



## Configuring General Switch Features

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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.

Before you begin this chapter, keep the following statements in mind:

- The generic term “PXM” refers to both the PXM1E and the PXM45. If a procedure or step is specific to one of these cards, it will be called out in the text.
- The generic term “MGX” refers to the MGX 8830, Cisco MGX 8830/B, MGX 8850 (PXM1E/PXM45), Cisco MGX 8850/B, and MGX 8950 switches and the Cisco MGX 8880 Media Gateway. If a procedure or step is specific to only one or two of these MGX switches, it will be called out in the text.
- The procedures in this section apply to the MGX 8830, Cisco MGX 8830/B, MGX 8850 (PXM1E/PXM45), Cisco MGX 8850/B and MGX 8950 switches and the Cisco MGX 8880 Media Gateway. The PXM examples show a Cisco MGX 8850 switch, but you can apply these examples to other switches. If an example does not apply to one of the three MGX switches, it will be called out in the text.

### Configuration Quickstart

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

Table 2-1 Configuration Quickstart

	Command	Purpose
Step 1	<b>sysVersionSet</b> <i>version</i> <b>reboot</b>	<p>Select the runtime firmware version the switch will use on the PXM card and restart the switch with that firmware. For example:</p> <pre><b>sysVersionSet</b> "004.000.000.000"</pre> <p><b>Note</b> These commands must be entered at the PXM backup boot prompt. On PXM1E cards, the backup boot prompt is <code>pxm1ebkup&gt;</code>. On PXM45 cards, the backup boot prompt is <code>pxm45bkup&gt;</code>.</p> <p>See the “<a href="#">Initializing the Switch</a>” section later in this chapter.</p>
Step 2	After you reboot, the system prompts you to enter your <i>username</i> and <i>password</i> .	<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 the “<a href="#">Starting a CLI Management Session After Initialization</a>” section later in this chapter.</p> <p>For information on other ways to manage a switch, see <a href="#">Appendix C, “Supporting and Using Additional CLI Access Options.”</a></p> <p><b>Note</b> 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 <i>serviceuser</i>. For more information on access privileges, see the “<a href="#">Configuring User Access</a>” section later in this chapter.</p>
Step 3	<b>adduser</b> <username> <accessLevel>  Related commands: <b>cnfpasswd</b> <b>cnfuser</b> <options> <b>deluser</b> <username>	<p>Configure user access. This step is optional.</p> <p>See the “<a href="#">Configuring User Access</a>” section later in this chapter.</p>
Step 4	<b>cnfname</b> <node name>	<p>Configure the switch name.</p> <p>See the “<a href="#">Setting and Viewing the Node Name</a>” section later in this chapter.</p>
Step 5	<b>cnfdate</b> <mm:dd:yyyy> <b>cnftmzn</b> <timezone> <b>cnftmzngmt</b> <timeoffsetGMT> <b>cnftime</b> <hh:mm:ss>  Related commands: <b>dsptime</b>	<p>Configure the switch time.</p> <p>See the “<a href="#">Viewing and Setting the Switch Date and Time</a>” section later in this chapter.</p>

Table 2-1 Configuration Quickstart (continued)

	Command	Purpose
Step 6	<b>addcontroller</b> <i>&lt;options&gt;</i> <b>cnfpnni-node</b> <i>&lt;options&gt;</i> <b>cnfspvcprfx</b> <i>&lt;options&gt;</i>  Related commands: <b>dspcontrollers</b> <b>dspspvcprfx</b> <b>dsppnni-summary-addr</b>	Configure basic PNNI node parameters which include the PNNI controller, PNNI level, peer group ID, ATM address, node ID, and SPVC prefix.  See the “ <a href="#">Configuring PNNI Node Parameters</a> ” section later in this chapter.
Step 7	<b>addcontroller</b> <i>&lt;options&gt;</i>  Related commands: <b>dspcontrollers</b>	Configure the MPLS controller.  See the “Configuring the MPLS Controller” section later in this chapter.  <b>Note</b> The MPLS label switch controller (LSC) function is not supported on MGX 8850 (PXM1E) or MGX 8830 switches.
Step 8	<b>cnfclksrc</b> <i>&lt;options&gt;</i> or <b>cnfncdp</b>	Configure any BITS clock ports the switch will use. You can configure clock sources manually or through the NCDP feature. This step is optional.  <b>Note</b> Each switch supports one or more clock sources. The clock sources can reside on a PXM1E, AXSM, CESM, VISM-PR, or AUSM card.  See the “ <a href="#">Configuring Clock Sources</a> ” section later in this chapter.  <b>Note</b> For information on configuring PXM1E line clock sources, see <a href="#">Chapter 4, “Preparing Service Modules for Communication.”</a> For information on configuring AXSM line clock sources, see the <i>Cisco ATM Services (AXSM) Configuration Guide and Command Reference for MGX Switches, Release 5</i> .
Step 9	<b>bootChange</b> <b>ipifconfig</b> <i>&lt;options&gt;</i>	Set the IP address or addresses for LAN access.  See the “ <a href="#">Setting the LAN IP Addresses</a> ” section later in this chapter.
Step 10	<b>cnfsnmp</b> community [ <i>string</i> ] <b>cnfsnmp</b> contact [ <i>string</i> ] <b>cnfsnmp</b> location [ <i>string</i> ]  Related commands: <b>dspsnmp</b>	Configure SNMP management.  See the “ <a href="#">Configuring for Network Management</a> ” section later in this chapter.
Step 11	<b>dspcds</b> <b>dspcd</b> <b>cc</b> <i>&lt;slotnumber&gt;</i>	Verify the hardware configuration.  See the “ <a href="#">Verifying the Hardware Configuration</a> ” section later in this chapter.

# Initializing the Switch

After you assemble a new switch, as described in the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*, you must initialize the switch before you can configure it. Although PXM 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 PXM hard disk.

A new switch must be initialized using a console port management session. A console port management session requires a terminal or workstation with a serial connection to the Console Port (CP) port on the PXM-UI-S3 back card.

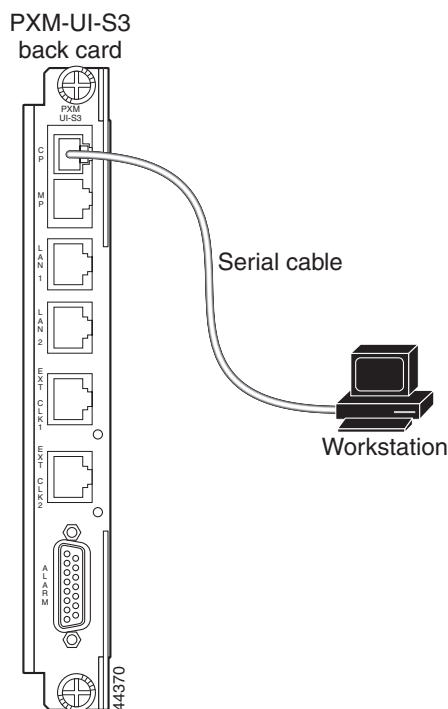
Figure 2-1 shows how a workstation connects to a PXM-UI-S3 back card. Figure 2-2 shows how a workstation connects to a PXM-UI-S3/B back card.

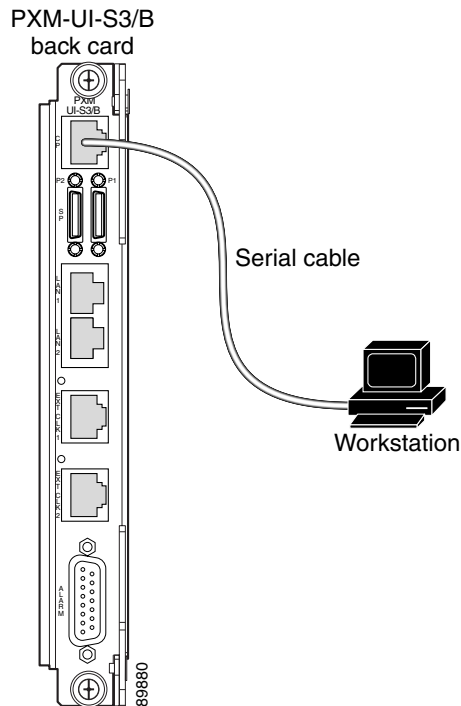


## Note

Note that some or all of the commands discussed in this section require SERVICE\_GP or CISCO\_GP privileges. These privileges and the default user names and passwords for these privilege levels are described in the “[Adding Users](#)” section, which appears later in this chapter.

**Figure 2-1 Workstation Connection to Console Port on a PXM-UI-S3 Back Card**



**Figure 2-2 Workstation Connection to Console Port on a PXM-UI-S3/B Back Card**

To initialize the switch, use the following procedure.

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



**Note** You can connect the terminal to a PXM in either slot 7 or slot 8 in the MGX 8850 (PXM1E/PXM45) or in the MGX 8950. On a MGX 8830, connect the terminal to a PXM1E in either slot 1 or slot 2.

- 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 emulation 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 the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.



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

- Step 5** If the switch does not display any messages or a prompt, press **Return**.  
When startup is complete for an uninitialized switch, it will display the PXM backup boot prompt.

```
PXMbkup>
```

- 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 following release note documents:

- *Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00*
- *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.0.02*

You must use the same format listed in the firmware file name when you enter the number. For example, if the firmware filename is pxm1e\_004.000.000.000\_mgx.fw, the firmware version number you will enter is 004.000.000.000.

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

```
PXMbkup> sysVersionSet version
```

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

```
PXMbkup> sysVersionSet 005.000.001.000
```

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

```
PXMbkup> 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.



#### Tip

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 the “[Troubleshooting Upgrade Problems](#)” section 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

The default user names and passwords for all privilege levels are described in the “[Adding Users](#)” section, which appears later in this chapter.

**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.PXM.i>`. In this mode, you can only log in as user *cisco*, password *cisco*, 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**

On MGX 8850 (PXM1E/PXM45) and MGX 8950 switches, the number 7 in the switch prompt indicates that you are managing the PXM in slot 7. If you are managing the PXM in slot 8, the switch prompt displays the number 8.

On a MGX 8830 switch, the number 1 in the switch prompt indicates that you are managing the PXM in slot 1. If you are managing the PXM in slot 2, the switch prompt displays the number 2.

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

The switch prompt for the PXM cards and for all service modules 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 <i>unknown</i> . To change the name, see the <a href="#">“Setting and Viewing the Node Name”</a> section 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 PXM cards. On MGX 8850 (PXM1E/PXM45) and MGX 8950, the PXM cards are in slots 7 and 8. In MGX 8830, the PXM cards are in slots 1 and 2.  For many line and trunk configuration procedures, you need to modify service modules (such as the CESM card), which are installed in the other slots.
cardtype	The <i>cardtype</i> identifies the model of the card, such as PXM or CESM.
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 FRSM-2CT3 cards displays VHS2-CT3 as the cardtype, because the FRSM-2CT3 is a VHS card. For example: `MGX.1.4.VHS2CT3.a >`. FRSM 8T1E1 cards, however, follow the standard naming convention and display FRSM as the cardtype in the switch prompt.

After initialization, the PXM in the initialized slot becomes active. If a second PXM resides in the other slot, the active PXM initiates a runtime firmware load on the other slot. After the runtime firmware loads on the nonactive PXM, 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.



**Tip** 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 in releases prior to Release 5, enter 0 seconds. For Release 5 and later, entering 0 will set the default time to 43200 seconds (12 hours). 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.



**Tip** 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** 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 Cisco level) privileges and passwords.

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:
unknown.7.PXM.a >
```



**Note**

The default configured username and password sets are: user *cisco*, password *cisco*; user *service*, password *serviceuser*; and user *superuser*, password *superuser*. 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.PXM.i>*. In this mode, you can only log in as user *cisco*, password *cisco*, 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 PXM cards and for all service modules uses the following format:

*nodename.slot.cardtype.state>*

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

**Note**

The switch prompt for FRSM-2CT3 cards uses a different card name in the prompt. This is to distinguish FRSM-2CT3 cards from FRSM-8T1 cards. The FRSM-2CT3 cards use the name *VHS2CT3* in the place for *cardtype*. FRSM-8T1 card use the standard naming convention and display *FRSM* in the place for *cardtype*.

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.

**Tip**

To restart an automatically terminated session, press **Return**. Depending on the application you use to log in to the switch, you may be prompted 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 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 terminate 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 PXM card in slot 7 is selected:

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

To select another card in the switch, enter the **cc** command:

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

Replace *slotnumber* with the slot number of the card you want to manage. You can use the **dspcds** command to list which slot numbers are occupied.

**Note**

Refer to the valid slot number options table in the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1* for more details.

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 a CESM card in slot 6 of a Cisco MGX 8850 switch:

```
mgx8850a.6.CESM.a >
```

If you have trouble entering 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.6.CESM.a > dspdate
Unknown Command: dspdate
```

The **dspdate** command runs on a PXM card. It is not recognized by a CESM card.

**Tip**

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 on PXM cards and most service modules. 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 your partial entry of the **help** command because it proceeds to list commands.

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

Available commands
-----
addpref
addprfx
addred
addrscprtn
addstc
addserialif
addslave
addstprmtsvr
addtrapmgr
adduser
aes_ping
arpAdd
arpDelete
arpFlush
arpShow
bootChange
burnboot
bye
cc
```

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



#### Note

The command abbreviation feature is not supported on older cards such as AUSM, CESM, and FRSM.



#### Tip

To disable the command abbreviation feature, enter 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** display 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 **help** display.

The following example demonstrates what can appear when a command abbreviation is entered and either the abbreviation is not unique or the card does not support abbreviations:

```
M8830_CH.1.13.AUSMB8.a > dspc

Unknown Command : dspc

The possibilities are :

dspcacparm      dspcd      dspcderrs
dspcdparms      dspchan    dspchancnt
dspchans        dspcon     dspcons
dspconstdabr
```

In the example above, **dspc** is entered at an AUSM card prompt. Because there are several possible commands that start with **dspc**, the switch lists all supported commands that start with those letters. AUSM cards are older cards. Newer cards such as the PXM45 produce a different display for the same scenario:

```
M8850_LA.8.PXM.a > dspc
ERR: ambiguous command: "dspc"
```

For newer cards, you can display a list of commands that start with the same prefix by entering the command as follows:

```
M8850_LA.8.PXM.a > ? dspc
```

```
Available commands
-----
dspcusecnt
dspcbclk
dspcd
dspcdalms
dspcderrs
dspcdhealth
dspcds
dspcdstatus
dspcduptime
dspcdvtdft
dspchassis
dspcli
dspclkalms
dspclkparms
dspclksrcs
dspcmdabbr
dspcon
dspconinfo
dspcontracebuffer
```

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

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 the [“Configuring User Access”](#) section 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:

```
M8850_LA.8.PXM.a > ? ip
```

```
Available commands
-----
cnfifip
cnfilmiproto
cnftrapip
delifip
dspifip
dspipconntask
dspipif
dspipifcache
dsptrapip
ipifconfig
pntracevsipkt
setipconndebug
zip
```

```
M8850_LA.8.PXM.a >
```

## Displaying Detailed Command Lists

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

- Access level required to enter the command
- Card state in which the command can be entered
- 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 the “[Configuring User Access](#)” section). You can also find this information in the *Cisco MGX 8800/8900 Series Command Reference, Release 5.1*.

To enable detailed command lists, log in as a user at the CISCO\_GP level and enter the **clidbxlevel** command as shown in the following example:

```
mgx8850a.7.PXM.a> clidbxlevel 1
Value of cliDbxLevel is now 1
```



### Note

Beginning with Release 5, the **clidbxlevel** command is not available in the default configuration. To enable access to this command, log in as a user at the CISCO\_GP level and enter the **seteng on** command. The **seteng** command enables and disables (**seteng off**) access to commands that are intended for use by Cisco engineers.

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

```
mgx8850a.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	+
addapsln	GROUP1	A	+
addcon	GROUP1	A	+
addcontroller	SUPER_GP	A	+
addfltset	GROUP1	A	+
addlink	ANYUSER	A	-
addlnloop	GROUP1	A	+
addlpback	GROUP1	A	-
addmaster	GROUP1	A	+
addpart	GROUP1	A	+
addpnni-node	SUPER_GP	A	+
addpnni-summary-addr	SUPER_GP	A	+
addpnport	GROUP1	A	+
addport	GROUP1	A	+

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



**Note**

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

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

The Card State 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 State column are described in [Table 2-2](#).

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 2-2 Card State Descriptions**

Card State	Description
A	Command is supported when the 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 when the **cnfifip** command is entered without any parameters.

```
M8850_LA.8.PXM.a > cnfifip
Syntax: cnfifip <interface> <ip_address> [<mask> [<broad_addr>]]
OR
      cnfifip <interface> <flag>
interface -- 26/28/37 (26:Ethernet 28:SLIP 37:ATM) or Ethernet/SLIP/ATM
ip_address -- <n>.<n>.<n>.<n> (<n>: integer 0..255)
mask -- subnet mask <n>.<n>.<n>.<n> (<n>: integer 0..255)
```

```
broad_addr -- <n>.<n>.<n>.<n> (<n>: integer 0..255)
flag -- a string "UP" or "DOWN"
```

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.

**Tip**

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

```
mgx8850a.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 user names 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 *cisco* password.

## Adding Users

The Cisco MGX switches support up to 100 users. To create a user account, specify the following information:

- 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 2-3](#) 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 2-3 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 <i>cisco</i>. The default password for user <i>cisco</i> is <i>cisco</i>. 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, SUPER_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: SUPER_GP, GROUP1, and ANYUSER.</p> <p>The default username is <i>service</i>. The default password is <i>serviceuser</i>.</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: SUPER_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<sup>1</sup> and SPVPs<sup>1</sup>. 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>



1. SPVC = soft permanent virtual connection
2. SPVP = soft permanent virtual path

**Note**

Earlier releases of the Cisco MGX 8850 software support 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 2-3](#).

**Note**

The access levels are case-sensitive and must be entered as shown in [Table 2-3](#). 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 **dspusers** command.

**Tip**

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** or **?** command.

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

**Tip**

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

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

**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.

- 
- Step 1** Log in to your user account with 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

To change your own user password, enter 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** Log in to the switch. 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] [-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. After you enter the command, the switch prompts you to enter the new password as shown in the following example:

```
M8850_LA.8.PXM.a > cnfuser -u jim -p
Enter new password:
Re-enter new password:
Completed local database changes for user jim
```

If you are changing the user access level, specify the **-l** (lowercase L) option and enter the appropriate access level as shown in [Table 2-3](#). In the following example, the access level is changed for user *jim*:

```
M8850_LA.8.PXM.a > cnfuser -u jim -l SUPER_GP
Completed local database changes for user jim
```



### 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:

```

mgx8850a.7.PXM.a> dspusers

  UserId      AccessLevel
  -----
  cisco       CISCO_GP
  service     SERVICE_GP
  superuser   SUPER_GP
  jbowman     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 **dspusers** command.
- 

## Resetting the User *cisco* 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 *cisco* 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.

Use the following procedure to reset the user *cisco* password.

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



### Caution

Anyone with physical access to the switch CP 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 password *cisco*.

- Step 4** To maintain switch security after resetting the cisco user password, change the password using the **cnfpasswd** command.
- 

## Enabling and Disabling the User cisco Password Reset

If the switch you are managing is in an insecure area, you might want to disable the user cisco password reset feature. Otherwise, anyone with physical access to the switch CP 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 **cnfpswreset off** command.
- Step 3** To enable password reset, enter the **cnfpswreset on** command.
- Step 4** To view the status of this feature, enter the **dsppswreset** command.
- 

## Setting and Viewing the Node 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 PXM 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 mgx8850a
This node name will be changed to mgx8850a. Please Confirm
cnfname: Do you want to proceed (Yes/No)? y
cnfname: Configured this node name to mgx8850a Successfully.
```

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




---

**Note** The node name cannot contain any spaces or special characters.

---

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.



## Note

The procedure that follows propagates the switch date and time to all cards on the switch except for the RPM cards. Use the CLI to manually configure the switch date and time on each RPM card in your switch, or use SNTP to enable each RPM card to retrieve the date and time from a network server.

- 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> dspdate
```

- 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 2-4](#). If your switch is located outside the Western Hemisphere, select **GMT** (see [Table 2-4](#)) 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 2-4](#). *Daylight* times are adjusted by one hour in the Fall and Spring for daylight savings. *Standard* times are not adjusted.

**Table 2-4 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> cnftmzngmt <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 **dsptime** command.

## Configuring PNNI Node Parameters

The MGX switches support many PNNI configuration commands. This section describes how to configure the basic PNNI configuration parameters for the switch. [Chapter 8, “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 4, “Preparing Service Modules for Communication.”](#) 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. [Chapter 8, “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:

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

[Table 2-5](#) describes the parameters for the **addcontroller** command.



### Tip

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

**Table 2-5** 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.<br><br><b>Note</b> Option <b>3</b> (the MPLS controller) is not supported for PXM1E cards. |
| —               | i      | Enter the value <b>i</b> . This parameter will support additional values in future releases.                                                                                                     |

**Table 2-5 Parameter Descriptions for the `addcontroller` Command (continued)**

| Parameter         | Values     | Descriptions                                                                                                                                                                                                                                                                                                                         |
|-------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>cntrlrType</i> | 2          | Controller type. Enter <b>2</b> to specify a PNNI controller.                                                                                                                                                                                                                                                                        |
| <i>slot</i>       | 1, 2, 7, 8 | Slot number for PXM cards.<br><br>Enter <b>1</b> or <b>2</b> to specify the PXM1E as the PNNI controller host on a Cisco MGX 8830 switch. Enter <b>7</b> or <b>8</b> to specify the PXM as the PNNI controller host on a Cisco MGX 8850 or Cisco MGX 8950 switch, or on a Cisco MGX 8880 Media Gateway.                              |
| <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.<br><br><b>Note</b> The MPLS label switch controller (LSC) function is not supported on PXM1E cards. |

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

```

mgx8850a.7.PXM.a> dspcontrollers
pxm1e                               System Rev: 03.00    May. 07, 2002 16:42:18 GMT
MGX8850                             Node Alarm: MAJOR
Number of Controllers:               1
Controller Name:
Controller Id:                       2
Controller Location:                 Internal
Controller Type:                     PNNI
Controller Logical Slot:             7
Controller Bay Number:               0
Controller Line Number:              0
Controller VPI:                      0
Controller VCI:                      0
Controller In Alarm:                 NO
Controller Error:

```

## Setting the PNNI Level and Peer Group ID

The *Cisco PNNI Network Planning Guide for MGX and SES Products* 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:

```
mgx8850a.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 8, “Managing PNNI Nodes and PNNI Routing.”](#)

**Step 3** Change the PNNI level and peer group ID with the **cnfpnni-node** command as follows:

```
mgx8850a.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:

```
mgx8850a.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:

```
mgx8850a.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 following command:

```
mgx8850a.7.PXM.a> dsppnni-node
```

The switch displays a report similar to the following example:

```
mgx8850a.7.PXM.a> dsppnni-node
```

```
node index: 1                      node name: mgx8850a
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 PNNI Network Planning Guide for MGX and SES Products* provides guidelines for setting the PNNI node address, which is identical to 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 PXM 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 PXM 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:

```
mgx8850a.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:

```
mgx8850a.7.PXM.a> cnfpnni-node <node-index> [-atmAddr atm-address]
```

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

```
mgx8850a.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 PNNI Network Planning Guide for MGX and SES Products*.



**Tip**

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:

```
mgx8850a.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:

```
mgx8850a.7.PXM.a> dsppnni-node
```

The switch displays a report similar to the following example:

```
mgx8850a.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.....56:160:47.0091810000000001a531c2a.00001a531c2a.01
ATM address.....47.00918100000100001a531c2a.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:

```
mgx8850a.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.....8850_SF
Remote node id.....56:160:47.00918100000100036b5e31b3.00036b5e31b3.01
Upnode id.....0:0:00.00000000000000000000000000.000000000000.00
Upnode ATM addr.....00.00000000000000000000000000.000000000000.00
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 8850\_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:

```
mgx8850a.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:

```
mgx8850a.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:

```
mgx8850a.7.PXM.a> cnfpnni-node 1 -nodeId
56:160:47.00918100000100001a531c2a.00001a531c2a.01
```

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

```
mgx8850a.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:

```
mgx8850a.7.PXM.a> dspnni-node
```

The switch displays a report similar to the following example:

```
mgx8850a.7.PXM.a> dspnni-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 PNNI Network Planning Guide for MGX and SES Products* 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 that terminate on PXM1E cards, see [Chapter 4, “Preparing Service Modules for Communication.”](#) For information on deleting SPVCs that terminate on service modules, refer to the service module documentation listed in [Table 1-1](#).

**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:

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

The switch response is similar to the following example:

```
mgx8850a.7.PXM.a> dspspvcprfx
SPVC Node Prefix: 47.00918100000000001a531c2a
```



### Tip

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 **dspnni-node** command.

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

```
mgx8850a.7.PXM.a> cnfspvcprfx -prfx <prefix>
```

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

```
mgx8850a.7.PXM.a> cnfspvcprfx -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 PNNI Network Planning Guide for MGX and SES Products*.



**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, 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:

```
mgx8850a.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:

```
mgx8850a.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

mgx8850a.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.....47.0091810000000001a531c2a.00001a531c2a.01
Peer group id.....56:47.00.9181.0000.0100.0000.0000.00

mgx8850a.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

The MPLS label switch controller (LSC) function is not supported on MGX 8830 and MGX 8850 (PXM1E) switches.



### 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> <lslot> [cntrlrName]
```

Table 2-5 describes the parameters for the **addcontroller** command.



### Tip

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 Clock Sources

The “[Guidelines for Creating a Network Clock Source Plan](#)” section in [Chapter 1, “Preparing for Configuration,”](#) introduces two clock source configuration options:

- manual
- Network Clock Distribution Protocol (NCDP)



### Note

When NCDP is enabled, your manual configuration is disabled, and vice versa. When you disable NCDP, your node reverts back to any manual clock configuration that was previously done on the node. If you re-enable NCDP after disabling it, your switch will remember your last NCDP configuration and use that unless you change it.

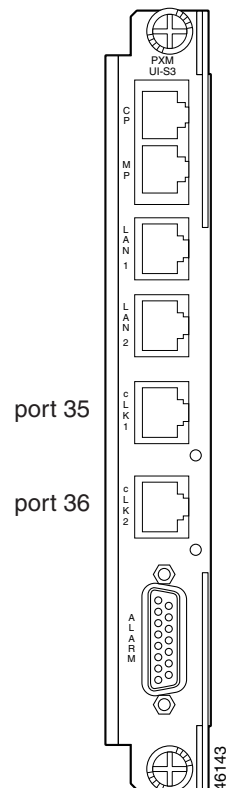
Both clock source options can use built-in hardware ports designed for Building Integrated Timing System (BITS) clock sources. [Figure 2-3](#) shows how BITS clock sources connect to the PXM45 UI-S3 back card. [Figure 2-4](#) shows how BITS clock sources connect to the PXM1E UI-S3/B back card.

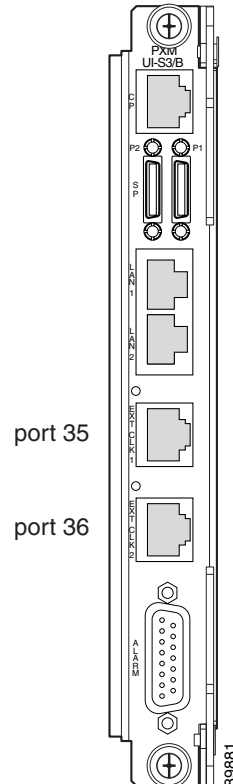
The clock source ports on the UI-S3 and PXM-UI-S3/B cards can be used to receive clock signals from either T1 or E1 lines; the card does not support both line types simultaneously. These clock ports support stratum levels 1 to 3.

**Note**

The PXM45 and PXM1E cards support T1 data (1.544Mbps) and E1 data (2.048Mbps) clock sources, and the PXM1/B supports both T1 and E1 data types and an E1 sync (2.048MHz) line as a clock input. The E1 sync line is not supported on switches with PXM45 and PXM1E cards.

**Figure 2-3 BITS Clock Source Ports on PXM-UI-S3 Back Card**



**Figure 2-4 BITS Clock Source Ports on PXM-UI-S3/B Back Card****Note**

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

## Manually Configuring BITS Clock Sources

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

**Note**

For instructions on configuring the switch to use a clock source on a PXM1E line, refer to [Chapter 4, “Preparing Service Modules for Communication.”](#) For instructions on configuring the switch to use a clock source on an AXSM line, refer to the *Cisco ATM Services (AXSM) Configuration Guide and Command Reference for MGX Switches, Release 5*.

**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 2-6](#) describes the parameters for this command.

**Table 2-6 Parameter Descriptions for cnfclksrc Command on the PXM**

| Parameter         | Values               | Descriptions                                                                                                                                                                                                                                                                                                                   |
|-------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>priority</i>   | primary or secondary | Replace <i>&lt;priority&gt;</i> with the type of clock source that is either primary or secondary. The default is primary.                                                                                                                                                                                                     |
| <i>shelf</i>      | 1                    | The <i>&lt;shelf&gt;</i> value is always 1 and is optional.                                                                                                                                                                                                                                                                    |
| <i>slot</i>       | 7                    | For the BITS clock, the <i>&lt;slot&gt;</i> number is 7 for a MGX 8850 (PXM1E/PXM45) or MGX 8950 switch, or slot 1 for a MGX 8830 switch.                                                                                                                                                                                      |
| <i>port</i>       | 35 to 36             | The <i>&lt;port&gt;</i> number identifies the line on the PXM-UI-S3 or PXM-UI-S3/B back card 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 = upper line</li> <li>Port 36 = lower line</li> </ul> |
| <i>-bits</i>      | e1 or t1             | The <b>-bits</b> option specifies whether the clock source line is an E1 or T1.                                                                                                                                                                                                                                                |
| <i>-revertive</i> | enable or disable    | The <b>-revertive</b> option enables or disables the revertive feature for all clock sources.<br><br><b>Note</b> In releases prior to Release 5, this option applied only to BITS clock sources.                                                                                                                               |

- Step 3** To display the parameter configuration of the BITS clock sources, enter the **dspclparms** command as shown in the following example:

```
M8850_LA.8.PXM.a > dspclparms
BITS Cable Type : Twisted Pair
BITS Signal Type : Data Mode
```

The above example shows the default BITS clock configuration parameters. The cable type can be either twisted pair or coax. The signal type can be either data mode or sync mode.

- Step 4** If you need to change the BITS clock configuration parameters, enter the **cnfclparms** command as follows:

```
M8850_LA.8.PXM.a > cnfclparms <signal type> <cable type>
```

Replace the *signal type* variable with **1** to select data or with **2** to select sync. Replace the *cable type* variable with **1** to select twisted pair cabling or with **2** to select coaxial cabling.

- Step 5** To configure an additional BITS clock source, repeat [Step 2](#) using the correct parameters for the additional source. The clock parameters configured in Steps 3 and 4 apply to both BITS clock inputs.

- Step 6** To display the clock source configuration, enter the **dspclksrcs** command.

The **dspclksrcs** command is described in the “[Managing Manually Configured Clocks Sources](#),” in [Chapter 9, “Switch Operating Procedures](#).”



**Note**

Manual clock distribution provides a revertive function that can apply when the primary clock source fails and is subsequently restored. 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

The following command example shows how to configure a primary E1 external clock source at the upper connector of the PXM-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
```

## Enabling NCDP on a Node

Use the following procedure to enable NCDP on each node in your network.

- Step 1** Enter the **cnfncdp** [options] command to enable NCDP on the node, set timer values, and specify the number of nodes in the clocking domain.

```
M8850_LA.8.PXM.a > cnfncdp -distributionMode 1 -maxNetworkDiameter 30 -hello 300 -holdtime 300 -topoChangeTimer 300
```

Table 2-7 describes the options available for the **cnfncdp** command.

**Table 2-7 cnfncdp Command Parameters**

| Parameter           | Description                                                                                                                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -distributionMode   | The clock distribution mode is either NCDP or manual. If manual, enter the <b>cnfclksrc</b> and its related commands for synchronization.<br>Possible entries: 1 for NCDP or 2 for manual clocking<br>Default = manual (2) |
| -maxNetworkDiameter | Maximum network diameter measured in hops. This is the maximum length of the spanning tree, in the range 3 through 200.<br>Default = 20                                                                                    |
| -hello              | Hello time Interval, in milliseconds, between PDUs. The range is 47 through 60000 milliseconds.<br>Default = 500 milliseconds                                                                                              |

**Table 2-7** *cnfncdp Command Parameters (continued)*

| Parameter        | Description                                                                                                                                                                                               |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -holdtime        | Specifies the time interval, in milliseconds, between each PDU configuration. The range is 47 through 60000 milliseconds.<br>Default = 500 milliseconds                                                   |
| -topoChangeTimer | Time interval, in milliseconds, for which the topology change notification bit will be sent in the the configuration PDUs. The range is from 47 through 60000 milliseconds.<br>Default = 500 milliseconds |

**Step 2** Enter the **dsnpncdp** command to verify that the NCDP parameters were set properly.

```
M8850_LA.8.PXM.a > dsnpncdp
Distribution Mode           : ncdp
Node stratum level         : 3
Max network diameter       : 20
Hello time interval        : 500 ms
Hold Down time interval    : 500 ms
Topology change time interval : 500 ms
Root Clock Source          : internal clock
Root Clock Source Reason   : Free Run
Root Clock Source Status   : ok
Root Stratum Level         : unknown
Root Priority               : 0
Secondary Clock Source     : 0.0
Secondary Clock Source Reason : unknown
Secondary Clock Source Status : unknown
Last Clock Source change time : N/A
Last Clock Source change reason : None
```

Once NCDP is enabled on your node, the best clock source and second best clock source are automatically selected and distributed to all nodes in the network that have NCDP enabled. If no previous NCDP clock configuration has been done, NCDP selects a root clock source that comes from an internal oscillator. If you want the root clock source to come from an external source, use the **cnfncdpclksrc** command as described in the “[Configuring an NCDP Clock Source](#)” section in [Chapter 9, “Switch Operating Procedures.”](#)

**Note**

Cisco recommends using an external clock source instead of the internal oscillator.

**Caution**

If you want to specify the root clock source to come from an external source before you enable NCDP, use the **cnfncdpclksrc <portid> 0** command as described in the “[Configuring an NCDP Clock Source](#)” section in [Chapter 9, “Switch Operating Procedures.”](#) If you run **cnfncdpclksrc <portid> 0** before you enable NCDP with the **cnfncdp** command, the root clock source will be the external clock you configured, instead of the internal oscillator.

If you wish to change the BITS clock selected by NCDP, enter the **cnfncdpclksrc** command, as described in the “[Configuring an NCDP Clock Source](#)” section in [Chapter 9, “Switch Operating Procedures.”](#)

# Setting the LAN IP Addresses

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

- Boot IP addresses
- 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, see the “[Guidelines for Creating an IP Address Plan](#)” section in [Chapter 1, “Preparing for Configuration.”](#)



## Note

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

## Setting the Boot IP Address

The boot IP address is the LAN port IP address that a PXM 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 disk IP addresses), the boot IP address can also be used to access the standby PXM card directly, while the disk IP address can be used to access the active PXM.



## Note

Because the disk IP address is stored on the PXM 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 also allows you to 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.

```
mgx8850a.1.PXM.a> bootChange

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

boot device          : lnPci
```



## Note

Although the **bootChange** command display offers a “quit” option, this option does not work. To exit the **bootChange** command without making any changes, press return after each parameter appears. The **bootChange** display is complete when the switch prompt appears.

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 press **Return** to accept the current value and display the next option. The following example shows all options.

```

mgx8850a.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 the “[Troubleshooting Upgrade Problems](#)” section 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 **bootChange** boot IP address when the card 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 PXM 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  | <p>This option selects the boot IP address and network mask for the PXM you are configuring. (This PXM is identified in the switch prompt.) Enter the address and mask in the format: a.b.c.d:ffffff, where a.b.c.d is the IP address and fffffff is the network mask in hexadecimal format.</p> <p><b>Note</b> The <b>bootChange</b> and <b>sysChangeEnet</b> commands are the only commands that can be used to set or change the network mask used for the boot IP address.</p> |
| 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:ffffff00
```

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, 172.29.52.8 is the new boot IP address, and fffffff00 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.

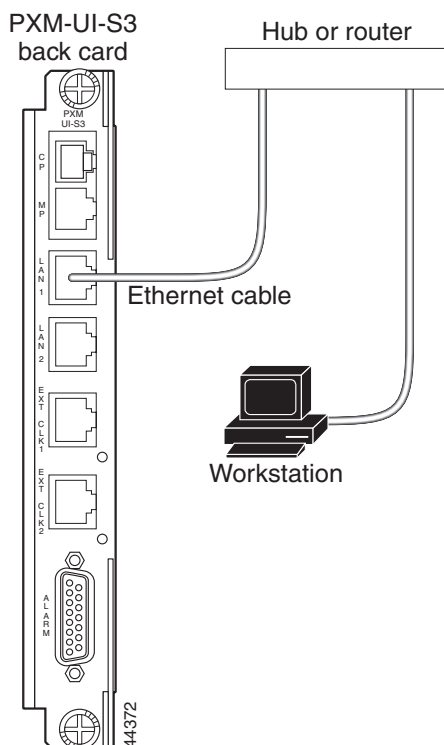
**Note**

If you used the **bootChange** command to enter a network mask for the first time, the new network mask should be operable and visible using the **dspipif** command. If you are changing the network mask, you must reset the active PXM to begin using the new network mask. For a redundant PXM configuration, use the **switchcc** command to switch control to the standby PXM and reset the formerly active card. For a standalone PXM configuration, use the **resetcd** command to reset the standalone PXM.

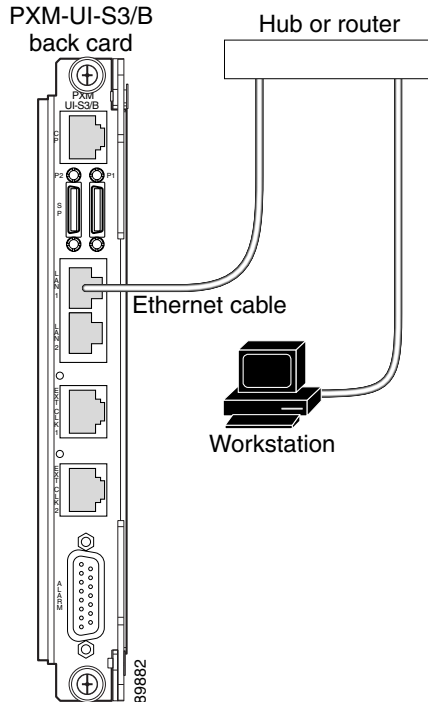
## Setting the Disk IP Address

A local LAN connection extends switch management to all workstations that have connectivity to the LAN to which the switch is connected. [Figure 2-5](#) shows the hardware required for a local LAN connection to a PXM-UI-S3 card. [Figure 2-6](#) shows the hardware required for a local LAN connection to a PXM-UI-S3/B card.

**Figure 2-5 Hardware Required for Local LAN Connections to PXM-UI-S3 Back Cards**

**Note**

The PXM-UI-S3 card shown in [Figure 2-5](#) has two LAN ports. In the current release, only the LAN 1 connector is enabled for communications. Communication through the LAN 2 connector is disabled.

**Figure 2-6 Hardware Required for Local LAN Connections to PXM-UI-S3/B Back Cards**

Before you can manage the switch through the PXM LAN port, you must first assign an IP address to the LAN port. The disk IP address is the IP address that the active PXM uses when the runtime software is loaded.

**Tip**

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 PXM card and the card is active. To access the LAN port over Ethernet when a PXM is operating in boot or standby mode, you must use the Boot IP address.

The disk 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 PXM during regular operation. For more information on how the boot and disk IP addresses are used, see [“Guidelines for Creating an IP Address Plan”](#) in Chapter 1, [“Preparing for Configuration.”](#)

To set the disk IP address, enter 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* and *superuser*.
- Step 2** Verify that the disk 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 PXM LAN port interface (lnPci0), and the PXM 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 InPci 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 disk 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 disk IP address for the switch.

**Step 3** To set the disk 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 8800/8900 Series Command Reference, Release 5.1*.

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

```
mgx8850a.7.PXM.a> dspipif lnPci0
mgx8850a                               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 0xffffffff00
  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
```

## 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 disk IP addresses.

After the disk IP interface has been configured and a physical path established to the Cisco MGX switch, 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 disk IP address as follows:

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



**Note** 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.

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

The Login prompt comes from the switch and indicates that the workstation has connected successfully 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 Cisco MGX 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. CWM uses IP over ATM connections to connect to Cisco MGX switches. For information on establishing this type of access, see the “[Configuring the Switch](#)” section 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 on a PXM1E card, see [Chapter 4, “Preparing Service Modules for Communication.”](#) For information on bringing up ILMI on an AXSM card, refer to the “[Configuring ILMI on a Port](#)” section in Chapter 2 of the *Cisco ATM Services (AXSM) Configuration Guide and Command Reference for MGX Switches, Release 5*.

The following tasks are described in this section:

- [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 disk or ATM IP interfaces. In some installations, the disk 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:

```
mgx8850a.7.PXM.a> cnftrapip <ipaddress>
```

The IP address should match the disk IP address or the ATM interface IP address. For information on setting and viewing the disk IP address, see the “[Setting the LAN IP Addresses](#)” section earlier in this chapter. For information on setting and viewing the ATM interface IP address, see the “[Configuring the Switch](#)” section 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:

```
mgx8850a.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 passwords for network management, enter the following command:

```
mgx8850a.7.PXM.a> cnfsnmp community password ro|rw
```

The network management passwords are called community strings, and there is a read-only (ro) community string and a read-write (rw) community string. Network management programs that use the ro community string can read switch data (using SNMP GET or GET-NEXT requests), but they cannot change the switch configuration. Network management programs that use the rw community string can read switch data and change the switch configuration (using SNMP SET requests). The default ro community string is *public* and the default rw community string is *private*.

The following example shows how to change the ro community string:

```
mgx8850a.7.PXM.a> cnfsnmp community cisco ro
```

- 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]
```

Replace *location* with 0 to 255 characters of text. The text can include space characters. The location value is sent to SNMP managers when information is requested about the sysLocation MIB object.

The following example shows how to change the SNMP location string:

```
M8850_LA.8.PXM.a > cnfsnmp location Doc Lab
```

- 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]
```

Replace *contact* with 0 to 255 characters of text. The text can include space characters. The contact value is sent to SNMP managers when information is requested about the sysContact MIB object.

The following example shows how to change the SNMP contact string:

```
M8850_LA.8.PXM.a > cnfsnmp contact Lab Manager
```

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

```
M8850_LA.8.PXM.a > dspsnmp
M8850_LA                      System Rev: 05.00    Apr. 13, 2004 20:38:41 GMT
MGX8850                      Node Alarm: MAJOR

Community (rw):               private
Community (ro):               cisco
System Location:              Doc Lab
System Contact:               Lab Manager
```

## Verifying the Hardware Configuration

Before you can configure your switch, you need to collect information about the cards and software installed on the switch. The primary reason for collecting this information is to verify that the correct cards are installed in the correct slots, and that the back cards installed are indeed compatible with the front cards they serve. The “[Hardware Survey Worksheets](#)” section of [Appendix E, “Hardware Survey and Software Configuration Worksheets,”](#) provides worksheets that you can use to record the hardware installation for the different Cisco MGX switches.

The following procedure describes how to display the information you need to complete the hardware survey worksheets. 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
```

A Cisco MGX 8830 switch displays a report similar to the following example:

```
mgx8830b.1.PXM.a> dspecds
mgx8830b                               System Rev: 03.00   Apr. 25, 2002 23:20:16 GMT
Chassis Serial No: SCA053000KM Chassis Rev: A0   GMT Offset: 0
   Node Alarm: MAJOR

Card  Front/Back      Card      Alarm      Redundant  Redundancy
Slot  Card State        Type      Status     Slot       Type
---  -
01    Active/Active     PXM1E-4-155  MAJOR      02         PRIMARY SLOT
02    Standby/Active    PXM1E-4-155  NONE       01         SECONDARY SLOT
03    Active/Empty      RPM          NONE       NA         NO REDUNDANCY
04    Active/Active     FRSM_2CT3    MINOR      05         PRIMARY SLOT
05    Standby/Active    FRSM_2CT3    NONE       04         SECONDARY SLOT
06    Active/Active     CESM_8T1     NONE       NA         NO REDUNDANCY
07    Active/Active     SRM_3T3      NONE       14         PRIMARY SLOT
11    Active/Active     FRSM_8T1     NONE       NA         NO REDUNDANCY
12    Empty            ---         ---        ---        ---
13    Standby/Active    FRSM_8T1     NONE       NA         NO REDUNDANCY
14    Standby/Active    SRM_3T3      NONE       07         SECONDARY SLOT
```

A Cisco MGX 8850 switch displays a report similar to the following example:

```
M8850_LA.8.PXM.a > dspecds
M8850_LA                               System Rev: 04.00   May. 08, 2003 08:23:19 GMT
Chassis Serial No: SAA03230375 Chassis Rev: B0   GMT Offset: 0
   Node Alarm: CRITICAL

Card  Front/Back      Card      Alarm      Redundant  Redundancy
Slot  Card State        Type      Status     Slot       Type
---  -
01    Active/Active     AXSM_40C12   NONE       NA         NO REDUNDANCY
02    Active/Active     AXSM_40C12   NONE       NA         NO REDUNDANCY
03    Active/Active     AXSM_16T3E3  NONE       NA         NO REDUNDANCY
04    Active-F/Active    AXSME_16T3E3  MAJOR      NA         NO REDUNDANCY
05    Active-F/Active    AXSME_20C12  MAJOR      NA         NO REDUNDANCY
06    Active/Active     AXSM_16OC3_B  MAJOR      NA         NO REDUNDANCY
07    Empty Resvd/Empty  ---         MAJOR      08         PRIMARY SLOT
08    Active/Active     PXM45B       NONE       07         SECONDARY SLOT
09    Active/Active     RPM_PR       NONE       NA         NO REDUNDANCY
10    Empty            ---         ---        ---        ---
11    Mismatch/Empty    UNKNOWN      NONE       NA         NO REDUNDANCY
12    Active/Active     AXSM-32-T1E1-E  NONE       NA         NO REDUNDANCY
13    Active/Active     FRSM_2CT3    NONE       NA         NO REDUNDANCY
14    Active/Active     FRSM_8T1     NONE       NA         NO REDUNDANCY
15    Empty            ---         ---        ---        ---
```

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

```
M8850_LA                               System Rev: 04.00   May. 08, 2003 08:23:19 GMT
Chassis Serial No: SAA03230375 Chassis Rev: B0   GMT Offset: 0
   Node Alarm: CRITICAL

Card  Front/Back      Card      Alarm      Redundant  Redundancy
Slot  Card State        Type      Status     Slot       Type
---  -
16    Active/Active     SRME_OC3     NONE       15         SECONDARY SLOT
29    Active/Active     CESM_8T1     NONE       NA         NO REDUNDANCY
30    Active/Active     FRSM_HS2/B   NONE       NA         NO REDUNDANCY
```

```

31    Empty          ---          ---          ---          ---
32    Empty          ---          ---          ---          ---

```

A Cisco MGX 8950 switch displays a report similar to the following example:

```

M8950_DC.8.PXM.a > dspcds
M8950_DC                      System Rev: 04.00    May. 08, 2003 09:10:06 GMT
Chassis Serial No:   SCA0504043H Chassis Rev: A0    GMT Offset: 0
   Node Alarm: CRITICAL

Card  Front/Back      Card      Alarm      Redundant  Redundancy
Slot  Card State      Type      Status     Slot       Type
---  -
01    Active/Active    AXSM_4OC12  MINOR      NA         NO REDUNDANCY
02    Active/Active    AXSM_16OC3  NONE       NA         NO REDUNDANCY
03    Empty           ---        ---        ---        ---
04    Empty           ---        ---        ---        ---
05    Active/Active    AXSM_10C48_B  NONE      NA         NO REDUNDANCY
06    Empty           ---        ---        ---        ---
07    Standby/Active   PXM45B      NONE       08        PRIMARY SLOT
08    Active/Active    PXM45C      NONE       07        SECONDARY SLOT
09    Active/Empty     XM_60       NONE      NA         NO REDUNDANCY
10    Active/Empty     XM_60       NONE      NA         NO REDUNDANCY
11    Empty           ---        ---        ---        ---
12    Active/Active    AXSM_16OC3  NONE      NA         NO REDUNDANCY
13    Empty           ---        ---        ---        ---
14    Active/Active    AXSM_4OC12  NONE      NA         NO REDUNDANCY
15    Active/Active    AXSM-1-9953-XG  MINOR    NA         NO REDUNDANCY

Type <CR> to continue, Q<CR> to stop:
M8950_DC                      System Rev: 04.00    May. 08, 2003 09:10:06 GMT
Chassis Serial No:   SCA0504043H Chassis Rev: A0    GMT Offset: 0
   Node Alarm: CRITICAL

Card  Front/Back      Card      Alarm      Redundant  Redundancy
Slot  Card State      Type      Status     Slot       Type
---  -
16    Active/Active    AXSM-4-2488-XG  NONE      NA         NO REDUNDANCY
25    Active/Empty     XM_60       NONE      NA         NO REDUNDANCY
26    Active/Empty     XM_60       NONE      NA         NO REDUNDANCY

M8950_DC.8.PXM.a >

```

**Step 3** In the appropriate worksheet in the “[Hardware Survey Worksheets](#)” section of [Appendix E, “Hardware Survey and Software Configuration Worksheets,”](#) 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:

```
mgx8830b.1.PXM.a> dspcd <slot>
```

The **dspcd** command displays information that is unique to a particular card. For PXM1E cards, the switch displays a report similar to the following example:

```
mgx8830b.1.PXM.a> dspcd 2
mgx8830b                               System Rev: 03.00   Apr. 25, 2002 22:51:15 GMT
MGX8830                               Node Alarm: MAJOR
Slot Number      2      Redundant Slot:  1

                                Front Card      Upper Card      Lower Card
                                -----
Inserted Card:      PXM1E-4-155      UI Stratum3      SMFIR_4_OC3
Reserved Card:      PXM1E-4-155      UI Stratum3      SMFIR_4_OC3
State:              Standby          Active           Active
Serial Number:      S1234567890      SAK0325008J      SAG05415SW9
Prim SW Rev:        3.0(0.39)A      ---             ---
Sec SW Rev:         3.0(0.39)A      ---             ---
Cur SW Rev:        3.0(0.39)A      ---             ---
Boot FW Rev:        3.0(0.26)A      ---             ---
800-level Rev:      E2              03              4P
800-level Part#:    800-12345-01      800-05787-01      800-18663-01
CLEI Code:          /0              0
Reset Reason:       On Reset From Shell
Card Alarm:         NONE
Failed Reason:      None
Miscellaneous Information:

Type <CR> to continue, Q<CR> to stop:
mgx8830b                               System Rev: 03.00   Apr. 25, 2002 22:51:15 GMT
MGX8830                               Node Alarm: MAJOR

Crossbar Slot Status:      EMPTY

Alarm Causes
-----
      NO ALARMS

mgx8850a.7.PXM.a>
```

**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 service modules, the switch displays a report similar to the report displayed on the PXM cards. The following example shows the **dspcd** report for a CESM-8T1 card:

```
mgx8830b.1.PXM.a> dspcd 6
mgx8830b                               System Rev: 03.00   Apr. 25, 2002 23:01:03 GMT
MGX8830                               Node Alarm: MAJOR
Slot Number:      6      Redundant Slot: NONE

                                Front Card      Back Card
                                -----
Inserted Card:      CESM_8T1          RJ48_8T1
Reserved Card:      UnReserved        UnReserved
State:              Active            Active
Serial Number:      A79907            A12475
Prim SW Rev:        20.0(0.106)D      ---
Sec SW Rev:         20.0(0.106)D      ---
Cur SW Rev:        20.0(0.106)D      ---
Boot FW Rev:        1.0(2.0)          ---
```

```

800-level Rev:
800-level Part#:    000-00000-00          000-00000-00
CLEI Code:
Reset Reason:       On Reset from PXM
Card Alarm:         NONE
Failed Reason:      None
Miscellaneous Information:

Type <CR> to continue, Q<CR> to stop:
mgx8830b                System Rev: 03.00   Apr. 25, 2002 23:01:03 GMT
MGX8830                  Node Alarm: MAJOR
Crossbar Slot Status:    No Crossbar

Alarm Causes
-----
NO ALARMS

```

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

```

mgx8830b.1.PXM.a> dspcd 7
mgx8830a                System Rev: 03.00   Apr. 25, 2002 23:10:08 GMT
MGX8830                  Node Alarm: MAJOR
Slot Number      7      Redundant Slot: 14

      Front Card      Back Card
      -----
Inserted Card:      SRM_3T3      BNC_3T3
Reserved Card:      UnReserved    UnReserved
State:              Active        Active
Serial Number:      955802        SBK043600TT
Prim SW Rev:        ---          ---
Sec SW Rev:         ---          ---
Cur SW Rev:        ---          ---
Boot FW Rev:        ---          ---
800-level Rev:      BB           A0
800-level Part#:    000-00000-00    800-03148-02
CLEI Code:          ---          BAI9A6VAAA
Reset Reason:       On Power up
Card Alarm:         NONE
Failed Reason:      None
Miscellaneous Information:

Type <CR> to continue, Q<CR> to stop:
mgx8830                System Rev: 03.00   Apr. 25, 2002 23:10:08 GMT
MGX8830                  Node Alarm: MAJOR
Crossbar Slot Status:    No Crossbar

Alarm Causes
-----
NO ALARMS

```



**Note** You can not run the **dspcd** command on the SRM itself, because all SRM card configuration is done from the PXM card. Enter **dspcd <SRM\_slot\_number>** at the PXM to display information about the SRM cards in your switch.

- b. In the worksheet for your switch type, write down the following information for each card:
  - Upper back card type that appears in the Upper Card column of the Inserted Card row.
  - Lower back card type that appears in the Lower Card column of the Inserted Card row.

**Tip**

Another way to display a detailed report on a card is to enter 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 enter the required information for all cards in hardware survey worksheet, verify that each card is installed in a slot that supports that card type. You also need to verify that the correct back cards are installed for the corresponding front cards. Refer to the table titled “Valid Slot Installation Options” in *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.

**Note**

The locations where the upper and lower back cards are installed are also called bays. On a MGX 8850 (PXM1E/PXM45) or MGX 8950 switch, each slot has an upper and a lower bay for back cards.

If any of the cards are installed incorrectly, refer to the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1* for instructions on installing the cards correctly..