

Lab 3.7.1 Configuring PPP Interactive Mode



Objective

In this lab, the student will configure a Cisco router to connect asynchronously to a modem and use a workstation, Host A, to remotely dial into the router. The student will also configure PPP interactive mode, so that the user on Host A can select between a PPP session and a router management EXEC session when using HyperTerminal for dialing out.

Scenario

The International Travel Agency wants dialup access configured to the central router SanJose1. They would like access set up so that the remote user at Host A can dial up the router for either an EXEC management session on the router, or a PPP connection to the corporate LAN. This configuration will allow the dialup user to choose between configuring the router remotely and accessing the central site network. Since the user may choose to access International Travel Agency's TCP/IP-based network, this configuration must account for assigning an IP address to Host A.

Step 1

Before beginning this lab, it is recommended that the router be reloaded after erasing its startup configuration. This will prevent problems that may be caused by residual configurations. Build and configure the network according to the diagram, but do not configure SanJose1's serial interface yet. Configure SanJose1 with the appropriate hostname and Loopback 0 IP address. Use the Adtran Atlas 550, or similar device, to simulate the PSTN. If the Atlas 550 is being used, be sure the line cables from both modems are plugged into the octal FXS voice module ports of the Atlas 550 as labeled in the diagram.

Step 2

Configure the serial interface on SanJose1 for an asynchronous connection as follows:

```
SanJose1 (config) #interface s0/1
SanJose1 (config-if) #physical-layer async
SanJose1 (config-if) #ip address 192.168.8.1 255.255.255.0
SanJose1 (config-if) #async mode interactive
SanJose1 (config-if) #peer default ip address 192.168.8.5
```

The `async mode interactive` command allows the remote user to select between a PPP session and an EXEC session with the router. The `peer default ip address` command configures the router to assign an IP address to the dial-in host. An IP address is required in order for the remote host to access the International Travel Agency corporate network.

Since Telnet and reverse Telnet will be used in this exercise, configure the virtual terminals on SanJose1 with the following commands:

```
SanJose1(config)#line vty 0 4
SanJose1(config-line)#login
SanJose1(config-line)#password Cisco
```

Step 3

Configure the appropriate line so that it can communicate with the modem as follows:

Note: Line 2 is used here as an example, use `show line` to verify the actual number for the router.

```
SanJose1(config)#line 2
SanJose1(config-line)#login
SanJose1(config-line)#password cisco
SanJose1(config-line)#speed 115200
SanJose1(config-line)#flowcontrol hardware
SanJose1(config-line)#modem inout
SanJose1(config-line)#transport input all
SanJose1(config-line)#stopbits 1
```

For this scenario, also configure the following line to select PPP automatically:

```
SanJose1(config-line)#autoselect ppp
```

The `autoselect` command configures the Cisco IOS software to identify the type of connection being requested. This command is used on lines making different types of connections.

Finally, reverse Telnet to the modem, restore the factory default settings (AT&F) on the modem, and configure the modem to answer on the second ring (**ATS0=2**) as follows:

```
SanJose1#telnet 192.168.0.1 2002

Password: cisco
AT
OK
AT&F
ATS0=2
```

1. What port number will be used to establish a reverse Telnet session with the modem?
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-

Now that the modem is configured, suspend the reverse Telnet session by pressing **Control+Shift+6** at the same time, release and press **X**. From the router prompt, disconnect the reverse Telnet session to the modem as follows:

```
SanJose1#disconnect
```

Step 4

In this step, verify that SanJose1 is accepting dialup PPP connections from Host A.

Change the TCP/IP Properties of the network card to obtain an IP address automatically.

Next, configure Dialup Networking (DUN) on Host A. The exact configuration steps for DUN will vary depending on the operating system used by Host A. If Windows 9x/2000/Me is being used, open the "Dialup Networking" folder and click on the **Make New Connection** icon. In Windows 2000, this folder is called Network and Dialup Connections. If the standard Adtran Atlas configuration is being used, configure the connection to dial 555-6001 (port 1). Since PPP authentication has not been configured, no username or password for this connection is required.

When the DUN configuration has been named and completed, double-click the connection icon and establish a dialup connection with SanJose1. If the connection fails, troubleshoot as necessary.

Once the connection is established, check IP address of Host A. Remember that this address will be bound to the dialup adapter not to the NIC.

1. What IP address has been assigned to the dialup adapter?
-
-

Verify that Host A has TCP/IP connectivity to the corporate network by pinging the loopback interface on SanJose1, 192.168.0.1. If Host A does not receive a reply, troubleshoot as necessary.

From Host A, Telnet to SanJose1 at 192.168.8.1 and enter the appropriate password. On SanJose1, issue the **show interface s0/1** command.

Note: The following is a partial sample output displayed on the workstation:

```
SanJose1#show interface s0/1
Serial0/1 is up, line protocol is up
  Hardware is PQUICC Serial in async mode (TTY2)
  Internet address is 192.168.8.1/24
  MTU 1500 bytes, BW 115 Kbit, DLY 100000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation PPP, loopback not set
  Keepalive not set
<output omitted>
```

2. According to the output of the **show interface** command, what is the encapsulation set to?
-
-

Now that TCP/IP connectivity has been verified, exit the Telnet session and disconnect the dialup link.

Step 5

Verify that SanJose1 is accepting dialup management (EXEC) sessions from Host A. Right-click on the connection icon in the Dialup Networking window and select **Properties**. If Windows 95/98 is being used, click the **Configure** button on the **General** tab. This will open the modem configuration window. In this window, select the **Options** tab, and check the box that says "Bring up terminal window after dialing". If Windows 2000 is used, check the "Show terminal window" box on the **Security** tab. Finally, if you are using Windows ME, click on the Scripting tab and uncheck the "Start terminal screen minimized"

Now establish the dialup connection, as in Step 4. When the router answers the call, a terminal window should appear. Press the **Enter** key to trigger the router password prompt and then enter the appropriate password.

While still connected, issue the `show interface s0/1` command on SanJose1.

1. According to the output of the `show interface` command, what is the line encapsulation set to?

2. Notice that the interface is not in an up-and-up state even though a connection has been established. Why is this so?

3. Has the dialup adapter on Host A been assigned an IP address?

Finally, since SanJose1 is using asynchronous interactive mode, begin a PPP session with the router by entering the appropriate command while in the management session. In the dialup terminal window, type the following command:

```
SanJose1>ppp
```

Strings of character output will be displayed representing PPP frames. In Windows 9x/ME, click on the **Continue** button at the bottom of the Dial-Up Networking terminal window. Otherwise click on the **Done** button. After a few seconds, check the IP address of Host A. The dialup adapter should now have the address 192.168.8.5.

Verify that there is TCP/IP connectivity by telnetting from Host A to SanJose1 through 192.168.8.1.