

Configuration Procedures

This chapter provides procedures for configuring the Cisco 6200 digital subscriber line access multiplexer (DSLAM). This chapter provides the following procedures:

- Configuring an SLC on page 4-1
- Working With a Master Configuration File on page 4-3
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The network trunk card (NTC) requires no configuration. If you are replacing a management processor card (MPC), refer to the configuration instructions in the document *Cisco 6200 FRU Installation and Replacement*. If you are installing a new Cisco 6200, you should follow the configuration instructions outlined in Chapter 2, “Installing the Cisco 6200.”

For detailed descriptions of the configuration and other commands mentioned in this chapter, go to Chapter 5, “Command Reference.”

The Cisco 6200 can be configured by following the procedures in this chapter or by using the Cisco 6200 Manager, which provides a graphical user interface for configuring, monitoring, and managing the Cisco 6200. For information on the Cisco 6200 Manager, see the *User Guide for the Cisco 6200 Manager*.

4.1 Configuring an SLC

This section explains how to configure the subscriber line card (SLC) interfaces on a Cisco 6200 system. You can follow these steps before or after you insert the SLC into its slot.

To configure an SLC, you must be in global configuration mode. If you are already in this mode, go to Step 3.

Step 1 Enter the **enable** command and then enter the password to go into privileged mode.

```
c6200> enable
Enter Password:
```

Step 2 Enter the **configure** command and press **Return** to accept “terminal,” the default.

```
c6200# configure
Configuring from terminal, memory, or network [terminal]?

c6200(config)#
```

Step 3 If you already inserted the card you want to configure into its slot, go to Step 4. If the card is not in the slot, use this step to preconfigure the card.

Enter the **c6200 card** command and specify a slot number and card type. Each SLC card goes into a slot with a number in the range 5 to 14 and has a card type of slc1-8-cap. Each SLC has eight ports, numbered 0 to 7. In the following example, an SLC is being preconfigured for slot 5.

```
c6200(config)# c6200 card 5 slc1-8-cap
```

Step 4 Enter the **interface dsl** command and specify the card and port you want to configure. In this example, you configure port 0 of the SLC in slot 5.

```
c6200(config)# interface dsl 5/0
```

Step 5 Specify a subscriber name. In this example, the subscriber name “boston” is specified. If you skip this step, the system provides a default subscriber name in the form port-type slot/port, for example, “DSL 6/2.”

```
c6200(config-if)# dsl subscribername boston
```

Note Use the **no dsl subscribername** command to remove the subscriber name. This command changes all configuration values for this interface to default values.

Step 6 Specify downstream and upstream bit rates, which in this example have been set to 1600 and 272 kbps, respectively.

```
c6200(config-if)# dsl bitrate downstream 1600 upstream 272
```

Step 7 Activate the configuration by entering the **no shutdown** command and return to the global configuration prompt by entering the **end** command.

```
c6200(config-if)# no shutdown
c6200(config-if)# end
c6200(config)#
```

Repeat Step 4 through Step 7 for each interface that you want to configure, and then follow the step below to save the configuration to nonvolatile memory. If you do not save it, the configuration will be lost when the device is rebooted.

Step 8 To save the configuration, use the **end** command to return to privileged EXEC mode, and copy the running configuration to the startup configuration.

```
c6200# end
c6200# copy running-config startup-config
```

Step 9 In addition to saving the configuration to the startup configuration, you may want to copy it to a PCMCIA Flash memory card. The following command copies the startup configuration to a file named “myconfig” on the PCMCIA card in slot 0.

```
c6200#copy startup-config slot0:myconfig
```

4.2 Working With a Master Configuration File

A master configuration file is used to configure multiple SLC cards or multiple Cisco 6200 nodes. The following sections explain how to create a master configuration file, upload it to a TFTP server, and download it to the running configuration of a Cisco 6200.

4.2.1 Creating a Master Configuration File

A master configuration file can be copied from an existing configuration file or created from a text file.

If your master configuration file is the same as the startup configuration file (stored in NVRAM) or the running configuration file (stored in active memory) on one of your Cisco 6200s, go to the next section, "Copying a Master Configuration to a TFTP Server."

You can create a master configuration file that selectively modifies your local configuration files. To do this, create a text file that includes only those configuration instructions that you want in the master file. Put each command on a separate line.

The following text is an example of a master configuration file that changes only the configurations for DSL interfaces 5/0 through 5/3.

```
int ds15/0
dsl bitrate downstream 1600 upstream 680
no shut
int ds15/1
dsl bitrate downstream 1600 upstream 680
no shut
int ds15/2
dsl bitrate downstream 1600 upstream 680
no shut
int ds15/3
dsl bitrate downstream 1600 upstream 680
no shut
!
end
```

After creating the text file, go to the next procedure, "Copying a Master Configuration to a TFTP Server."

4.2.2 Copying a Master Configuration to a TFTP Server

Use the following procedure to copy a master configuration file to a TFTP server.

Step 1 If you are not in privileged mode, enter it by keying in the **enable** command. In this example, the running configuration file is being used as the master configuration file. If another file were being used, you would replace "running-config" with the name of that file. Copy the configuration file to a TFTP server by using the following command:

```
c6200# copy running-config tftp
```

Step 2 Specify the name of the remote host. In this example, the name is tftp-server.

```
Remote host []? tftp-server
```

Step 3 Assign a name to the configuration file or use the default name that appears between the brackets.

```
Name of configuration file to write [myconfig]?
```

- Step 4** Confirm the configuration-file name and host destination.

```
Write file myconfig on host 3.0.3.1? [confirm]
Building configuration...
```

4.2.3 Copying a Master Configuration from a TFTP Server

Use the following procedure to copy the master configuration file from a TFTP server into the local running configuration.

- Step 1** If you are not in privileged mode, enter it by keying in the **enable** command. In privileged mode, enter the following command and accept the default value of *host*.

```
c6200# copy tftp running-config
Host or network configuration file [tftp-server]?
```

- Step 2** Enter the IP address of the TFTP server where the master configuration file is stored.

```
Address of remote host [3.0.3.1]?
```

- Step 3** Enter the name of the master configuration file on the TFTP server and confirm.

```
Name of configuration file [myconfig]?
Configure using myconfig from 3.0.3.1? [confirm]
c6200#
```

- Step 4** The master configuration file is integrated into the existing running configuration file and loaded into running memory. If you do not save the local configuration, the configuration will be lost the next time the device is rebooted. Save the configuration to the NVRAM by entering the following command:

```
c6200# copy running-config startup-config
```

- Step 5** In addition to saving the configuration in the startup configuration, you may want to copy it to one of the flashcards. The following command copies the startup configuration to a file named “myconfig” on the PCMCIA flash memory card in slot0.

```
c6200#copy startup-config slot0:myconfig
```

4.3 Setting and Recovering Passwords

This section explains how to create, change, and recover passwords.

4.3.1 Creating and Changing Passwords

The following procedure is used to create or change a password:

- Step 1** Enter the **enable** command; then enter the password.

```
c6200> enable
Enter Password:
```

- Step 2** Enter the **configure** command and accept the default value “terminal.”

```
c6200# configure
Configuring from terminal, memory, or network [terminal]?

c6200(config)#
```

- Step 3** Enter the **enable password** command. This password is displayed in the configuration files. In this example, the password “potato” is created.

```
c6200(config)# enable password potato
```

Note The password is case sensitive and can contain from 1 to 25 uppercase and lowercase alphanumeric characters. Spaces can be used; leading spaces are ignored; trailing spaces are recognized. The first character must be a letter, not a number.

- Step 4** Enter the **enable secret** command. This password is displayed in encrypted form in the configuration files. The secret password is used for the same purpose as the enable password. In this example, the password “carrot” is created.

```
c6200(config)# enable secret carrot
```

If you lose or forget your enable password, see the section “Recovering Lost Passwords.”

4.3.2 Recovering Lost Passwords

To recover a password, you must have a terminal attached to the console port of the Cisco 6200. For more information, refer to Chapter 2, “Installing the Cisco 6200.”

Note If you have lost your password and Flash memory has been erased, you should contact customer service. If Flash memory is erased, you can only view or erase the configuration.

- Step 1** At the console, enter the **show version** command and record the setting of the configuration register. You will need to specify this value in Step 15. The configuration register value is on the last line of the display. A typical configuration register value is 0x2101 or 0x101.
- Step 2** Turn off the Cisco 6200 DSLAM and then turn it on. *Within 60 seconds* of turning on the DSLAM, press the **Break** key on the terminal.
- The `rommon>` prompt appears. If it does not appear, the terminal is not sending the correct Break signal. In that case, check the terminal or terminal emulation setup.
- Step 3** Enter the **confreg** command at the **rommon>** prompt. The following prompt appears:
- ```
rommon> confreg
Do you wish to change configuration[y/n]?
```
- Step 4** The system asks if you want to change the configuration. Enter **Yes** and press **Return**.
- ```
Do you wish to change configuration[y/n]? y
```
- Step 5** Enter **No** to subsequent questions until you are asked if you want to ignore the system configuration information. Answer **Yes** to that question.
- ```
enable "Ignore system config info[y/n]?" y
```
- Step 6** Enter **No** to subsequent questions until you are asked if you want to change the boot characteristics. Answer **Yes** to that question.
- ```
change boot characteristics[y/n]? y
```

Step 7 At the next prompt, you are asked where you want to boot from. Enter 2, to select “boot system.”

```
enter to boot: 2
  0=ROM Monitor
  1=the boot helper image
  2-15=boot system
```

Step 8 A configuration summary is displayed and you are asked if you want to change the configuration. Answer **No**.

```
Do you wish to change configuration[y/n]? n
rommon>
```

Step 9 Enter the **reset** command at the `rommon>` prompt.

```
rommon> reset
```

Step 10 When the DSLAM boots, enter **No** to any setup questions until the following prompt appears:

```
router>
```

Step 11 Enter the **enable** command to enter privileged EXEC mode. You will not need a password.

```
router> enable
router#
```

Step 12 Copy the configuration file that is stored in the NVRAM to active memory:

```
router# copy startup-config running-config
```

Step 13 You can now create a new password. Enter the **configure terminal** command.

```
c6200# configure terminal
c6200(config)#
```

Step 14 Enter the **enable secret** command and specify a password. In the following example, the password “carrot” is created:

```
c6200(config)# enable secret carrot
c6200(config)#
```

Step 15 Enter the **config-register** command, and use the value recorded in Step 1. For example:

```
c6200(config)# config-register 0x2101
```

Step 16 You must now instruct the system to activate the Ethernet interfaces associated with the backplane and the MPC.

(a) Configure interface ethernet 0/0 by entering the following commands:

```
c6200(config)# interface ethernet 0/0
c6200(config-if)# no shutdown
```

(b) Enter the **exit** command to return to global configuration mode:

```
c6200(config-if)# exit
```

(c) Configure interface ethernet 0/1 by entering the following commands:

```
c6200(config)# interface ethernet 0/1
c6200(config-if)# no shutdown
```

Step 17 Enter **Ctrl-Z** to quit from the configuration mode.

- Step 18** Enter the **reload** command at the prompt and answer **Yes** when asked if you want to save the configuration file. Press **Return** to confirm that you want to proceed with the reload.

```
c6200)# reload
System configuration has been modified.
Save? [yes/no] y
Proceed with reload [confirm]?
```

4.4 Changing the Ethernet Port Addresses

To Telnet to the Cisco 6200, you need to specify the Ethernet port (IP address) of the Cisco 6200. Normally, you specify this address when you install the system. You can change the Cisco 6200 Ethernet port address using the following procedure:

- Step 1** Enter the **interface ethernet** command for card/port 0/0:

```
c6200(config)# interface ethernet0/0
```

- Step 2** Specify the IP address and subnet mask for the Cisco 6200:

```
c6200(config-if)# ip address <ip_address> <subnet_mask>
```

- Step 3** Enter the **no shutdown** command:

```
c6200(config-if)# no shutdown
```

- Step 4** Enter **Ctrl-Z** to quit from the configuration mode.

You can now Telnet to the specified IP address of the Cisco 6200.

4.5 Configuring In-band Management

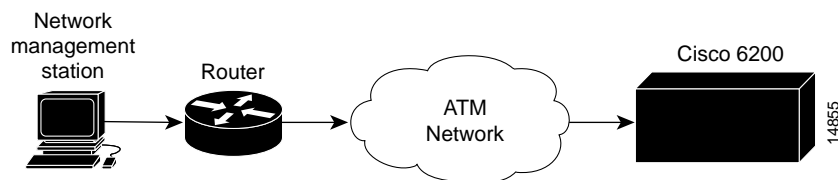
In the Cisco 6200, management activities like saving and loading of configuration files via TFTP, running CLI remotely over a Telnet session, and SNMP-based network management require IP connectivity.

The Cisco 6200 supports two ways to achieve this connectivity:

- Through the dedicated Ethernet port on the MPC. This is called out-of-band management.
- Via a data path through the ATM trunk. This is called in-band management.

The typical network configuration for in-band management is shown in Figure 4-1.

Figure 4-1 A Network Using In-band Management



To use in-band management, configure the ATM port on the MPC to handle IP over ATM (RFC 1483) and either establish a static path between the management station and the ATM port, or set up a default gateway, as described below. Follow these steps at the Cisco 6200 console or via Telnet.

Step 1 Enter **enable** and the password to go to privileged EXEC mode.

```
c6200> enable
Password:
```

Step 2 Enter **configure terminal** to go to global configuration mode.

```
c6200# configure terminal
```

Step 3 Enter the **interface** command to go to interface configuration mode. Specify the ATM port (0/0) and subinterface (.1) on the MPC, and set up a point-to-point connection.

```
c6200(config)# interface atm 0/0.1 point-to-point
```

Note If you wish to set up the ATM connection on the interface (0/0) rather than the subinterface (0/0.1), do the following:

- In Step 3, specify only the port, not the subinterface, and omit the keyword **point-to-point** (that is, enter **interface atm 0.0**).
 - Follow Step 4 and Step 5 as given below.
 - Use the **map-group** command to assign a map group to the ATM port. Then use the **map-list** command to establish mapping between the ATM PVC and an outgoing IP address. Finally, resume this procedure with Step 6.
-

Step 4 Enter the **ip address** command to assign an IP address and subnet mask to the ATM subinterface.

```
c6200(config-if)# ip address <ip-address> <mask>
```

Step 5 Enter the **atm pvc** command to set up the ATM permanent virtual circuit (PVC).

```
c6200(config-if)# atm pvc <vc_num> vpi vci
```

Step 6 Do *only one* of the following:

- To set up a static route between the management station and the ATM port you are now configuring, enter the **ip route** command.

```
c6200(config-if)# ip route <dest-ip-address> <mask> <forwarding interface>
```

- To set up a default gateway for the ATM port you are now configuring, enter the **ip default-gateway** command.

```
c6200(config-if)# ip default-gateway <gateway-ip-addr>
```

Step 7 Set up the corresponding PVC, IP address, and static route (if you configured a static route in Step 6) on the router that connects the Cisco 6200 management station to the ATM network.

Step 8 Verify the connection by pinging from the management station to the Cisco 6200 ATM port's IP address.

Note No IP routing is supported other than static routing or default gateway. Do not turn on IP routing.

4.6 Balancing Parameter Settings on a DMT Line

Some of the parameters that control the behavior of lines on the 8-port DMT card are interdependent. Specifically, the attainable bit rate determines what the maximum codeword size (symbols per codeword) can be, and the codeword size, in turn, influences the allowable values for the interleaving delay and FEC check bytes parameters. See Table 4-1.

Table 4-1 Parameter Dependencies on a DMT Line

| Bit Rate | Maximum Codeword Size | Allowable Check Bytes Settings | Allowable Interleaving Delay Settings |
|-------------------|-----------------------|---|---------------------------------------|
| 32 to 352 Kbps | 16 | 0 or 16 | 0, 8 or 16 |
| 384 to 800 Kbps | 8 | 0, 8 or 16 | 0, 4, 8 or 16 |
| 832 to 1728 Kbps | 4 | 0, 4, 8, 12, or 16 | 0, 2, 4, 8 or 16 |
| 1760 to 3584 Kbps | 2 | Any value (0, 2, 4, 6, 8, 10, 12, 14, 16) | 0, 1, 2, 8 or 16 |
| 3616 to 8032 Kbps | 1 | Any value (0, 2, 4, 6, 8, 10, 12, 14, 16) | 0, 1, 2, 8 or 16 |

Cisco recommends that you leave the codeword size, check bytes, and interleaving delay parameters set to their defaults.

However, if you want to change these values, follow these steps:

Step 1 To determine the bit rate attainable on the line, first use these interface configuration commands to set the parameters to their default values:

```
c6200(config-if)# no dsl check-bytes
c6200(config-if)# no dsl symbols-codeword
c6200(config-if)# no dsl int-delay
```

Step 2 Bring up the interface and use the **show dsl interface** command to display the actual bit rate at which the line trains. For example, this command displays the bit rates and other information for port 2 in slot 5:

```
c6200# show dsl int dsl 5/2
```

Step 3 Use the **dsl check-bytes**, **dsl symbols-codeword**, and **dsl int-delay** interface configuration commands to set the parameters, following the guidelines in Table 4-1.

