

## 7.12.1

### NETWORK CONFIGURATION:

#### Cisco Router



## Laboratory Overview

### **Objective**

At the end of this lab students will be able to Use HyperTerminal to erase an existing router configuration and configure the router to the instructor's specifications, both manually and with an existing configuration file.

### **Information for Laboratory**

- A. Students will utilize Cisco routers
- B. Students will utilize HyperTerminal
- C. Students will clear the current router configuration, and configure the router to the given specifications.

### **Student Preparation**

The student will have completed requisite reading. The student will require paper for notes and should be prepared to discuss the exercises upon completion.

All PCs are connected to the router console port using a console cable and a DB9 serial adaptor at the computer serial port.

### **Estimated Completion Time**

40 Minutes

### **Step 1: Connecting to the Router**

Start HyperTerminal by double clicking on the desktop icon, or from START, All Programs, Accessories, Communication, and Hyperterminal.



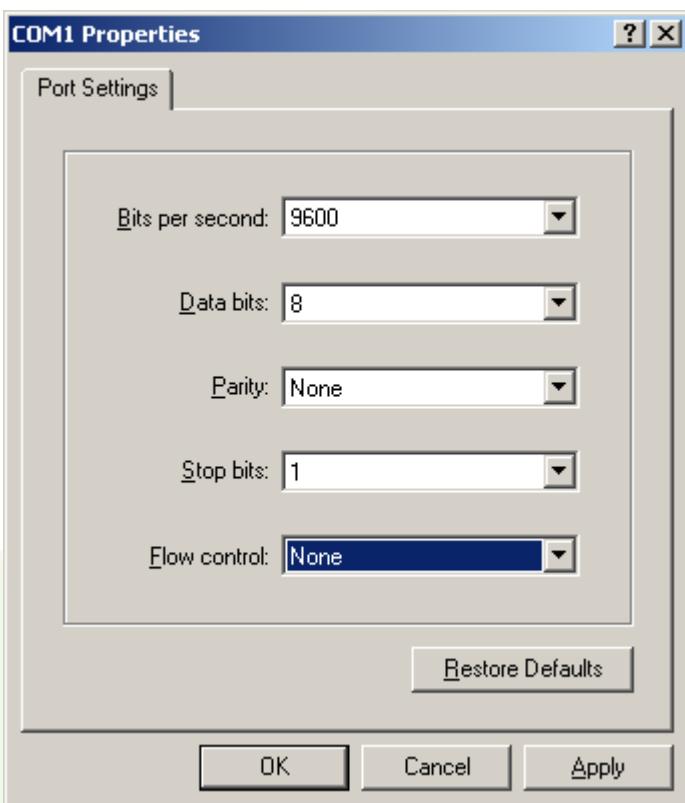
Enter a in the new connection dialog box and click on "ok."



Pick COM1 in the "Connect using" dropdown box and click "ok."



Change the “Bits per second” dropdown to 9600 and the “Flow control” to None and click ok.



You should now see the HyperTerminal window. It will probably be blank, with just a blinking cursor. Press enter. If the prompt that appears is: Router> and skip to step 6. If a message asking if you wish to enter initial setup appears press **n**, press **enter**, and skip to step 3. If the prompt is "**[any other wording, particularly a city name]>**", type: **enable**, press **enter**, and continue to the next step. If you get any other message call the instructor or lab assistant.

## Step 2: Clearing the current configuration

Type: **erase nvram**. The router will reply with: Erasing the nvram filesystem will remove all files! Continue? [confirm]. Press **enter**.

It will return with: [ok]  
Erase of nvram: complete  
Router#

When you see the Router# prompt type **reload** and press **enter**. The router will reply with: Proceed with reload? [confirm]. Press **enter**. It will then start the reload, you will see a lot of specification information go by on the window.

Once it is finished it will ask: Would you like to enter the initial configuration dialog? [yes/no]: type **n** and press **enter**. It will than ask: Would you like to terminate autoinstall? [yes]: Press **enter**. It responses with: Press RETURN to get started! and floods the window with status information. It will eventually stop. If you don't see the Router> prompt once it seems to have stopped, press **enter** once.

### Step 3:

When you have the Router> prompt, type: **enable**. Your prompt should now be **Router#**.

Congratulations, you are now ready to actually configure the router.

### Step 4: Router Configuration

To configure the router you need to be in configure mode, so type: **configure terminal** (if it gets to be too much typing, you can abbreviate it to **conf t**.) Your prompt will change to: Router(config)#. You are now ready to enter configuration commands. If you ever have a question on what commands you can enter at any prompt type a ?. You can type part of a command, say **configure**, and then type a ? to see what things you can configure. When you are done configuring the router type a **ctrl z** to get back to the enable prompt. Typing: **exit**, will take you back to the previous configuration level.

### Step 5: Config a login banner

First we are going to configure the welcome banner. The banner shows up when the router is accessed. It is a good idea to include a banner stating that only authorized access is allowed on the system.

At the Router(config)# prompt type: **banner motd # You have entered a secure system, authorized access ONLY! #**. (motd is an acronym for message of the day).

## **Step 6: Config the hostname**

Now we will give our router a hostname. The hostname is a unique name for the router. This name can be used to access the router from other routers within your network.

If necessary type: **configure terminal** to get back to the config prompt. Now type: **hostname** followed by the hostname Auckland.

Once you press enter the prompt will change to:  
YourName(config)#.

## **Step 7: Configuring the interfaces**

For the router to work properly, it must have some sort of ip address(es), and must tell other routers in the network what they are. First we will configure the serial interface used between routers either in the local network or through the internet.

At the (config)# prompt type: **interface serial0** (or int s0, or s1 if you are configuring serial 1). The prompt will change to:  
YourName(config-if)#

Then type: **ip address 201.100.11.1 255.255.255.0** (using the address provided for this interface in place of the 201.100.11.1).

If you are configuring the serial 0 interface, you need to set the clock rate so that the routers have a clocking signal to control the

timing. To set the clock rate type: **clock rate 56000**.

Now type: **no shutdown**. This activates the interface. To shutdown an active interface that is no longer being used just type **shutdown**. Now type: **exit**.

Next come the Ethernet interface(s). The routers in this lab use a FastEthernet. At the (config)# prompt type: **interface fa0** (or int fa0 or fa1 depending on which interface you are configuring).

Give it the ip address supplied by your instructor for this interface the same way you did for the serial interface, and activate it.

## **Step 8: Configuring a Routing Protocol**

The next step is to set the routing protocol. A routing protocol provides processes for sharing route information and allows routers to communicate with other routers to update and maintain the routing tables. This will allow the router to choose the best path for the data to travel across the net. For this lab we will use RIP (the Routing Information Protocol) version 2.

At the (config)# prompt, type: **router rip**. The prompt changes to YourName(config-router)#. Now type: **version 2**.

For other routers to reach us, we must tell them our address(es). We do this by giving out the network addresses that we want them to know about. At the (config-router)# prompt type: **network 201.100.11.0** using the address(es) that are on your interfaces. Use a .0 as the last octet rather than the .1 or .2 you were given. You advertise the network address(es), not the device address(es).

## **Step 9: Configuring Telnet access**

We need to set up our router so that we can telnet into it remotely if need be to fix a problem from offsite or from another router. Telnet allows connection to remote hosts and is used to verify the application layer software between hosts. It is a powerful test mechanism.

To set our router up for remote access, we have to activate the VTY lines (telnet lines) and set them up with password protection.

At the (config)# prompt, type: **line vty 0 4**. This tells the router to set up 5 telnet lines numbered 0-4. The prompt changes to: YourName(config-line)#. Now type: **password cisco**. In this lab we use either cisco or class as the password unless told otherwise by the instructor.

We now need to tell the router to allow logins. This is done by typing: **login** at the (config-line)# prompt.

### Step 10: Verify your config

We are now done with a basic router configuration so type a **ctrl z** to get back to the enable prompt. To see what you have done type: **show run**. Look at the information that crosses the screen and get familiar with it. Hit the space bar to continue when you see a –more—prompt.

### Step 11: Enabling HTTP server

To turn on the HTTP server, at the (config)# prompt, type **ip http server**.

### Step 11:

Show your configuration to the instructor

### **Step 12: Copy your config to notepad**

From the Router# prompt, type “show run” and press enter. You may have to press the space bar a few times to get to the end of the config. Once you are at the end of the config, and back at the router# prompt, using your mouse, select all the text from the beginning to the end of the config. Page Up and Page Down keys work with Hyper terminal to navigate easier. With the config text highlighted, at the top, Click on Edit, and Copy.

Open notepad, START, Run, type “notepad” and press enter.

Click Edit, Paste. You should see that the config text copied over from Hyper terminal to notepad. Save your configuration file in notepad as router-config.txt for future reference.

### **Analysis**

- 1) What is hyper terminal used for?
- 2) After working with Hyper Terminal, and a Cisco router, what about them do you feel you should study further? Why?
- 3) What benefit does copying configurations to notepad have?

### **Summary Discussion**

A classroom discussion should follow the lab. Review the lab questions and your analyses as a group. Share your experiences and knowledge with the class.

## If You Want To Learn More

Go to <http://www.cisco.com>

## Appendix:

The OS environment for this lab was Windows XP Professional, Version 2002, Service Pack 2 (8/04).

