon completion of the previous steps, logoff and turn the router off.

Erasing and reloading the router

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

```
Router>enable
```

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

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**.

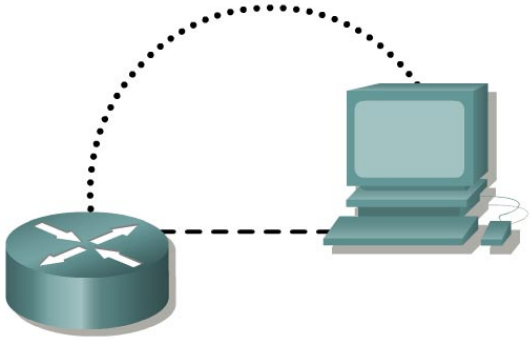
The router is ready for the assigned lab to be performed.

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 Output~~

```
GAD#show running-config
Current configuration:
version 11.1
service slave-log
service udp-small-servers
service tcp-small-servers
hostname GAD
enable secret 5 $1$qBx1$fFFD7GtW5rjqLEYR7RSSo/
interface Ethernet0
 ip address 192.168.14.1 255.255.255.0
interface Serial0
 no ip address
 shutdown
interface Serial1
 no ip address
 shutdown
no ip classless
ip http server
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
end
GAD#
```


Lab 10.2.5 Well-Known Port Numbers and Multiple Sessions – Instructor Version 2600



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- Show multiple HTTP and Telnet sessions on a single host.
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Background/Preparation

Cable a network similar to one of the diagram. Any router that meets the interface requirements displayed on the above diagram, such as 800, 1600, 1700, 2500, 2600 routers, 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 hostname, passwords and interface on the GAD router

a. On the GAD router, enter the global configuration mode and configure the hostname as shown in the chart. Then configure the console, virtual terminal, and enable passwords. Configure the Ethernet interface.

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

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

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

Step 4 Allow HTTP access to the router

a. Allow HTTP access by issuing the **ip http server** command in global configuration mode.

Step 5 Use the workstation browser to access the router

a. Open a browser on Host 1 and type `http://ip-address of Router GAD`. Then there will be a prompt a username and the enable password of the router. The username can be left blank; only the password is required.

Step 6 Telnet to the Ethernet interface on the router from the host

Step 7 Start a second Telnet session to router

Step 8 Start a third Telnet session to router by opening another command prompt

Step 9 Start a fourth Telnet session to router by opening another command prompt

Step 10 Check the number of sessions on the host

a. Open another command prompt on the host and type **netstat /?** at the DOS prompt.

b. What options are available for the **netstat** command? -a -n -s -p -r interval

c. Now type **netstat -n**.

d. How many open sessions are there? 4

e. What are the open sessions? Telnet

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Step 11 Check the number of sessions on the Router

a. At the privileged EXEC mode type **show tcp**.

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c. What are the open sessions? Telnet or vty

d. What are the port numbers on the sessions? Answers will vary.

e. Why can all the sessions use port 23 (under Local Address)?

Because they are all using a different port number on the local machine /

f. List some of the Local Address port numbers (number after the colon following the IP address).

2099, 2100, 2101,

g. Why are all of the Local Address port numbers different?

There are multiple telnet sessions open to a single destination address on port 23, therefore, the local TCP/IP service has to distinguish each session with a high order port numbe to track the multiple sessions.

Upon completion of the previous steps, logoff and turn the router off.

Erasing and reloading the router

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

```
Router>enable
```

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

At the privileged EXEC mode, enter the command **erase startup-config**.

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The responding line prompt will be:

```
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```

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
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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:

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Press RETURN to get started!
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Press **Enter**.

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

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Current configuration:
service slave-log
service udp-small-servers
service tcp-small-servers
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enable secret 5 $1$qBx1$fFFD7GtW5rjqLEYR7RSSo/
interface FastEthernet0/0
 ip address 192.168.14.1 255.255.255.0
interface Serial0/0
 no ip address
 shutdown
interface Serial0/1
 no ip address
 shutdown
no ip classless
ip http server
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
end
GAD#
```

