



Configuring General Switch Features

This chapter describes how to set up general switch features that apply to multiple switch interfaces, beginning with a configuration quickstart procedure, which introduces the configuration tasks. The following sections provided detailed information on how to complete the configuration tasks.

Configuration Quickstart

The quickstart procedure is provided as an overview and as a quick reference for those who have already configured MGX 8850 and MGX 8950 switches.

	Command	Purpose
Step 1	<code>sysVersionSet <i>version</i></code> <code>reboot</code>	<p>Select the runtime firmware version the switch will use on the PXM45 card and restart the switch with that firmware. For example:</p> <pre>sysVersionSet "002.001.000.000"</pre> <p>Note that these commands must be entered at the PXM45 backup boot prompt: <code>pxm45bkup></code>.</p> <p>See “Initializing the Switch,” which appears later in this chapter.</p>
Step 2	<code><i>username</i></code> <code><i>password</i></code>	<p>Start a management session.</p> <p>For instructions on starting a session from a terminal or workstation attached to the Console Port (CP), see “Starting a CLI Management Session After Initialization,” which appears later in this chapter.</p> <p>For information on other ways to manage a switch, see “Appendix C, “Supporting and Using Additional CLI Access Options.”</p> <p>Note To perform all the procedures in this quickstart procedure, you must log in as a user with SERVICE_GP privileges. The default user with these privileges is <i>service</i> and the default password is supplied with your switch. For more information on access privileges, see “Configuring User Access,” which appears later in this chapter.</p>

	Command	Purpose
Step 3	adduser <username> <accessLevel> Related commands: cnfpasswd cnfuser <options> deluser <username>	Configure user access. This step is optional. See “ Configuring User Access ,” which appears later in this chapter.
Step 4	cnfname <node name>	Configure the switch name. See “ Setting and Viewing the Switch Name ,” which appears later in this chapter.
Step 5	cnfdate <mm:dd:yyyy> cnftmzn <timezone> cnftmzngmt <timeoffsetGMT> cnftime <hh:mm:ss> Related commands: dsptime	Configure the switch time. See “ Viewing and Setting the Switch Date and Time ,” which appears later in this chapter.
Step 6	addcontroller <options> cnfpnni-node <options> cnfspvcprfx <options> Related commands: dspscontrollers dspspvcprfx dsppnni-summary-addr	Configure basic PNNI node parameters which include the PNNI controller, PNNI level, peer group ID, ATM address, node ID, and SPVC prefix. See “ Configuring PNNI Node Parameters ,” which appears later in this chapter.
Step 7	addcontroller <options> Related commands: dspscontrollers	Add the MPLS controller. See “ Configuring the MPLS Controller ,” which appears later in this chapter.

	Command	Purpose
Step 8	<code>cnfclksrc <options></code>	Configure any BITS clock ports the switch will use. This step is optional. See “ Configuring BITS Clock Sources ,” which appears later in this chapter. Note For information on configuring AXSM line clock sources, refer to “ Configuring AXSM Line Clock Sources ” in Chapter 5, “ Provisioning AXSM Communication Links .”
Step 9	<code>bootChange</code> <code>ipifconfig <options></code>	Set the IP address or addresses for LAN access. See “ Setting the LAN IP Addresses ,” which appears later in this chapter.
Step 10	<code>cnfsnmp community [string]</code> <code>cnfsnmp contact [string]</code> <code>cnfsnmp location [string]</code> Related commands: <code>dspsnmp</code>	Configure SNMP management. See “ Configuring for Network Management ,” which appears later in this chapter.
Step 11	<code>dspcds</code> <code>dspcd</code> <code>cc <slotnumber></code>	Verify the hardware configuration. See “ Verifying the Hardware Configuration ,” which appears later in this chapter.

Initializing the Switch

After you assemble a new switch, as described in either the *Cisco MGX 8850 Routing Switch Hardware Installation Guide* or the *Cisco MGX 8950 Routing Switch Hardware Installation Guide*, you must initialize the switch before you can configure it. Although PXM45 cards ship with the latest version of boot firmware on the front card, the runtime firmware cannot be loaded until both front and back cards have been installed. When you initialize the switch, you are configuring the switch to load a specific runtime firmware version from the PXM45 hard disk back card.

A new switch must be initialized using a console port management session. As shown in [Figure 2-1](#), a console port management session requires a terminal or workstation with a serial connection to the Console Port (CP) port on the PXM45 UI-S3 back card.



Note

Note that some or all of the commands discussed in this section require service-level or above user privileges. To access these commands, you must have debug (Service or StrataCom level) privileges and passwords. Check with TAC for assistance.

Figure 2-1 Workstation Connection to Console Port

To initialize the switch, use the following procedure.

-
- Step 1** Physically connect a terminal or workstation to the PXM45 UI-S3 back card as shown in [Figure 2-1](#). You can use any personal computer or UNIX workstation with VT-100 emulation software.



Note You can connect the terminal to a PXM45 in either slot 7 or slot 8.

- Step 2** Start the terminal, or, if you are using a workstation, start a terminal emulation program and configure it to connect to the switch through the serial port on the workstation. For instructions on configuring the terminal emulation program, refer to the documentation for the program.

The default switch configuration supports the following settings: 9600 bps, 8 data bits, no parity, 1 stop bit, no hardware flow control.

- Step 3** At the workstation, enter the command that connects the terminal emulation program to another computer.

- Step 4** If the switch power is not on, turn on the switch power as described in either the *Cisco MGX 8850 Routing Switch Hardware Installation Guide* or the *Cisco MGX 8950 Routing Switch Hardware Installation Guide*.



Note You can connect the workstation to the switch before or after power is applied. If you connect the terminal emulation program to the switch before power is applied, the terminal emulation program displays the switch startup messages.

Step 5 If the switch does not display any messages or prompt, press **Return**.

When startup is complete for an uninitialized switch, it will display the PXM45 backup boot prompt:

```
pxm45bkup>
```

Step 6 Locate and write down the version number for the runtime firmware provided with your switch. You need this version number to complete the next step.

The version number is listed in the *Release Notes for Cisco WAN MGX 8850 Software Release 2.1.60* and the *Release Notes for Cisco WAN MGX 8950 Software Release 2.1.60*, and must be entered using the same format listed in the firmware file name. For example, if the firmware filename is `pxm45_002.001.060.000_mgx.fw`, the firmware version number you will enter is **002.001.060.000**.

Step 7 When the PXM45 backup boot prompt appears, define the PXM45 runtime firmware version by entering the `sysVersionSet` command as follows:

```
pxm45bkup> sysVersionSet version
```

Replace `version` with the version number for the runtime firmware. For example:

```
pxm45bkup> sysVersionSet 002.000.001.000
```

Step 8 Reboot the switch by entering the `reboot` command as follows:

```
pxm45bkup> reboot
```

During initialization, the switch will appear to boot twice. When the reboot is complete, the switch displays the Login prompt, which indicates that the firmware is loaded and the switch is ready for configuration.



Tips

The `sysVersionSet` command has failed if the switch reboot process stops and displays the message “Can not open file C:/version” or the message “Unable to determine size of C:/FW/filename.” If this happens, press **Return** to display the backup boot prompt, then refer to “[Troubleshooting Upgrade Problems](#)” in [Appendix A, “Downloading and Installing Software Upgrades.”](#)

Step 9 To log in to the switch, enter the login name supplied with your switch, then enter the password for that login name. For example:

```
Login: cisco
password:
unknown.7.PXM.a >
```



Note

If the switch has not fully started and is operating in init state (which is also called stage 1 CLI mode), an `i` appears in the switch prompt: `unknown.7.PXM45.i>`. In this mode, you can only log in with the user id and password supplied with the switch, and a limited set of commands are available for troubleshooting. If you log in during init state and the card progresses to the active or standby state, the card will log out the init state user and prompt you to log in again. At this point, you can log in as a configured user with the corresponding password.



Note

The number `7` in the switch prompt indicates that you are managing the PXM45 in slot 7. If you are managing the PXM45 in slot 8, the switch prompt displays the number 8.

The switch does not display the password during login. When login is complete, the switch prompt appears.

The switch prompt for PXM45 and AXSM cards uses the following format:

```
nodename.slot.cardtype.state>
```

Table 2-1 describes the components in the CLI prompt.

Table 2-1 CLI Prompt Components

Component	Description
nodename	The <i>nodename</i> is the name of the node. When a new switch starts up, the node name is set to “unknown.” To change the name, see “ Setting and Viewing the Switch Name ,” which appears later in this chapter.
slot	The <i>slot</i> number indicates the physical slot in which the card you are configuring is installed. For most switch configuration procedures, configure the switch using the PXM45 cards in slots 7 and 8. For many line and trunk configuration procedures, you need to modify service modules (such as the AXSM card), which are installed in the other slots.
cardtype	The <i>cardtype</i> identifies the model of the card, such as PXM or AXSM.
state	The card <i>state</i> is active (a), standby (s), or init (i). Cards are labeled as <i>init</i> while they are initializing during switch startup.



Note The prompt for RPM cards uses a different format and displays only the name assigned to the router on the card. For example: `Router>`. This switch prompt comes from the Cisco Internetworking Operating System (IOS) that runs on the card.



Tips

To make it easier to identify the RPM cards in your switch, choose card names that identify the switch and slot that hosts the card. You can set the card or router name in global configuration mode with the **hostname** command.

After initialization, the PXM45 card in the initialized slot becomes active. If a second PXM45 is installed in the other slot, the active PXM45 initiates a runtime firmware load on the other slot. After the runtime firmware loads on the nonactive PXM45, the card enters standby mode, ready to take control if the active card fails.

After you log in, the switch maintains your session for the default period of 10 minutes (600 seconds) after the last keystroke is entered. If the session is idle longer than 600 seconds, the session is terminated.



Tips

To restart an automatically terminated session, press **Return**. The switch will prompt you for a login name and password.

Step 10 To change the session time-out period, enter the **timeout** command as follows:

```
unknown.7.PXM.a > timeout <seconds>
```

Replace *seconds* with the number of seconds you want the session to remain active before it times out. The maximum value is 600. To disable time-out, enter 0 seconds. The switch uses the new timeout value until you terminate the session. Each time a new session is started, the timeout value returns to the default value, 600 seconds.

Once you have completed the procedure above, you have established a Command Line Interface (CLI) management session. You can use a CLI management session to configure or monitor the switch.

Starting a CLI Management Session After Initialization

After initialization, you can terminate and start sessions at any time using the terminal or workstation connection to the CP port, which was described in the previous section.



Tips

The switch also supports several other types of management connections, including remote connections. For instructions on supporting and starting other types of CLI management sessions, see [Appendix C, “Supporting and Using Additional CLI Access Options.”](#)



Note

Note that some or all of the commands discussed in this section require service-level or above user privileges. To access these commands, you must have debug (Service or StrataCom level) privileges and passwords. Check with TAC for assistance.

To start a CLI management session at the CP port for switch configuration and monitoring, use the following procedure.

-
- Step 1** Turn on the terminal or start the terminal session.
- For instructions on preparing the terminal and the connection, refer to the previous section, “[Initializing the Switch.](#)”
- Step 2** If the `Login` prompt does not appear, press **Return**. The `Login` prompt comes from the switch and indicates that the terminal has successfully connected to the switch.
- Step 3** When the `Login` prompt appears, enter the login name supplied with your switch, then enter the password for that login name. For example:

```
Login: superuser
password:

pop20one.7.PXM.a >
```



Note

The default configured username and password sets are supplied with your switch. To perform most of the procedures in this chapter, you will need to login as a user with `SUPER_GP` privileges or higher. The default username with these privileges is *superuser*.

**Note**

If the switch has not fully started and is operating in init state (which is also called stage 1 CLI mode), an `i` appears in the switch prompt: `unknown.7.PXM45.i>`. In this mode, you can only log in with the user name and password supplied with your switch, and a limited set of commands are available for troubleshooting. If you log in during init state and the card progresses to the active or standby state, the card will log out the init state user and prompt you to log in again. At this point, you can log in as a configured user with the corresponding password.

The switch does not display the password during login. When login is complete, the switch prompt appears.

The switch prompt for PXM45 and AXSM cards uses the following format:

```
nodename.slot.cardtype.state>
```

Table 2-1 describes the components in the switch prompt.

**Note**

The switch prompt for RPM cards uses a different format and displays only the name assigned to the router on the card. For example: `Router>`.

After you log in, the switch maintains your session for 10 minutes (600 seconds) after the last keystroke is entered. If the session is idle longer than 600 seconds, the session is terminated.

**Tips**

To restart an automatically terminated session, press **Return**. The switch will then prompt you for a login name and password.

Step 4

To change the session time-out period, enter the **timeout** command as follows:

```
unknown.7.PXM.a > timeout <seconds>
```

Replace *seconds* with the number of seconds you want the session to remain active before it times out. The maximum value is 600. To disable timeout, enter 0 seconds. The switch uses the new timeout value until you terminate the session. Each time a new session is started, the timeout value returns to the default value, 600 seconds.

Once you have completed the procedure above, you have established a Command Line Interface (CLI) management session. You can use a CLI management session to configure or monitor the switch.

Ending a CLI Management Session

CLI management sessions automatically terminates after the configured idle time. The default idle time is 600 seconds (10 minutes) and can be changed with the **timeout** command. To manually end a CLI management session, enter the **bye** or **exit** command.

**Note**

The **bye** and **exit** commands end the CLI session. They do not terminate the terminal session. For instructions on terminating the terminal session, refer to the manuals for your terminal or terminal emulation program.

To restart the session after entering the **bye** or **exit** command, press **Return**, and the switch will prompt you for a username and password.

Entering Commands at the Switch Prompt

The commands in the switch operating system are associated with the cards that are installed in the switch. Before you execute a command, you must select a card that supports the command. The switch displays the currently selected card in the switch prompt. For example, the following switch prompt shows that the PXM45 card in slot 7 is selected:

```
mgx8850a.7.PXM.a >
```

To select another card in the switch, enter the following command:

```
mgx8850a.7.PXM.a > cc <slotnumber>
```

Replace *slotnumber* with the slot number of the card you want to manage. [Table 2-2](#) lists the valid slot numbers for each card type.

Table 2-2 Valid Slot Numbers for Each Card Type

Card Type	Valid Slot Numbers MGX 8850	Valid Slot Numbers MGX 8950
PXM45	7 and 8	7 and 8
AXSM	1-6 and 9-14	1-6 and 11-16
RPM	1-6 and 9-14	1-6 and 11-16

After you execute the **cc** command to change cards, verify that you are managing the correct card by viewing the slot number that is shown in the switch prompt. The following example shows the prompt for an AXSM card in slot 9:

```
mgx8850a.9.AXSM.a >
```

If you have trouble executing a command, look at the switch prompt to see if you have selected the correct card and type for the command. The following example shows the response to an unrecognized command:

```
mgx8850a.9.AXSM.a > dspdate
ERR: unknown command: "dspdate"
```

The **dspdate** command must be run on a PXM45 card. It is not recognized by an AXSM card.



Tips

The command examples in this book include the switch prompt so that you can verify which card types support specific commands.

The default switch configuration allows you to enter command abbreviations. Because the **help** command is the only command that begins with **he**, you can use the abbreviated **he** command to display help. The following example demonstrates that the switch recognizes partial commands and displays long reports one page at a time.

```
mgx8850a.7.PXM.a > he

  Available commands
  -----
  ?
  abortallsaves
  abortofflinediag
  abortrev
  actaudit
  addaddr
  addcontroller
  addfltset
  addlink
  addlnloop
  addlpback
  addpnni-node
  addpnni-summary-addr
  addpnport
  addprfx
  addred
  addserialif
  addtrapmgr
  adduser
```

Type <CR> to continue, Q<CR> to stop:



Tips

To disable the command abbreviation feature, use the **cnfcmdabbr** command. To display the current setting for this option, enter the **dspcmdabbr** command.

Notice the last line of the help command display. Because the help report is too long to appear on one screen, it is displayed in pages. Press **Return** to display the next page, or type **q** and press **Return** to cancel the report display.

The following example demonstrates what can appear when a command is entered at the wrong card prompt.

```
mgx8850a.9.AXSM.a > dspcds
ERR: incorrect number of parameters: (not enough)
Syntax: dspcdsct <bw|gen|cosb|vcThr|cosThr>

  bw|gen|cosb|vcThr|cosThr -- bw: Bandwidth parameters
  gen: policing and CAC parameters
  cosb: cosb parameters
  vcThr: vc threshold parameters
  cosThr: cosb threshold parameters
```

In the example above, the **dspcds** command is entered at the AXSM card prompt, but this command is not supported on the AXSM card (although the **dspcd** command is). Because the command is not recognized, the switch matches it to a command that is supported, which is the **dspcdsct** command. Because the command was entered without parameters, the switch displays an error message and the correct format for entering the **dspcdsct** command.

Whenever the switch displays an error message, be sure to check the spelling of the command, the parameters entered with the command, and the prompt at which the command was entered.

Getting Command Help

The following sections describe how to display the following types of command help:

- Available commands
- Available commands with additional information on access levels and logging
- Command syntax and parameters

Displaying Command Lists

The commands you can use to manage the switch are determined by your user name, which is configured for a particular access level. User names and access levels are described in more detail in “[Configuring User Access](#),” which appears later in this chapter. To display a list of all the commands available to the username you used at log in, enter the **help** command as follows:

```
mgx8850a.7.PXM.a > help
```

To display a list of commands that include a common set of characters, enter a question mark and the common set of characters, as shown in the following example:

```
mgx8850a.7.PXM.a > ? ip
```

```
Available commands
-----
cliPlugin
cliPlugout
cnfifip
cnfilmiproto
cnftrapip
delifip
dspifip
dspipconntask
dspipif
dspipifcache
dsptrapip
ipifconfig
pntracevsipkt
```

Displaying Detailed Command Lists

Detailed command lists display the following additional information for each command:

- The access level required to execute the command
- The card state in which the command can be executed
- Whether command execution is logged



Note

To display detailed command lists, you must establish a session using a username with SERVICE_GP privileges or higher (access privileges are described later in this chapter in “[Configuring User Access](#).”). You can also find this information in the *Cisco MGX 8850 and MGX 8950 Switch Command Reference*.

To enable detailed command lists, enter the **clidbxlevel** command as shown in the following example:

```
pop20two.7.PXM.a > clidbxlevel 1
Value of cliDbxLevel is now 1
```

After you enter this command, you can display detailed command lists by entering the **help** command as shown in the following example:

```
M8850_LA.7.PXM.a > ?
```

Command	Access	Card	Log
?	ANYUSER	A S I	-
abortallsaves	GROUP1	A	+
abortofflinediag	SERVICE_GP	A S	-
abortrev	SERVICE_GP	A S	+
actaudit	SUPER_GP	A	+
addaddr	GROUP1	A	+
addcontroller	SUPER_GP	A	+
addfltset	GROUP1	A	+
addlink	ANYUSER	A	-
addlnloop	ANYUSER	A	+
addlpback	GROUP1	A	-
addpnni-node	SUPER_GP	A	+
addpnni-summary-addr	SUPER_GP	A	+
addpnport	GROUP1	A	+
addprfx	GROUP1	A	+
addred	SUPER_GP	A	+
addserialif	SUPER_GP	A	-
addtrapmgr	SUPER_GP	A	+
adduser	GROUP1	A	+

Type <CR> to continue, Q<CR> to stop:



Note

After you enter the **clidbxlevel** command, the **help** command displays detailed reports for that session only. You can disable detailed reports by entering the **clidbxlevel 0** command. Every time you start a new session, detailed command lists are disabled.

The Access column shows the access level required to execute the command. Access levels are described in “[Configuring User Access](#),” which appears later in this chapter.

The Card column identifies the card states during which the command can be executed. Valid card states are active, standby, and init. Cards are labeled as *init* during switch startup. The options that appear in the Card column are described in [Table 2-3](#).

If a plus symbol appears in the Log column, each successful execution of the command is logged. If a minus symbol appears in the column, the command is not logged.

Table 2-3 Card State Descriptions

Card State	Description
A	Command is supported when card state is active.
I	Command is supported when the card state is in init state.
S	Command is supported in standby state.

Displaying Command Syntax and Parameters

To display the syntax of a command, enter the command without any parameters. The following example shows the syntax report provided by the switch using the **addport** command.

```
pop20two.1.AXSM.a > addport
ERR: incorrect number of parameters: (not enough)
Syntax: addport "<ifNum> <bay.line> <guaranteedRate> <maxRate> <sctID> <ifType>
        [vpi]"
        If Number -- number between 1 and 60
        Line Number -- format bay.line
        Guaranteed virtual int. Rate -- rates in cells/sec:
        Max virtual int. Rate -- for OC48:between 50 and 5651320
                                for OC12:between 50 and 1412830
                                for OC3:between 50 and 353207
                                for T3:between 50 and 96000 (PLCP), 104268 (ADM)
                                for E3:between 50 and 80000
        SctID -- Port SCT Id between 0 and 255, for default file use 0
        IfType -- 1: uni 2: nni 3: vnni
        vpiNum -- vpi between 1 and 4095:
                    used for configuring interface as virtual trunk
```

When a parameter is shown between less-than (<) and greater-than (>) symbols, the parameter represents a variable that must be replaced by a value. The values are described below the command syntax.

When the parameter is shown between brackets ([]), it is an optional parameter. If you omit an optional parameter, most commands will use the last value defined for the option. If no value has been assigned to an option, the default value is used.



Note

Some commands, such as **dspcd** and **saveallcnf**, do not require parameters, so entering the command without parameters executes the command. When you enter the **saveallcnf** command, which saves the current switch configuration to a file, the switch prompts you to confirm the save before execution begins. Whenever the switch prompts you to confirm a command, the command you are confirming is likely to change the switch configuration, reduce switch performance, or take a long time to execute.



Tips

To see the syntax of a command that does not require parameters, enter the command with a parameter you know is incorrect. For example:

```
8850_NY.7.PXM.a > dspcd jim
ERR: Invalid Slot number specified
ERR: Syntax: dspcd ["slot_number"]
        slot number -- optional;
```

Configuring User Access

The usernames and passwords supplied with your switch provide access to all switch features, and they allow you to add and delete users and change user passwords.

When configuring user access for the switch, consider the following recommendations:

- Change the default passwords provided with your switch. These passwords are published on the Cisco website and enable anyone with local or remote network access to configure and manage your switch.
- Share the usernames and passwords with only one or two people.
- If usernames and passwords become common knowledge during the switch installation and configuration, change the passwords.
- If additional users need access to the switch, create usernames and passwords below the top levels so that these users cannot access or modify the top-level user information.

The following sections describe how to add users, change passwords for existing users, delete users, and recover the user password.

Adding Users

The switch supports up to 50 users. When you add users, you must specify the following for each user:

- user name
- password
- access level

The user name and password identify the user and determine the user access level for switch management.

An access level must be assigned to a user when the user is added to the switch. The access levels listed in [Table 2-4](#) are used throughout this guide to indicate the level of access required to execute a command or complete a procedure. These access levels are also called access privileges. If a user has access privileges at a lower level than a command requires, the user cannot execute the command. If the user has access privileges at the level required or at a higher level, the user can execute the command.

Table 2-4 User Access Levels

Access Level	Descriptions
CISCO_GP	<p>This is the highest user access level. Users with this access level have complete access to all commands.</p> <p>There is only one user at the CISCO_GP level, and that username is supplied with your switch. Again, Cisco Systems recommends that you change the default passwords when you install a switch.</p> <p>Users at the CISCO_GP access level can add users, delete users, change passwords, and change access levels for users at the following levels: SERVICE_GP, SUPERUSER_GP, GROUP1, and ANYUSER.</p>
SERVICE_GP	<p>This access level allows access to commands that update switch firmware, save and restore the switch configuration, and enable debugging. This access level also provides access to all commands in all lower access levels: SUPERUSER_GP, GROUP1, and ANYUSER.</p> <p>The default username is <i>service</i>. The default password is supplied with your switch.</p> <p>Users at the service access level can add users, delete users, change passwords, and change access levels for users at the following levels: SUPERUSER_GP, GROUP1, and ANYUSER.</p>
SUPER_GP	<p>This access level allows users to configure switch level parameters such as the node name, date, and interface IP addresses. Users at this level can also enable traces. This access level also provides access to all commands in all lower access levels: GROUP1 and ANYUSER.</p> <p>The default username is <i>superuser</i>, and the default password is <i><superuser></i>.</p> <p>Users at the superuser access level can add users, delete users, change passwords, and change access levels for users at the following levels: GROUP1 and ANYUSER.</p>
GROUP1	<p>This access level allows users to configure line and port level parameters and create SPVCs and Soft Permanent Virtual Paths (SPVPs). This access level also provides access to all commands at the ANYUSER access level.</p> <p>No default username and password is provided for this access level.</p> <p>Users at the GROUP1 access level can add users, delete users, and change passwords for users at the ANYUSER access level.</p>
ANYUSER	<p>This access level allows users to run display and status commands that display the switch configuration and operational status.</p> <p>No default username and password is provided for this access level.</p>

**Note**

Earlier releases of the MGX 8850 software supported users at levels Group 2 through Group 5. These user levels have been removed from the software. If you upgrade a switch that has users configured at these levels, the user level for the affected users will change to Group 1 level access during the upgrade.

To add a user to the switch, use the following procedure.

Step 1 Establish a CLI management session with GROUP1 privileges or higher. To add a user at a specific access level, you must log in as a user with a higher access level.

Step 2 Enter the following command after the switch prompt:

```
mgx8850a.7.PXM.a >adduser <username> <accessLevel>
```

Enter the *username* using 1 to 12 alphanumeric characters. Specify the access level by entering one of the levels defined in [Table 2-4](#).



Note The access levels are case-sensitive and must be entered as shown in [Table 2-4](#). Also, you cannot add users at access levels that are equal to or above your own access level.

If you enter the command correctly, the switch prompts you for a password.

Step 3 Enter a password, using 5 to 15 characters.

Step 4 When prompted, enter the password a second time to validate the previous entry.

This completes the addition of the new user.

Step 5 To display the new user in a list of all users, enter the command **dspusers**.



Tips

To determine which commands are available at a particular access level, log in to the switch as a user at that access level, then enter the **help** command.

Step 6 To test the username, enter the **bye** command, then log in as the new user.



Tips

If you forget which username you used to log in, enter the **whoami** command. This command displays the username, access level, and access method (for example, Telnet) for the current session.

Changing Your Own User Password

Use the **cnfpasswd** command to change your own password.



Note

The **cnfuser** command allows you to change another user password if you have the correct access privileges. The next section describes how to use the **cnfuser** command.

To change your own password with the **cnfpasswd** command, use the following procedure.

Step 1 Establish a CLI management session using the username for which you want to change the password.

Step 2 Enter the following command after the switch prompt:

```
mgx8850a.7.PXM.a >cnfpasswd
```

Step 3 When prompted, enter your current password.

- Step 4** When prompted, enter a new password, using 5 to 15 characters.
- Step 5** When prompted, enter the new password a second time to validate the correct entry.
This completes the change of password.
- Step 6** To test the new password, enter the **bye** command, then log in using the new password.

Changing User Access Levels and Passwords with **cnfuser**

After you create a user, you can change that user's access level or password using the **cnfuser** command.



Note You can also change your own user password with the **cnfpasswd** command as described in the preceding section.

To change the user level or password of a switch user, use the following procedure.

- Step 1** Establish a CLI management session. Use either the username for which you want to change the password, or a username with privileges at least one level higher than those of the user whose password you want to change.

- Step 2** Enter the following command after the switch prompt:

```
mgx8850a.7.PXM.a > cnfuser -u <username> [-p <password>] [-l <accessLevel>]
```

Replace *username* with the name of the user for whom you are making the change.

If you are changing the password, specify the **-p** option and enter a password containing from 5 to 15 characters. If you are changing the user access level, specify the **-l** (lowercase L) option and enter the appropriate access level as shown in [Table 2-4](#).



Note You can change passwords and access levels only for users who have privileges lower than the username you used to log in.

- Step 3** To test a new password, enter the **bye** command, then log in using the new password.

- Step 4** To verify a user access level change, enter the **dspusers** command.

The **dspusers** command displays all the usernames and the access level for each user as shown in the following example:

```
pop20two.7.PXM.a > dspusers

  UserId          AccessLevel
  -----
  cisco           CISCO_GP
  service         SERVICE_GP
  superuser       SUPER_GP
  username        GROUP1
```

Deleting Users

To delete a user, use the following procedure.

-
- Step 1** Establish a CLI management session using a username with privileges at least one level higher than that of the user you want to delete.
- Step 2** Enter the following command after the switch prompt:
- ```
mgx8850a.7.PXM.a >deluser <username>
```
- Enter the *username* using from 1 to 12 alphanumeric characters.
- This completes the deletion of a user.
- Step 3** To verify the user has been deleted, enter the command **dspusers**.
- 

## Resetting the Default User Password

If you lose or forget your password for switch access, you should ask a user with a higher access level to reset your password using the **cnfuser** command. If you do not have any passwords for any access levels, you can use the following password recovery procedure to reset the password for user *cisco*. This procedure resets the user *cisco* password to the default password supplied with your switch, and leaves all other passwords unchanged. (You can change the other passwords with the **cnfuser** command after logging in as user *cisco*.)



### Note

This feature can be disabled using the **cnfpasswdreset** command as described in the next section. You can determine if this feature is enabled or disabled by logging in as a user at any level and entering the **dsppswdreset** command.

---

- Step 1** Establish a physical connection to the switch through the Console Port (CP) connector on the PXM UI-S3 card.



### Caution

Anyone with physical access to the switch Console Port can reset the password, deny access to other users, and reconfigure the switch. To prevent unauthorized switch access and configuration, the switch should be installed in a secure area.

---

- Step 2** When the login prompt appears, press **ESC**, **CTRL-Y** to reset the password.
- Step 3** Log in using username *cisco* and the password supplied with your switch.
- Step 4** To maintain switch security after resetting the *cisco* user password, change the password using the **cnfpasswd** command.
-

## Enabling and Disabling the User Password Reset

If the switch you are managing is in an insecure area, you might want to disable the user password reset feature. Otherwise, anyone with physical access to the switch Console Port can reset the password, deny access to other users, and reconfigure the switch. This feature can be enabled again at a later date if you know the user name and password for a user at the SERVICE\_GP privilege level or higher.

To enable or disable the password reset feature, use the following procedure.

- 
- Step 1** Establish a configuration session using a user name with SERVICE\_GP privileges or higher.
  - Step 2** To disable password reset, enter the **cnfpasswdreset off** command.
  - Step 3** To enable password reset, enter the **cnfpasswdreset on** command.
  - Step 4** To view the status of this feature, enter the **dsppswdreset** command.
- 

## Setting and Viewing the Switch Name

The switch name identifies the switch you are working on, which is important when you are managing multiple switches. The current switch name appears in the CLI prompt when you are managing a PXM45 cards and service modules. To change the switch name, use the following procedure.

- 
- Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.
  - Step 2** Enter the following command after the switch prompt:

```
unknown.7.PXM.a > cnfname <node name>
```

Enter up to 32 characters for the new node name, and since the node name is case-sensitive, be sure to use the correct case. For example:

```
unknown.7.PXM.a > cnfname pop20two
This node name will be changed to pop20two. Please Confirm
cnfname: Do you want to proceed (Yes/No)? y
cnfname: Configured this node name to pop20two Successfully.

pop20two.7.PXM.a >
```

The new name appears immediately in the next CLI prompt.

---

## Viewing and Setting the Switch Date and Time

The switch date and time is appended to event messages and logs. To assure that events are properly time stamped, use the following procedure to view and change the date and time.

- 
- Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.
  - Step 2** To view the current switch date and time, enter the following command after the switch prompt:

```
mgx8850a.7.PXM.a > dsptime
```

**Step 3** To change the switch date, enter the following command:

```
mgx8850a.7.PXM.a > cnfdate <mm/dd/yyyy>
```

**Step 4** To change the time zone, enter the following command:

```
mgx8850a.7.PXM.a > cnftmzn <timezone>
```

Replace *<timezone>* with **one of the parameter values listed in Table 2-5**. If your switch is located outside the Western Hemisphere, select **GMT** and use the next step to specify an offset from GMT. If your switch is located in the Western Hemisphere choose the appropriate option from [Table 2-5](#). *Daylight* times are adjusted by one hour in the Fall and Spring for daylight savings. *Standard* times are not adjusted.

**Table 2-5 Time Zones for cnftmzn Command**

| Parameter Value | Time Zone              |
|-----------------|------------------------|
| CDT             | Central Daylight Time  |
| CST             | Central Standard Time  |
| EDT             | Eastern Daylight Time  |
| EST             | Eastern Standard Time  |
| GMT             | Greenwich Mean Time    |
| MDT             | Mountain Daylight Time |
| MST             | Mountain Standard Time |
| PDT             | Pacific Daylight Time  |
| PST             | Pacific Standard Time  |

**Step 5** To configure an offset from GMT, enter the following command:

```
mgx8850a.7.PXM.a > cnftmzgmt <timeoffsetGMT>
```

Replace *<timeoffsetGMT>* with the offset in hours from GMT. Enter a number from -12 to +12.

**Step 6** To change the switch time, enter the following command:

```
mgx8850a.7.PXM.a > cnftime <hh:mm:ss>
```

Replace *<hh>* with the hour of the day (0 to 23), *mm* with the minute of the hour (0 to 59), and *ss* with the number of seconds in the minute (0 to 59).

**Step 7** To verify the new date and time settings, enter the **dspdate** command.

## Configuring PNNI Node Parameters

The MGX 8850 and MGX 8950 switches support many PNNI configuration commands. This section describes how to configure the basic PNNI configuration parameters for the switch. [Chapter 6, “Managing PNNI Nodes and PNNI Routing,”](#) describes how to manage PNNI after you have brought up the PNNI node.

**Caution**

It is important to configure the PNNI node parameters before you start creating SPVCs as described in [Chapter 5, “Provisioning AXSM Communication Links.”](#) If you create SPVCs using the default PNNI node parameters and later change those parameters, the node will advertise the old ATM address information for the older SPVCs as well as the new ATM address information. To keep PNNI running at maximum efficiency, set the PNNI node parameters to the proper values before creating SPVCs, or delete and recreate old SPVCs after making PNNI node parameter updates.

## Adding the PNNI Controller

The PNNI controller simplifies switch configuration by using PNNI protocol to discover call routes in an ATM network. Without the PNNI controller, each route through the network would have to be defined manually or through an alternative routing mechanism such as MPLS. [Chapter 6, “Managing PNNI Nodes and PNNI Routing,”](#) provides more information on PNNI. This section describes how to enable and configure the PNNI controller for the switch.

**Note**

Before entering the following command, you must log in as a user with SUPER\_GP privileges or higher.

To enable and configure the PNNI controller, enter the following command:

```
8850_LA.7.PXM.a > addcontroller <cntrlrId> i <cntrlrType> <slot> [cntrlrName]
```

[Table 2-6](#) describes the parameters for the **addcontroller** command.

**Tips**

Remember to include the **i** option, which identifies the controller as an internal controller.

**Table 2-6** Parameter Descriptions for the **addcontroller** Command

| Parameter         | Values | Descriptions                                                                                                                                                                                                                     |
|-------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>cntrlrId</i>   | 2      | Controller ID. Enter <b>2</b> to specify a PNNI controller or <b>3</b> to specify an MPLS controller. The MPLS controller is introduced in the next section.                                                                     |
| —                 | i      | Enter the value <b>i</b> . This parameter will support additional values in future releases.                                                                                                                                     |
| <i>cntrlrType</i> | 2 or 3 | Controller type. Enter <b>2</b> to specify a PNNI controller or <b>3</b> to specify an MPLS controller. The MPLS controller is introduced in the next section.                                                                   |
| <i>slot</i>       | 7      | Slot number for PXM45 cards. Enter <b>7</b> or <b>8</b> to specify the PXM45 as the PNNI controller host.                                                                                                                        |
| <i>cntrlrName</i> | text   | Controller name. This parameter is optional. You can enter a text name to identify the PNNI or MPLS controller. If the name you want to use includes one or more space characters, enclose the entire name with quotation marks. |

To display the PNNI controller configuration, enter the **dspcontrollers** command:

```
8850_LA.7.PXM.a > dspcontrollers
```

## Setting the PNNI Level and Peer Group ID

The *Cisco MGX and SES PNNI Network Planning Guide* provides guidelines for selecting a PNNI level and peer group ID. To set these parameters in the switch, use the following procedure.

**Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.

**Step 2** Disable PNNI node operation by entering the following command:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> -enable false
```

The *node-index* uniquely defines a logical PNNI node within the switch. Initially, there is just one logical PNNI node at the lowest PNNI level, and its index number is 1. If you add a higher level logical node to the physical node, the first higher level will be numbered two, and the next higher level will be number three. Additional levels receive sequentially higher node index numbers.

During this general node configuration, you are setting the PNNI level and peer group ID for the lowest PNNI level, so replace *node-index* with 1.



**Note** For instructions on creating logical nodes above the lowest PNNI level, see [Chapter 6, “Managing PNNI Nodes and PNNI Routing.”](#)

**Step 3** Change the PNNI address with the **cnfpnni-node** command as follows:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> [-pgId level:peerGroupID]
```

To configure the lowest PNNI level, replace *<node-index>* with 1. Replace *level* with the PNNI level you want to use, and replace *peerGroupID* with the 13-byte peer group ID you want to use. For example:

```
8850_LA.7.PXM.a > cnfpnni-node 1 -pgId 56:47.00.9181.0000.0100.0000.0000.00
```

**Step 4** Enable PNNI node operation by entering the following command:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> -enable true
```

Replace *node-index* with the value you used when disabling and reconfiguring the PNNI node.

**Step 5** To display the PNNI node configuration, enter the command:

```
8850_LA.7.PXM.a > dsppnni-node
```

The switch displays a report similar to the following:

```
8850_LA.7.PXM.a > dsppnni-node

node index: 1 node name: 8850_LA
Level..... 56 Lowest..... true
Restricted transit.. off Complex node..... off
Branching restricted on
Admin status..... up Operational status.. up
Non-transit for PGL election.. off
Node id.....56:160:47.00918100000000001a531c2a.00001a531c2a.01
ATM address.....47.00918100000000001a531c2a.00001a531c2a.01
Peer group id.....56:47.00.9181.0000.0100.0000.0000.00
```

## Setting the PNNI Node Address

The *Cisco MGX and SES PNNI Network Planning Guide* provides guidelines for setting the PNNI node address, which is also the switch ATM address. To set the PNNI node address, use the following procedure.



### Caution

When installing new switches, you can assume that each default node address will be unique. When PXM45 cards are repaired or moved between switches, however, it is possible that two switches will start using the same node address. To prevent duplicate node addresses, use your own address plan, and check the node address whenever a PXM45 card is replaced or moved from one switch to another.

**Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.

**Step 2** Disable PNNI node operation by entering the following command:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> -enable false
```

The *node-index* uniquely defines a logical PNNI node within the switch. Initially, there is just one logical PNNI node at the lowest PNNI level, and its index number is 1. If you add a higher level logical node to the physical node, the first higher level will be numbered two, and the next higher level will be number three. The node index is a reference to particular logical PNNI process in the node.

The PNNI address is configured at the lowest PNNI level, so replace *<node-index>* with 1.



### Note

The PNNI address you enter at the lowest level is used for all levels. PNNI increments the selector byte (which is the last byte) of the ATM address to represent logical nodes at higher PNNI levels.

**Step 3** Change the PNNI address with the **cnfpnni-node** command as follows:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> [-atmAddr atm-address]
```

To configure the lowest PNNI level, replace *<node-index>* with 1, and replace *atm-address* with the 20-byte ATM address you want to use. For example:

```
8850_LA.7.PXM.a > cnfpnni-node 1 -atmAddr 47.00918100000100001a531c2a.00001a531c2a.01
```



### Note

The ATM address in the example above shares the same seven most-significant bytes (level 56 peer groups use the first 7 bytes) as the peer group ID example in the previous section, so PNNI can advertise only the peer group ID outside of the peer group. If the ATM address and peer group ID used different prefixes, PNNI would have to advertise the node ATM address and the peer group ID. The ATM address should conform to your ATM address plan. For more information, refer to the *Cisco MGX and SES PNNI Network Planning Guide*.



### Tips

Use the Copy and Paste functions of terminal session software to copy an existing ATM address into the command line. Then you can use your editing keys to make changes to the address before pressing **Enter** to execute the command.

**Step 4** Enable PNNI node operation by entering the following command:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> -enable true
```

Replace *<node-index>* with the value you used when disabling and reconfiguring the PNNI node.

**Step 5** To display the PNNI node configuration, enter the command:

```
8850_LA.7.PXM.a > dsppnni-node
```

The switch displays a report similar to the following:

```
8850_LA.7.PXM.a > dsppnni-node
```

```
node index: 1 node name: 8850_LA
Level..... 56 Lowest..... true
Restricted transit.. off Complex node..... off
Branching restricted on
Admin status..... up Operational status.. up
Non-transit for PGL election.. off
Node id.....56:160:47.009181000001000001a531c2a.00001a531c2a.01
ATM address.....47.009181000001000001a531c2a.00001a531c2a.01
Peer group id.....56:47.00.9181.0000.0100.0000.0000.00
```

## Setting the PNNI Node ID

The PNNI node ID appears in many CLI displays, including the **dsppnni-node** command display. The default node ID is *PNNIlevel:160:defaultATMAddress*. If you change the PNNI level or the node ATM address, you should also change the node ID so that the node ID represents the correct PNNI level and ATM address. This will make it easier to identify the node when using CLI commands because most CLI commands reference the node ID, not the node ATM address. For example:

```
8850_LA.7.PXM.a > dsppnni-link
```

```
node index : 1
Local port id: 16848897 Remote port id: 16848897
Local Phy Port Id: 1:2:1:1
Type. lowestLevelHorizontalLink Hello state..... twoWayInside
Derive agg..... 0 Intf index..... 16848897
SVC RCC index..... 0 Hello pkt RX..... 22366
 Hello pkt TX..... 22178

Remote node name.....8950_SF
Remote node id.....56:160:47.00918100000100036b5e31b3.00036b5e31b3.01
Upnode id.....0:0:00.000000000000000000000000000000.000000000000.00
Upnode ATM addr.....00.000000000000000000000000000000.000000000000.00
Common peer group id...00:00.00.0000.0000.0000.0000.0000.00
```

In the example above, there is no reference to the ATM address for the remote switch named 8950\_SF. However, if the node ID is set to match the ATM address, it will be easy to determine the ATM address of a remote switch.

To set the PNNI node ID, use the following procedure.

**Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.

**Step 2** Disable PNNI node operation by entering the following command:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> -enable false
```

The *node-index* uniquely defines a logical PNNI node within the switch. Initially, there is just one logical PNNI node at the lowest PNNI level, and its index number is 1. If you add a higher level logical node to the physical node, the first higher level will be numbered two, and the next higher level will be number three. The node index is a reference to particular logical PNNI process in the node.

The PNNI node ID is configured at the lowest PNNI level, so replace *<node-index>* with 1.



**Note** The node ID you enter at the lowest level is used for all levels. PNNI uses a modified version of the lowest level node ID for upper level nodes.

**Step 3** Change the PNNI node ID with the **cnfpnni-node** command as follows:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> [-nodeId PNNIlevel:160:atm-address]
```

To configure the lowest PNNI level, replace *<node-index>* with 1. Replace *PNNIlevel* with the lowest PNNI level, and replace *atm-address* with the 20-byte ATM address you want to use. For example:

```
8850_LA.7.PXM.a > cnfpnni-node 1 -nodeId
56:160:47.00918100000100001a531c2a.00001a531c2a.01
```

**Step 4** Enable PNNI node operation by entering the following command:

```
8850_LA.7.PXM.a > cnfpnni-node <node-index> -enable true
```

Replace *<node-index>* with the value you used when disabling and reconfiguring the PNNI node.

**Step 5** To display the PNNI node configuration, enter the command:

```
8850_LA.7.PXM.a > dsppnni-node
```

The switch displays a report similar to the following:

```
8850_LA.7.PXM.a > dsppnni-node

node index: 1 node name: 8850_LA
Level..... 56 Lowest..... true
Restricted transit.. off Complex node..... off
Branching restricted on
Admin status..... up Operational status.. up
Non-transit for PGL election.. off
Node id.....56:160:47.00918100000100001a531c2a.00001a531c2a.01
ATM address.....47.00918100000100001a531c2a.00001a531c2a.01
Peer group id.....56:47.00.9181.0000.0100.0000.0000.00
```

## Setting and Viewing the SPVC Prefix

The *Cisco MGX and SES PNNI Network Planning Guide* provides guidelines for selecting the SPVC prefix. The SPVC prefix is the ATM prefix that PNNI advertises for all SPVCs and Soft Permanent Virtual Paths (SPVP) on this node. The ATM address for each SPVC and SPVP is the combination of the SPVC prefix and a port identification number.

You can configure one SPVC node prefix per node. To set the SPVC prefix, use the following procedure.

**Note**

Although the SPVC prefix is set to match the first 13 bytes of the PNNI node address by default, changing either the PNNI node address or the SPVC prefix has no effect on the other setting. If the PNNI node ATM address and the SPVC prefix do not match, the switch advertises both prefixes instead of just one, and this advertising takes additional bandwidth.

**Note**

You can change the SPVC prefix only when no SPVCs or SPVPs have been defined. Once an SPVC has been defined, you must delete all SPVCs before you can change the SPVC prefix. For information on deleting SPVCs, see “Deleting SPVCs and SPVPs” in Chapter 5, “Provisioning AXSM Communication Links.”

**Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.

**Step 2** Use the following command to display the current SPVC prefix:

```
8850_LA.7.PXM.a > dspsvcprfx
```

The switch response is similar to the following:

```
8850_LA.7.PXM.a > dspsvcprfx
SPVC Node Prefix: 47.0091810000000001a531c2a
```

**Tips**

If the SPVC prefix begins with 47.009181000000, the SPVC prefix is probably set to the default value. To display the current PNNI node address, enter the **dsppnni-node** command.

**Step 3** To change the SPVC prefix, enter the following command:

```
8850_LA.7.PXM.a > cnfsvcprfx -prfx <prefix>
```

Replace *prefix* with the 13-byte prefix you want to use. For example:

```
8850_LA.7.PXM.a > cnfsvcprfx -prfx 47.00918100000100001a531c2a
```

**Note**

The SPVC prefix in the example above matches the first 13 bytes of the node PNNI address example presented in the previous section, so PNNI can advertise one prefix to support both SVC connections through the node and SPVCs. If the SPVC prefix does not match the corresponding bytes in the ATM address, PNNI advertises two prefixes instead of one. The SPVC prefix should conform to your ATM address plan. For more information, refer to the *Cisco MGX and SES PNNI Network Planning Guide*.

**Note**

The SPVC node prefix for each node must be unique within the network.

**Step 4** Verify the correct entry of the prefix by entering the **dspsvcprfx** command.

## Displaying PNNI Summary Addresses

After you configure the PNNI level, peer group ID, ATM address, and SPVC prefix, it is wise to review the summary addresses the node will advertise. If all PNNI parameters are properly coordinated, the node should display a single summary address that represents all PNNI destinations in that node. To display the summary addresses, enter the **dsppnni-summary-addr** command as shown in the following example:

```
8850_LA.7.PXM.a > dsppnni-summary-addr

node index: 1
 Type..... internal Suppress..... false
 State..... advertising
 Summary address.....47.0091.8100.0001.0000.1a53.1c2a/104
```

The example above is coordinated with the examples in the previous sections, so just one PNNI summary address is broadcast to the peer group. The following example demonstrates what happens when the node ATM address and the SPVC prefix are not coordinated:

```
8850_LA.7.PXM.a > dsppnni-summary-addr

node index: 1
 Type..... internal Suppress..... false
 State..... advertising
 Summary address.....47.0091.8100.0000.0000.1a53.1c2a/104

node index: 1
 Type..... internal Suppress..... false
 State..... advertising
 Summary address.....47.0091.8100.0001.0000.1a53.1c2a/104

8850_LA.7.PXM.a > dsppnni-node

node index: 1 node name: 8850_LA
 Level..... 56 Lowest..... true
 Restricted transit.. off Complex node..... off
 Branching restricted on
 Admin status..... up Operational status.. up
 Non-transit for PGL election.. off
 Node id.....56:160:47.00918100000000001a531c2a.00001a531c2a.01
 ATM address.....47.00918100000000001a531c2a.00001a531c2a.01
 Peer group id.....56:47.00.9181.0000.0100.0000.0000.00
```

```
8850_LA.7.PXM.a > dspspvcprfx
SPVC Node Prefix: 47.00918100000100001a531c2a
```

In the example above, the node ATM address does not conform to the peer group ID or the SPVC prefix, so it must be advertised in addition to the SPVC prefix.

## Configuring the MPLS Controller

The MPLS controller manages MPLS communications through the switch. Typically, the MPLS controller is used with a PNNI controller. Both MPLS and PNNI controllers can be used on the same line.

**Note**

Before entering the following command, you must log in as a user with SUPER\_GP privileges or higher.

To enable and configure the MPLS controller, enter the following command:

```
mgx8850a.7.PXM.a > addcontroller <cntrlrId> i <cntrlrType> <slot> [cntrlrName]
```

Table 2-6 describes the parameters for the **addcontroller** command.

**Tips**

Remember to include the **i** option, which identifies the controller as an internal controller.

To display the MPLS controller configuration, enter the **dspcontrollers** command:

```
mgx8850a.7.PXM.a > dspcontrollers
```

## Configuring BITS Clock Sources

The “[Network Clock Source Plan](#)” section in [Chapter 1, “Preparing for Configuration,”](#) introduces Building Integrated Timing System (BITS) clock sources and provides guidelines for developing a network clock source plan. When the network clock source plan requires BITS clock sources on the switch, you can use the procedure in this section to configure the BITS clock connections.

[Figure 2-2](#) shows how BITS clock sources connect to the PXM45 UI-S3 back card.

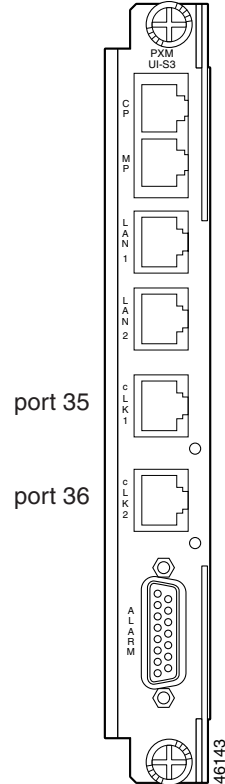
The PXM45-UI-S3 clock source ports can be used to receive clock signals from either T1 or E1 lines; the card does not support both line types simultaneously. These clock ports support stratum levels 1 to 3.

The PXM45 provides a revertive function that can apply when the primary clock source fails. A failure is a loss of the primary clock source after the switch has locked on to that clock source. If the primary clock source recovers and revertive mode is enabled, the switch automatically reverts to the primary source.

**Note**

When using an external clock source and redundant PXM45 cards, use a Y-cable to connect that clock source to the same clock port on both PXM45 cards. Otherwise, the clock source is available to only one of the PXM45 cards.

Figure 2-2 BITS Clock Source Ports on PXM UI-S3 Back Card



The following procedure describes how to configure the switch to use clock sources on the BITS clock ports.

**Note**

For instructions on configuring the switch to use a clock source on an AXSM line, refer to “Configuring AXSM Line Clock Sources” in Chapter 5, “Provisioning AXSM Communication Links.”

**Step 1** Establish a configuration session using a user name with GROUP1 privileges or higher.

**Step 2** To configure a primary or secondary BITS clock source, enter the **cnfclksrc** command:

```
mgx8850a.7.PXM.a > cnfclksrc <priority> [shelf.]slot.port -bits {e1|t1} [-revertive {enable|disable}]
```

Table 2-7 describes the parameters for this command.

Table 2-7 Parameter Descriptions for **cnfclksrc** Command when Used for PMX 45

| Parameter       | Values               | Descriptions                                                                                                    |
|-----------------|----------------------|-----------------------------------------------------------------------------------------------------------------|
| <i>priority</i> | primary or secondary | Replace <priority> with the type of clock source, which is either primary or secondary. The default is primary. |
| <i>shelf</i>    | 1                    | The <shelf> value is always 1 and is optional.                                                                  |
| <i>slot</i>     | 7                    | The <slot> number is 7 for the BITS clocks (regardless of whether the active PXM45 is in slot 7 or 8            |

**Table 2-7** Parameter Descriptions for `cnfclksrc` Command when Used for PMX 45 (continued)

| Parameter               | Values                                      | Descriptions                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>port</code>       | 35 to 36                                    | The <code>&lt;port&gt;</code> number identifies the port on the PXM45-UI-S3 to which the BITS clock is connected and the type of line connected. Select the appropriate port number from the following: <ul style="list-style-type: none"> <li>Port 35 = T1 or E1 clock connected to upper clock port</li> <li>Port 36 = T1 or E1 clock connected to lower clock port</li> </ul> |
| <code>-bits</code>      | <code>e1</code> or <code>t1</code>          | The <code>-bits</code> option specifies whether the clock source line is an E1 or T1.                                                                                                                                                                                                                                                                                            |
| <code>-revertive</code> | <code>enable</code> or <code>disable</code> | The <code>-revertive</code> option enables or disables the revertive feature for the BITS clock sources.                                                                                                                                                                                                                                                                         |

**Step 3** To configure an additional BITS clock source, repeat [Step 2](#) using the correct parameters for the additional source.

**Step 4** To display the clock source configuration, enter the `dsplksrcs` command, which is described in “[View the Configured Clock Sources](#),” in [Chapter 7, “Switch Operating Procedures](#).”

The following command example shows how to configure a primary E1 external clock source at the upper connector of the PXM45-UI-S3. Note the command punctuation.

```
mgx8850a.7.PXM.a > cnfclksrc primary 7.35 -bits e1
```

The next example configures a primary network clock source and enables the revertive option.

```
mgx8850a.7.PXM.a > cnfclksrc primary 7.36 -bits e1 -revertive enable
```

The last example disables the revertive function for an E1 BITS clock.

```
mgx8850a.7.PXM.a > cnfclksrc primary 7.36 -bits e1 -revertive disable
```

## Setting the LAN IP Addresses

The switch uses two types of IP addresses for Ethernet LAN access:

- Boot IP addresses
- Node or disk IP addresses

The following sections describe how to set these addresses. For information on how the switch uses these addresses and how to choose the addresses, refer to [Chapter 1, “Guidelines for Creating an IP Address Plan](#).”



### Note

The switch also supports IP addresses for dial-in and ATM inband access. For more information on these access options, refer to [Appendix C, “Supporting and Using Additional CLI Access Options](#).”

## Setting the Boot IP Address

The boot IP address is the LAN port IP address a PXM45 card uses when it first starts up. If the switch cannot fully start, this IP address can be used to access the switch in boot mode. When the switch is properly configured (with different addresses set for the boot IP and LAN IP addresses), the boot IP address can also be used to access the standby PXM45 card directly, while the disk IP address can be used to access the active PXM45.



### Note

Because the LAN IP address is stored on the PXM45 hard disk and is not used until after the runtime software loads, Cisco recommends that the boot IP address be set in every switch. This enables switch management over Ethernet when the boot software has loaded.

To set the boot IP address, use the **bootChange** command, which allows you to also define a remote boot location, a default gateway IP address, and a username and password for the remote boot location.

**Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.

**Step 2** Enter the **bootChange** command as shown in the following example.

```
pop20two.7.PXM.a > bootChange

'.' = clear field; '-' = go to previous field; ^D = quit

boot device : lnPci
```

In this example, the switch is waiting for you to take action on the boot device option. Enter a period <.> to clear the current value (lnPci), enter minus <-> to go back to the previous field (although this is the first of 14 fields), or enter **Return** to accept the current value and display the next option. The following example shows all options.

```
8850_NY.7.PXM.a > bootChange

'.' = clear field; '-' = go to previous field; ^D = quit

boot device : lnPci
processor number : 0
host name :
file name :
inet on ethernet (e) : 172.29.52.6
inet on backplane (b) :
host inet (h) : 0.0.0.0
gateway inet (g) : 172.29.52.1
user (u) :
ftp password (pw) (blank = use rsh):
flags (f) : 0x0
target name (tn) : ??????????
startup script (s) :
other (o) :
```



**Note** The only two options that must be set to support the boot IP address are **inet on ethernet (e)** and **gateway inet**. The **bootchange** command operates only on the active card. If you are having trouble bringing up a standby card, you can set the boot IP address with the **sysChangeEnet** command as described in “[Troubleshooting Upgrade Problems](#),” in [Appendix A, “Downloading and Installing Software Upgrades](#).” If you set the boot IP address on the standby card with the **sysChangeEnet** command and it is different from the IP address set with the **bootchange** command on the active card, the standby card will start using the boot IP address set with the **bootchange** command when it reaches standby mode.

**Step 3** Accept, clear, or change option values as necessary until the **inet on ethernet** option appears. [Table 2-8](#) defines the options that you can change.

**Table 2-8 bootChange Command Option Descriptions**

| Option            | Description                                                                                                                                                                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| boot device       | The InPci value selects an external server as the boot source when the boot or runtime software is not found on the PXM45 hard disk.                                                                                                                                     |
| processor number  | Do not change this option.                                                                                                                                                                                                                                               |
| host name         | The host name identifies an external server that has switch boot and runtime software.                                                                                                                                                                                   |
| file name         | This option defines the path and filename of the runtime software on a remote server.                                                                                                                                                                                    |
| inet on ethernet  | This option selects the boot IP address and network mask for the PXM45 you are configuring. (This PXM45 is identified in the switch prompt.) Enter the address and mask in the format: a.b.c.d:w.x.y.z, where a.b.c.d is the IP address and w.x.y.z is the network mask. |
| inet on backplane | Do not change this option.                                                                                                                                                                                                                                               |
| host inet         | The host inet option defines the IP address for the external server that has boot and runtime software for the switch.                                                                                                                                                   |
| gateway inet      | The gateway inet option identifies the IP address for the default gateway on the subnet that hosts the switch.                                                                                                                                                           |
| user              | This option defines a username that can be used for FTP access to the boot and runtime software files on a remote server.                                                                                                                                                |
| ftp password      | This option identifies a password that can be used for FTP access to the boot and runtime software files on a remote server.                                                                                                                                             |
| flags             | Do not change this option.                                                                                                                                                                                                                                               |
| target name       | Do not change this option.                                                                                                                                                                                                                                               |
| startup script    | Do not change this option.                                                                                                                                                                                                                                               |
| other             | Do not change this option.                                                                                                                                                                                                                                               |

**Step 4** Set the **inet on ethernet (e)** option to the boot IP address value you want to use. The following example shows how the command appears when a new value has been entered:

```
inet on ethernet (e) : 172.29.52.88 172.29.52.8:255.255.255.0
```

The 172.29.52.88 address appeared as part of the prompt. If no address had been previously defined, no text would appear after the colon. In this example, 172.29.52.108 is the new boot IP address, and 255.255.255.0 is the new network mask.

- Step 5** Set the **gateway inet** option to the IP address for the default gateway on the subnet that hosts the switch.
- Step 6** Accept, clear, or change values as necessary until the switch prompt reappears.
- Step 7** To verify the new values you have set, enter the **bootChange** command and press return for each of the 14 values.



**Note** MGX 8850 software releases prior to Release 2.0(12) supported unique addresses for the boot IP addresses on the PXM45 cards in slots 7 and 8. This approach required three unique Ethernet IP addresses per switch. Beginning with Release 2.0(12), the **bootChange** command automatically sets the boot IP addresses for both slots 7 and 8 to the same IP address.

## Setting the LAN or Disk IP Address

A local LAN connection extends switch management to all workstations that have connectivity to the LAN to which the switch is connected. [Figure 2-1](#) shows the hardware required for a local LAN connection.

**Figure 2-3** Hardware Required for Local LAN Connections

**Note**

The PXM UI-S3 card shown in [Figure 2-1](#) has two LAN ports. In the current software release, only the LAN 1 connector is enabled for LAN communications. Communication through the LAN 2 connector is disabled.

Before you can manage the switch through the PXM45 LAN port, you must first assign an IP address to the LAN port. The LAN or disk IP address is the IP address for the Ethernet LAN port on the active PXM45. The LAN IP address is also called the Disk IP address because it is stored on the PXM45 hard disk. However, the IP address for the Maintenance Port is also stored on the hard disk and must be different, so this section refers to this address as the LAN IP address.

**Note**

To enable LAN connectivity to the active PXM45 card, you must configure a LAN IP address. The boot IP address cannot be used to access an active PXM45 card. If you want to assign only one IP address for LAN access, assign the same IP address to the boot and LAN IP addresses.

**Tips**

The significance of the Disk IP address for the LAN Port is that it is stored on the hard disk and is not available until the runtime software is loaded on the PXM45 card and the card is active. To access the LAN port over Ethernet when a PXM45 is operating in boot or standby mode over, you must use the Boot IP address.

The LAN IP address can be set to match the boot IP address when only one IP address is available, or it can be set to a unique address to support access to the standby PXM45 during regular operation. For more information on how the boot and LAN IP addresses are used, refer to [Chapter 1, “Guidelines for Creating an IP Address Plan.”](#)

To set the IP address, use the **ipifconfig** command as described in the following procedure.

- Step 1** Establish a CLI management session using a username with SUPER\_GP privileges. The default user name and password for this level are *superuser, superuser*.
- Step 2** Verify that the IP address is not already configured by entering the **dspipif** command:

```
mgx8850a.7.PXM.a> dspipif lnPci0
```

**Note**

If you omit the **lnPci0** option, the switch displays the configuration for all switch IP interfaces: the ATM interface (atm0), the PXM45 LAN port interface (lnPci0), and the PXM45 maintenance port interface (sl0). Note that the address for each interface must be unique.

In the IP Interface Configuration Table, look for an Internet address entry under the lnPci entry. If an IP address is configured, you can use that address and skip the rest of this procedure. However, if the address has not been entered or is incompatible with your network, you must configure a valid IP address as described in the next step.

**Note**

If you are using CWM to manage your network, the IP address 10.0.XX cannot be used as the LAN address for the switch.

**Step 3** To set the IP address for the LAN port, enter the **ipifconfig** command using the following format:

```
mgx8850a.7.PXM.a> ipifconfig lnPci0 <IP_Addr> <netmask Mask>
```

Replace *<IP\_Addr>* with the IP address you want this port to use, and replace *<Mask>* with the network mask used on this network.



**Note** There are other options for the **ipifconfig** command, and you can set one or more options simultaneously. Any options you do not define in a command remain unchanged. For more information on this command, refer to *Cisco MGX 8850 and MGX 8950 Switch Command Reference*.

**Step 4** Verify that the IP address changes by entering the **dspipif** command. For example:

```
M8850_LA.7.PXM.a > dspipif lnPci0
M8850_LA System Rev: 02.01 Sep. 17, 2001 17:39:15 PST
MGX8850 Node Alarm: NONE
IP INTERFACE CONFIGURATION

lnPci (unit number 0):
 Flags: (0x63) UP BROADCAST ARP RUNNING
 Internet address: 172.29.52.88
 Broadcast address: 172.29.255.255
 Netmask 0xffff0000 Subnetmask 0xfffffff0
 Ethernet address is 00:00:1a:53:1c:2a
 Metric is 0
 Maximum Transfer Unit size is 1500
 1174481 packets received; 516574 packets sent
 502 input errors; 3 output errors
 3 collisions
 DISK IP address: 172.29.52.88
```



**Tips**

You can view the IP routing table for the switch by entering the **routeShow** command. To manage routes in the routing table, you can use the following commands: **routeAdd**, **routeDelete**, **routeNetAdd**, and **routestatShow**.

## Starting a CLI Session Through the LAN Port

The switch includes a Telnet server process that you can use to connect to and manage the switch. Before you can establish a CLI Telnet session, you must set up the hardware for your access method and assign the appropriate boot and LAN IP addresses.

After the LAN IP interface has been configured and a physical path established to the MGX 8850, you can start a CLI session using a workstation with a Telnet client program. To establish a CLI management session, use the following procedure.

**Step 1** Start the Telnet client program on a LAN workstation with a command similar to the following:

```
C:>telnet ipaddress
```

Replace *ipaddress* with the appropriate LAN IP address as follows:

- Active PXM45 card: enter the LAN IP address.
- Standby PXM45 card: enter the Boot IP address (requires separate addresses for boot and LAN IP addresses).
- PXM45 in backup boot mode: enter the Boot IP address.



**Note** Note that the Telnet program on your workstation may require a different start up and connection procedure. For instructions on operating your Telnet program, refer to the documentation for that product.



**Tips**

If you have trouble accessing the switch from a workstation, use the PING program at the workstation to test communications. For example: **ping 10.10.10.1**.

You can also view the IP routing table for the switch by entering the **routeShow** command. To manage routes in the routing table, you can use the following commands: **routeAdd**, **routeDelete**, **routeNetAdd**, and **routestatShow**.

**Step 2** If the Login prompt does not appear, press **Enter**.

The Login prompt comes from the switch and indicates that the workstation has successfully connected to the switch.

**Step 3** When the Login prompt appears, enter the user name provided with your switch and press **Enter**.

**Step 4** When the password prompt appears, enter the password provided with your switch and press **Enter**.

After you successfully log in, a prompt appears that is similar to the following:

```
mgx8850a.7.PXM.a >
```

## Configuring for Network Management

The MGX 8850 and MGX 8950 switches include a Simple Network Management Protocol (SNMP) agent that you can configure for communications with a network management station such as Cisco WAN Manager (CWM) or a third-party SNMP manager. When configured for SNMP management, the switch accepts configuration commands from management stations and sends status and error messages to the management station.

Typically, CWM operates on a workstation that is connected to an IP network, and CWM uses IP over ATM connections to connect to the MGX 8850 and MGX 8950 switches. For information on establishing this type of access, refer to [“Setting Up ATM WAN Connections”](#) in [Appendix C](#), [“Supporting and Using Additional CLI Access Options.”](#)

To support the auto-discovery feature of CWM, ILMI should be brought up on all links between the CWM workstation and the switches it will manage. For information on bringing up ILMI, refer to [“Configuring ILMI on a Port”](#) in [Chapter 5](#), [“Provisioning AXSM Communication Links.”](#)

The rest of this section describes the following:

- [Configuring the SNMP Trap Source IP Address](#)
- [Configuring the SNMP Manager Destination IP Address](#)
- [Configuring the Community String and General Switch Information](#)

## Configuring the SNMP Trap Source IP Address

The SNMP trap source IP address is sent to SNMP managers, such as CWM, in the SNMP trap Packet Data Unit (PDU). This IP address identifies the source of the trap and can be used by the SNMP manager to access the remote SNMP agent. This address must be configured to enable communications with an SNMP manager.



### Note

---

If the trap manager IP address is not set, CWM will reject traps from the switch.

---

The switch can communicate with an SNMP manager over the LAN or ATM IP interfaces. In some installations, the LAN IP interface will be used for CLI management and the ATM IP interface will be used for SNMP management. When you select the SNMP trap manager IP address, you must select the correct interface address.

To define the SNMP trap manager IP address, enter the **cnftrapip** command as follows:

```
8850_LA.7.PXM.a > cnftrapip <ipaddress>
```

The IP address should match the LAN IP address or the ATM interface IP address. For information on setting and viewing the LAN IP address, see “[Setting the LAN IP Addresses](#),” which appears earlier in this chapter. For information on setting and viewing the ATM interface IP address, see “[Setting Up ATM WAN Connections](#)” in [Appendix C, “Supporting and Using Additional CLI Access Options.”](#)

## Configuring the SNMP Manager Destination IP Address

The SNMP Manager destination IP address identifies the IP address of an SNMP manager, such as CWM, to which the switch sends SNMP traps. If you are using CWM to manage the switch, CWM will automatically configure the destination IP address on the switch. If you are using another SNMP manager, you can configure the destination IP address with the **addtrapmgr** command as follows:

```
8850_LA.7.PXM.a > addtrapmgr <ipaddress> <port>
```

Replace *ipaddress* with the IP address of the SNMP manager, and replace *port* with the UDP port number assigned to that manager. For more information on the SNMP manager IP address, refer to the SNMP manager documentation.

## Configuring the Community String and General Switch Information

To configure information about a switch in the local SNMP agent, use the following procedure.

**Step 1** Establish a configuration session using a user name with SUPER\_GP privileges or higher.

**Step 2** To define the SNMP password for network management, enter the following command:

```
mgx8850a.7.PXM.a > cnfsnmp community [password]
```

If the *password* parameter is not specified, the password becomes <private>.

**Step 3** To define a text string that identifies the location of the switch to the management station, enter the following command:

```
mgx8850a.7.PXM.a > cnfsnmp location [location]
```

If the *location* parameter is not specified, the location is set to null (no text). The location value is sent to SNMP managers when information is requested about the sysLocation MIB object.

**Step 4** To define a text string that identifies a person to contact regarding issues with this switch, enter the following command:

```
mgx8850a.7.PXM.a > cnfsnmp contact [contact]
```

If the *contact* parameter is not specified, the location is set to null (no text). The contact value is sent to SNMP managers when information is requested about the sysContact MIB object.

**Step 5** To display the SNMP agent configuration, enter the **dspsnmp** command. The command display appears similar to the following:

```
pop20two.7.PXM.a > dspsnmp
pop20two System Rev: 02.01 Dec. 28, 2000 20:37:18 PST
MGX8850 Node Alarm: NONE

Community: private
System Location: Pubs Lab
System Contact Jim
```

## Verifying the Hardware Configuration

Before you can configure your switch, you need to collect information about the cards and software installed on the switch. You need to enter this information during the various configuration tasks.

[Table 2-9](#) shows the information you need and serves as a worksheet where you can enter this information.

The following procedure describes how to display the configuration information you need to enter in this table. It also describes how to verify that the correct upper and lower back cards are installed for each front card.

- Step 1** Establish a configuration session at any access level.
- Step 2** To display a list of all the cards installed in the switch, enter the **dspecds** command after the switch prompt:

```
mgx8850a.7.PXM.a > dspecds
```

The switch displays a report similar to the following:

```
M8850_LA.7.PXM.a > dspecds
M8850_LA System Rev: 02.01 Sep. 27, 2001 20:20:05 PST
Chassis Serial No: SAA03230375 Chassis Rev: B0 GMT Offset: -8
 Node Alarm: NONE

Card Front/Back Card Alarm Redundant Redundancy
Slot Card State Type Status Slot Type
--- -
01 Active/Active AXSM_4OC12 NONE NA NO REDUNDANCY
02 Empty --- --- --- ---
03 Active/Active AXSM_16T3E3 NONE NA NO REDUNDANCY
04 Empty --- --- --- ---
05 Active/Active AXSME_2OC12 NONE NA NO REDUNDANCY
06 Active/Active AXSM_16OC3_B NONE NA NO REDUNDANCY
07 Active/Active PXM45 NONE 08 PRIMARY SLOT
08 Standby/Active PXM45 NONE 07 SECONDARY SLOT
09 Active/Active RPM_PR NONE NA NO REDUNDANCY
10 Empty --- --- --- ---
11 Empty --- --- --- ---
12 Empty --- --- --- ---
13 Empty --- --- --- ---
14 Empty --- --- --- ---
```



**Note** If an RPM card is installed in the switch and does not appear in the **dspecds** command display, the RPM card has not loaded the boot or runtime IOS software and you will have to visually locate the RPM cards by looking for them in the switch.

**Table 2-9 Hardware Configuration Worksheet**

| Card | Front Card Type | Upper Back Card | Lower Back Card | Primary Software Version | Boot Firmware Version | Redundant Slot | Redundancy Type |
|------|-----------------|-----------------|-----------------|--------------------------|-----------------------|----------------|-----------------|
| 1    |                 |                 |                 |                          |                       |                |                 |
| 2    |                 |                 |                 |                          |                       |                |                 |
| 3    |                 |                 |                 |                          |                       |                |                 |
| 4    |                 |                 |                 |                          |                       |                |                 |
| 5    |                 |                 |                 |                          |                       |                |                 |
| 6    |                 |                 |                 |                          |                       |                |                 |
| 7    |                 |                 |                 |                          |                       |                |                 |
| 8    |                 |                 |                 |                          |                       |                |                 |

Table 2-9 Hardware Configuration Worksheet (continued)

| Card | Front Card Type | Upper Back Card | Lower Back Card | Primary Software Version | Boot Firmware Version | Redundant Slot | Redundancy Type |
|------|-----------------|-----------------|-----------------|--------------------------|-----------------------|----------------|-----------------|
| 9    |                 |                 |                 |                          |                       |                |                 |
| 10   |                 |                 |                 |                          |                       |                |                 |
| 11   |                 |                 |                 |                          |                       |                |                 |
| 12   |                 |                 |                 |                          |                       |                |                 |
| 13   |                 |                 |                 |                          |                       |                |                 |
| 14   |                 |                 |                 |                          |                       |                |                 |

**Step 3** In the worksheet in [Table 2-9](#), write down the following information for each card:

- Front card type (from Card Type column)
- Redundant slot
- Redundancy type

**Step 4** For each slot in which a card is installed, complete the following tasks:

a. Enter the **dspcd** command as follows:

```
mgx8850a.7.PXM.a > dspcd slot
```

The **dspcd** command displays information that is unique to a particular card. For PXM45 cards, the switch displays a report similar to the following:

```
M8850_LA.7.PXM.a > dspcd 7
M8850_LA System Rev: 02.01 Sep. 27, 2001 20:21:48 PST
MGX8850 Node Alarm: NONE
Slot Number 7 Redundant Slot: 8

 Front Card Upper Card Lower Card

Inserted Card: PXM45 UI Stratum3 PXM HardDiskDrive
Reserved Card: PXM45 UI Stratum3 PXM HardDiskDrive
State: Active Active Active
Serial Number: SAK033600AN SBK044200J8 SAK0403005Q
Prim SW Rev: 2.1(60) --- ---
Sec SW Rev: 2.1(60) --- ---
Cur SW Rev: 2.1(60) --- ---
Boot FW Rev: 2.1(60) --- ---
800-level Rev: 12 A0 06
800-level Part#: 800-05983-01 800-05787-02 800-05052-03
CLEI Code: 0000000000 BA7IBCLAAA 0000000000
Reset Reason: On Reset From Shell
Card Alarm: NONE
Failed Reason: None
Miscellaneous Information:
Type <CR> to continue, Q<CR> to stop:
M8850_LA System Rev: 02.01 Sep. 27, 2001 20:21:48 PST
MGX8850 Node Alarm: NONE

Crossbar Slot Status: Present
Alarm Causes

NO ALARMS
```

**Note**

The **dspcd** and **dspcds** commands are very similar, but they produce different reports. The **dspcd** command displays information about a specific card. The **dspcds** command displays summary information for all cards in the switch.

For AXSM cards, the switch displays a report similar to the following:

```
M8850_LA.7.PXM.a > dspcd 1
M8850_LA System Rev: 02.01 Sep. 27, 2001 20:24:09 PST
MGX8850 Node Alarm: NONE
Slot Number: 1 Redundant Slot: NONE

 Front Card Upper Card Lower Card
 ----- ----- -----
Inserted Card: AXSM_4OC12 SMFIR_2_OC12 SMFIR_2_OC12
Reserved Card: AXSM_4OC12 SMFIR_2_OC12 SMFIR_2_OC12
State: Active Active Active
Serial Number: SAK0350007N SAK0346003F SBK0406001V
Prim SW Rev: 2.1(60) --- ---
Sec SW Rev: 2.1(60) --- ---
Cur SW Rev: 2.1(60) --- ---
Boot FW Rev: 2.1(60) --- ---
800-level Rev:
800-level Part#: 800-05774-05 800-05383-01 800-05383-01
CLEI Code: BAA1BADAAA 0000000000 BAI9ADTAAA
Reset Reason: On Power up
Card Alarm: NONE
Failed Reason: None
Miscellaneous Information:

Type <CR> to continue, Q<CR> to stop:
M8850_LA System Rev: 02.01 Sep. 27, 2001 20:24:09 PST
MGX8850 Node Alarm: NONE

Crossbar Slot Status: Present

Alarm Causes

NO ALARMS
```

- b. In the worksheet in [Table 2-9](#), write down the following information for each card:
- Upper back card type, which appears in the Upper Card column of the Inserted Card row.
  - Lower back card type, which appears in the Lower Card column of the Inserted Card row.
  - Primary software version, which appears in the Prim SW Rev row.
  - Boot firmware version, which appears in the Boot FW Rev row.

**Tips**

Another way to display a detailed report on a card is to use the **cc** command to select the card, then use the **dspcd** command without a slot number. However, the preferred method is to use the **dspcd** command with a slot number because this method can display information on a card when card errors prevent access through the **cc** command.

- Step 5** After you have entered the required information for all cards in [Table 2-9](#), use [Table 2-10](#) to verify that each card is installed in a slot that supports that card type, and verify that the correct back cards are installed for the corresponding front cards.

If any of the cards are installed incorrectly, refer to either the *Cisco MGX 8850 Routing Switch Hardware Installation Guide* or the *Cisco MGX 8950 Routing Switch Hardware Installation Guide* for instructions on installing the cards correctly.



**Note** The locations where the upper and lower back cards are installed are also called bays. Each slot has an upper and a lower bay for back cards.

**Table 2-10 Valid Card Installation Options**

| Front Card Type | Description and Part Number                                      | Back Card Types                                                                                            | Valid Back Card Bay Locations | MGX 8850 Valid Slot Numbers | MGX 8950 Valid Slot Numbers | Supports APS Connector |
|-----------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|-----------------------------|------------------------|
| AXSM-1-2488     | 1 port OC-48/STM-16<br>Note: no traffic shaping<br>AXSM-1-2488   | SMFSR-1-2488<br>SMFLR-1-2488<br>SMFXLR-1-2488                                                              | Upper                         | 1-6, 9-14                   | 1-6, 11-16                  | Yes                    |
| AXSM-1-2488/B   | 1 port OC-48/STM-16<br>Note: no traffic shaping<br>AXSM-1-2488/B | SMFSR-1-2488/B<br>SMFLR-1-2488/B<br>SMFXLR-1-2488/B                                                        | Upper                         | 1-6, 9-14                   | 1-6, 11-16                  | No                     |
| AXSM-2-622-E    | 2-port OC-12/STM-4 (622 Mbps) AXSM-E<br>AXSM-2-622-E             | SMFIR-1-622/C<br>SMFLR-1-622/C                                                                             | Upper                         | 1-6, 9-14                   |                             | Yes                    |
| AXSM-4-622      | 4 port OC-12<br>AXSM-4-622                                       | SMFIR-2-622<br>SMFLR-2-622                                                                                 | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  | Yes                    |
| AXSM-4-622/B    | 4 port OC-12<br>AXSM-4-622/B                                     | SMFIR-2-622/B<br>SMFLR-2-622/B                                                                             | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  | Yes                    |
| AXSM-8-155-E    | 8-port OC-3/STM-1 (155 Mbps) AXSM-E<br>AXSM-8-155-E              | MMF-4-155-MT/B<br>SMFIR-4-155-LC/B<br>SMFLR-4-155-LC/B<br>SMB-4-155                                        | Upper                         | 1-6, 9-14                   |                             | Yes                    |
| AXSM-16-155     | 16 port OC-3<br>AXSM-16-155                                      | MMF-8-155-MT<br>MMF-8-155-MT/B<br>SMFIR-8-155-LC<br>SMFIR-8-155-LC/B<br>SMFLR-8-155-LC<br>SMFLR-8-155-LC/B | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  | Yes                    |
| AXSM-16-155/B   | 16 port OC-3<br>AXSM-16-155/B                                    | SMB-4-155<br>MMF-8-155-MT/B<br>SMFIR-8-155-LC/B<br>SMFLR-8-155-LC/B                                        | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  | Yes                    |

Table 2-10 Valid Card Installation Options (continued)

| Front Card Type          | Description and Part Number                        | Back Card Types                            | Valid Back Card Bay Locations | MGX 8850 Valid Slot Numbers | MGX 8950 Valid Slot Numbers | Supports APS Connector |
|--------------------------|----------------------------------------------------|--------------------------------------------|-------------------------------|-----------------------------|-----------------------------|------------------------|
| AXSM-16-T3E3             | 16 port T3/E3<br>AXSM-16-T3E3                      | SMB-8-T3<br>SMB-8-E3                       | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  |                        |
| AXSM-16-T3E3/B           | 16 port T3/E3<br>AXSM-16-T3E3/B                    | SMB-8-T3<br>SMB-8-E3                       | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  |                        |
| AXSM-16-T3E3-E           | 16 port T3/E3<br>AXSM-16-T3E3-E                    | SMB-8-T3<br>SMB-8-E3                       | Upper and lower               |                             |                             |                        |
| AXSM-16-E1-E             | 16-port E1 AXSM-E<br>AXSM-16-E1-E                  | SMB-8E1-Y                                  | Upper                         | 1-6, 9-14                   |                             |                        |
| AXSM-16-T1-E             | 16-port T1 AXSM-E<br>AXSM-16-T1-E                  | RJ48-8T1-Y                                 | Upper and lower               | 1-6, 9-14                   |                             |                        |
| PXM45                    | Processor Switch Module<br>PXM45                   | UI Stratum 3                               | Upper                         | 7 and 8                     |                             |                        |
|                          |                                                    | PXM Hard Disk Drive                        | Lower                         |                             |                             |                        |
| PXM45/B                  | Processor Switch Module<br>PXM45/B                 | UI Stratum 3                               | Upper                         | 7 and 8                     |                             |                        |
|                          |                                                    | PXM Hard Disk Drive                        | Lower                         |                             |                             |                        |
| RPM-PR-256<br>RPM-PR-512 | Route Processor Module<br>RPM-PR-256<br>RPM-PR-512 | MGX-RJ45-4E/B<br>MGX-RJ45-FE<br>MGX-MMF-FE | Upper and lower               | 1-6, 9-14                   | 1-6, 11-16                  |                        |
| XM60                     | Switch Module 60. 60 Gbps switch fabric.           | none                                       | none                          |                             | 9, 10, 25, and 26           |                        |

