



Configuring the MGX 8850 Shelf

This chapter describes the shelf-level tasks used to bring up and configure the MGX 8850. These tasks are performed after all hardware is installed and the power is on and alarm-free.

The initial tasks require the use of the command line interface (CLI) on an ASCII terminal. Subsequent steps are performed with either the CiscoView application or the CLI.

This chapter contains the following sections:

- [User Interface Access Ports, page 5-2](#)
- [Initial Shelf Bring-Up, page 5-3](#)
- [Bringing Up a PXM1 with No Runtime Firmware, page 5-4](#)
- [Configuring Node-Level Parameters, page 5-6](#)
- [Downloading Firmware to a Service Module, page 5-11](#)



Note

The words “switch,” “node,” and “shelf” are synonymous for the MGX 8850 product. The word “bay” refers to the upper or lower half of the enclosure.



Note

To add an MGX 8850 feeder to the network, enter the **addshelf** command at the BPX 8600 series switch.

User Interface Access Ports

There are three external user-interface access ports on the PXM1 User Interface back card (PXM1-UI or PXM-UI-S3): the *control* port, the *Ethernet* port and the *maintenance* port. See the “[Initial Shelf Bring-Up](#)” section on page 5-3 for additional information on the use of these ports.

Control Port

The *control port* (sometimes called the console port), is accessed with a command line interface (CLI) on an ASCII terminal. This port is used to make the initial IP address settings and to troubleshoot the shelf.

Low-level control and troubleshooting can be accessed through the CLI on a terminal connected to the shelf or through the CLI in a window of the Cisco WAN Manager application.

Initial Assignment of IP Addresses

IP addresses are assigned to the following:

- Ethernet port
- maintenance port
- in-band ATM IP address— this address is used in the MGX 8850 feeder applications to link the PXM1 and the BPX 8600 series switch.
- IP address of the statistics manager.



Note

When the MGX 8850 is configured in a stand-alone application, only the workstation connected to the shelf can detect these IP addresses.

Before CiscoView or the Cisco WAN Manager (formerly StrataView Plus) is used, the IP addresses for the shelf must reside on the workstation in the *etc/hosts* file. Also, the text file *config.sv* on the workstation must contain the name of the shelf you intend to be the gateway node, the network ID, the network name, and so on. Refer to the Cisco WAN Manager documentation for the file system requirements on the workstation.



Note

When you use the CLI, type all required parameters and any optional parameters before you press Return or Enter.

Ethernet Port

Through the *Ethernet port*, you can use a workstation running a Cisco network management application such as the Cisco WAN Manager or CiscoView application. Typically, the workstation on a LAN is co-located with the MGX 8850.

Maintenance Port

Through the *maintenance port* (sometimes called the modem port), you can connect either a single workstation running an IP-based application or a terminal server that supports multiple workstations. The workstation must support SLIP. Typically, use of this port includes a modem because the shelf resides at a remote location. The typical applications are software and firmware download or tasks that require low-level access.

Other Ports

Other ports exist on the PXM1-UI and PXM-UI-S3. These ports support external clock sources and external, third-party audio or visual alarm systems. For information on the function of other ports, see [Chapter 6, “Card and Service Configuration”](#).

IP-Based Applications

The maintenance port and Ethernet port support IP-based applications. Through these ports, the following applications run:

- Telnet supports CLI command execution from any IP-based application window as well as a window in the Cisco WAN Manager application.
- TFTP lets you download firmware and upload and download configuration information.
- SNMP supports equipment management through the CiscoView application and connection management through the Cisco WAN Manager application.

Initial Shelf Bring-Up

This section describes how to start up the MGX 8850 shelf for the first time.

- If the PXM1 does not have a runtime (or “online”) firmware image, begin with the [“Bringing Up a PXM1 with No Runtime Firmware”](#) section on page 5-4.”
- If the PXM1 has a runtime firmware image, go to the [“Configuring Node-Level Parameters”](#) section on page 5-6.”

These sections contain instructions for the following tasks:

- Establish communication with a shelf.
- Configure one or more boot-level IP addresses to make the shelf available to the network.
- Download PXM1 firmware.
- Configure a new, shelf-level Ethernet IP address for the PXM1 as needed or other SLIP or IP addresses.
- Specify a name for the shelf.
- Specify the time on the shelf.
- Optionally configure a time zone for the Western Hemisphere, or configure a time zone relative to Greenwich Mean Time if the shelf resides outside the Western Hemisphere.
- Download firmware to the service modules.

Bringing Up a PXM1 with No Runtime Firmware

This section describes the tasks for loading runtime firmware onto a PXM1 that has only a boot loader. If the PXM1 already has a runtime firmware image, see the [“Configuring Node-Level Parameters” section on page 5-6](#).

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- Step 1** Establish communication with the shelf by doing one of the following:
- If you are using an ASCII terminal connected to the control port, the command prompt is present upon power-up (if the display is skewed, make sure the terminal speed and PXM1-UI port speeds are the same).
 - If you are using a utility such as Hyper Terminal on a PC, the firmware may reside on either a floppy or the hard drive.

- Step 2** Enter the **bootChange** command to configure boot-level IP parameters.

If the shelf has a redundant PXM1, enter **bootChange** on each PXM1 to configure unique, boot-level IP addresses.



Note During the subsequent shelf-level configuration, you must configure another Ethernet IP address that applies to *both* PXM1s.

The following parameters are the only ones that are meaningful at this point. Press Enter for other parameters:

- Mandatory “host name” is a name for the workstation. For the MGX 8850 node, enter the letter “c.”
- Ethernet IP address and subnet mask for the PXM1 LAN port are mandatory (see “inet on Ethernet” in the following example). Follow the IP address with a colon and a net mask. The netmask is eight hexadecimal numbers with no embedded periods. Do not type spaces on either side of the colon.
- If the workstation from which you download firmware is on a subnet other than the subnet of the PXM1, enter a gateway IP address (“gateway inet”).

There are three editing functions near the top of the following example screen. These are ‘clear field’, ‘go to previous field’, and ‘quit’. Of these, typing a period to clear the current field is the most commonly used.

```
>bootChange
'.' = clear field; '-' = go to previous field; ^D = quit
boot device      : lnPci
processor number  : 0
host name        : c
file name        :
inet on ethernet (e) : 188.29.37.14:ffffff00
inet on backplane (b) :
host inet (h)    :
gateway inet (g) : 188.29.37.1
user (u)         :
ftp password (pw) (blank = use rsh):
flags (f)        : 0x0
target name (tn) :
startup script (s) :
other (o)        :
```

The PXM1 now has a boot-level IP address. Remember to repeat the **bootChange** command on the redundant PXM1, if one is installed.

- Step 3** Enter **reboot** to reset the PXM1.

The PXM1 is ready to receive a firmware image through the Ethernet port. Use the workstation for the next steps.

Step 4 To confirm that the node is accessible (optional), ping the PXM1 at the workstation.

Step 5 Establish communication with the PXM1 according to the user-communication device type. For example, at the prompt on a UNIX workstation, enter

```
>tip -9600 /dev/ttya
```

The device specification could also be ttyb.

Step 6 Enter the **tftp** command with the IP address set at the ASCII terminal. For example, if the console port is connected to the serial port of the workstation enter

```
$tftp 162.29.38.101
```

Step 7 At the tftp prompt, enter the binary mode

```
>bin
```

Step 8 From the directory where the firmware resides, enter the **put** command. Include the arguments that specify the firmware release number, the statement that this firmware applies to the active PXM1, and the release directory.

If necessary, refer to the Release Notes for new firmware release numbers. The entries are case-sensitive. For example

```
>put pxm_release_number.fw POPEYE@PXM_ACTIVE.FW
```

release_number is a decimal number in the form *n.n.nn*. Currently, the initial *n* typically is a “1.” An example filename for PXM1 firmware is “pxm_1.0.03.”



Note

The download automatically includes the firmware for the standby PXM1 (if present). You can subsequently see POPEYE@PXM_STANDBY.FW in c:/FW.

Check the console to verify that the transfer is completed and the checksum is passed.

Step 9 Quit the TFTP application, then go to the ASCII terminal connected to the control port:

```
>quit
```

Step 10 At the ASCII terminal, enter **cd** to access the FW directory on the hard drive.

Step 11 List the contents to confirm that the firmware resides in the FW directory:

```
>cd "c:/FW"
```

```
>ll
```

Note these required quote marks are absent when you use the CLI after you reboot the PXM1 with its runtime image (see the [“Configuring Node-Level Parameters”](#) section on page 5-6).

Step 12 Enter the following command

```
>setPXMPrimary "version"
```

version is the version number of the firmware. The name of a PXM1 firmware file has the format *pxm_version.fw*. For example: in PXM_1.0.03.fw, *version* is 1.0.03.

Step 13 Reboot the system

```
>reboot
```

A login prompt appears on the ASCII terminal. The PXM1 is now the same as a PXM1 that Cisco ships with a runtime firmware image.

Configuring Node-Level Parameters

Except for adding a user and creating a password, all the tasks described in this section are performed through the CiscoView application. For descriptions of the commands you enter at the CLI, refer to the *Cisco MGX 8850 Series Switch Command Reference*.

A representation of the feeder application of the MGX 8850 shelf appears in [Figure 5-1](#).

A representation of the stand-alone application of the shelf appears in [Figure 5-2](#).

Figure 5-1 Feeder Application

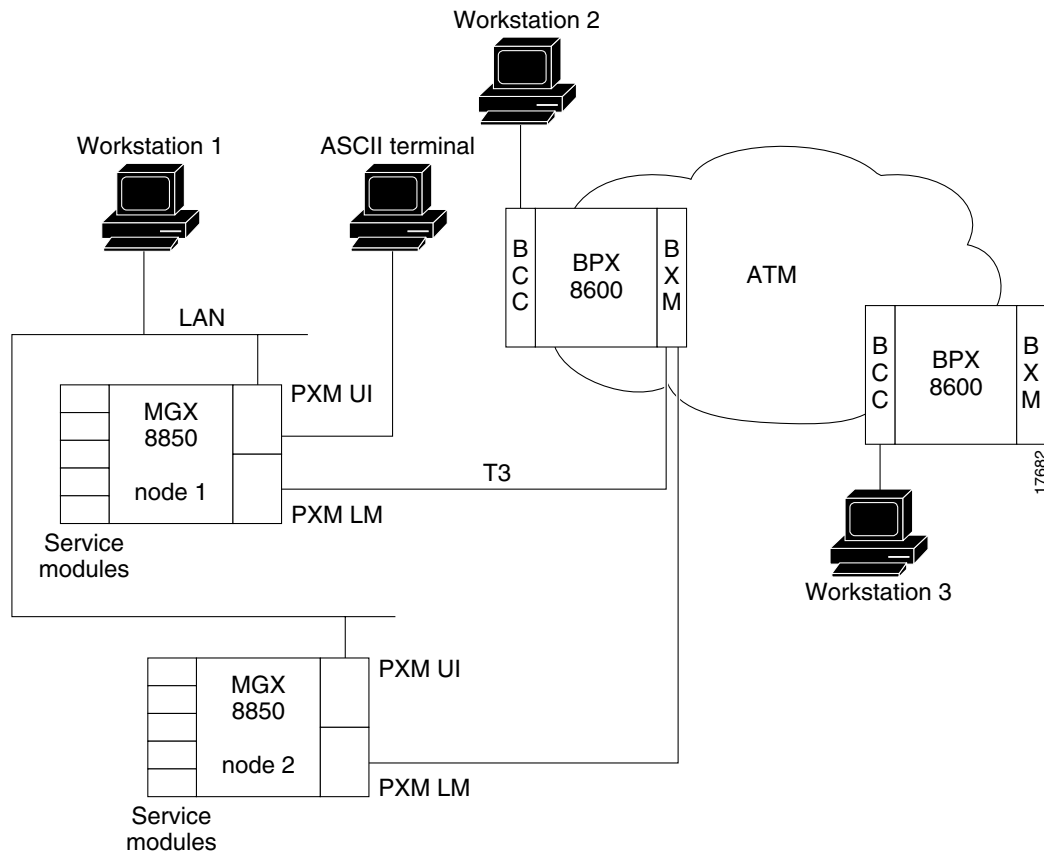
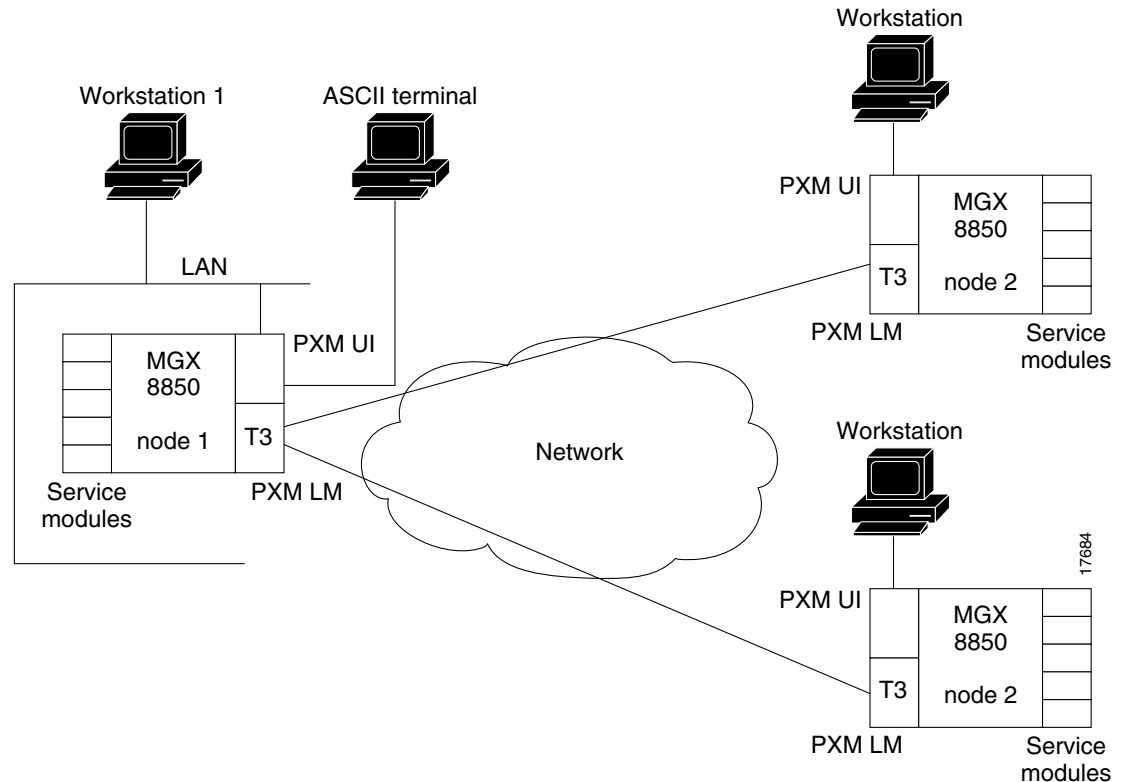


Figure 5-2 Stand-Alone Application



The following procedure establishes the basic configuration for the Node as a whole. For example, this procedure allows the user to specify the node's name, its IP address, the time and time zone for the node, and the clocking source. This procedure also allows the user to specify other users and their passwords.

At the CLI prompt on the ASCII terminal, perform the following steps.

-
- Step 1** Enter the default login and password provided in the Release Notes.
- The terminal displays the slot number of the PXM1 you have logged into by default:
- card number [7]:
- Step 2** Press **Return** to enter the CLI of this the PXM1.
- At runtime, you can enter the slot number of a service module or a standby PXM1. In this case, the CLI prompt shows
- ```
NODENAME.1.7.PXM.a>
```
- where NODENAME shows that the node has no name; the slot number of the PXM1 is 7; and this PXM1 is active.

The general format of the CLI prompt is

```
nodename.1.slot.cardtype.a>
```

where

|                    |                                                  |
|--------------------|--------------------------------------------------|
| <i>nodename</i>    | The name of the node                             |
| <i>l</i>           | he shelf (node) number (always 1).               |
| <i>slot</i>        | The location (slot number) of the card.          |
| <i>cardtype</i>    | The type of the card                             |
| <i>card status</i> | The status of the card (a = active, s = standby) |

**Step 3** Display the cards in the system

```
NODENAME.1.7.PXM.a> dspcads
```

**Step 4** Display any IP addresses in the system

```
NODENAME.1.7.PXM.a> dspifip
```

**Step 5** Change the IP addresses as needed

```
NODENAME.1.7.PXM.a> cnfifip <interface> <IP_Addr> <Net_Mask> [BroadcastAddr]
```

where *interface* is a number: 26 is the Ethernet (LAN AUI) port, 28 is the maintenance port (SLIP), or 37 for the ATM IP address (feeder application only). Note that *BroadcastAddr* applies to only the Ethernet interface (number 26).




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**Note** Check the Release Notes for any variations in how to configure IP addresses.

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**Step 6** Enter the **cnfname** command to assign a name to the shelf

```
UNKNOWN.1.7.PXM.a> cnfname <node name>
```

where *node name* is a case-sensitive name up to eight characters. For example

```
UNKNOWN.1.7.PXM.a> cnfname cisco22
```

**Step 7** Enter the **cnftime** command to specify the time on the shelf

```
cisco22.1.7.PXM.a> cnftime <hh:mm:ss>
```

*hh* The hour of the day in the range 1–24

*mm* The minute of the hour in the range 1–60

*ss* The number of seconds in the minute and has a range of 1–6

**Step 8** Optionally configure a time zone for the node. Enter the **cnftmzn** command to specify a time zone in the Western Hemisphere. To configure a time zone outside the Western Hemisphere, first specify Greenwich Mean Time (GMT) with **cnftmzn** then specify the offset from GMT by entering **cnftmzngmt**:



- cisco22.1.7.PXM.a) **cnftmzn** <timezone>

*timezone*      The timezone of the shelf: 1 for GMT, 2 for EST, 3 for CST, 4 for MST, 5 for PST

- cisco22.1.7.PXM.a) **cnftmzngmt** <timeoffsetGMT>

*timeoffset*      The timezone offset from GMT in hours. In the range of -12 to 12.

- Step 9**      Execute the **cnfstatsmgr** command to specify the IP address of the workstation that runs the Cisco WAN Manager application.

Before it sends statistics, the MGX 8850 node must have the IP address of the workstation with this application. The syntax is

```
>cnfstatsmgr <IP_Addr>
```

*IP\_Addr*      The IP address of the workstation

If the node has a redundant PXM1, it automatically receives the same IP addresses and configuration as the primary PXM1. With the IP addresses in place, you can configure the logical ports for the broadband interface through the CiscoView application or the CLI.

- Step 10**      Add one or more users by entering **adduser** once for each new user.

Note that the access privilege level is case-sensitive as the syntax description indicates. After you enter the privilege level, the system prompts for a new password for the user. (This password parameter does not appear in the help information for **adduser**.)

```
adduser <user_Id> <accessLevel>
```

*user\_Id*      The *user\_Id* is 1–12 alphanumeric characters

*accessLevel*      The *accessLevel* is the case-sensitive privilege level. It can be ANYUSER or within the range GROUP1–GROUP5. For example, to specify a privilege level 2, type GROUP2

After you enter a user-name and privilege level, the system prompts for a password. The password is a string of 5–15 characters. If you press Return without entering a password, the system assigns the default password “newuser.”

- Step 11**      Optionally change your password or another user’s password by entering

```
cnfpasswd [username]
```

username is the name of another user whose password you are changing. That user must have a privilege level that is lower than your privilege. To change your own password, enter cnfpasswd with no username.

- Step 12**      To specify the shelf as a feeder, execute the **cnfswfunc** command:

```
cnfswfunc <-ndtype>
```

and follow *-ndtype* with “fdr.”

**Step 13** Configure an external clock if needed:

- a. Set the clock interface type:  
**cnfextclk** <clock-type>: “1” is for T1 connections, “2” is for E1 connections.
- b. Set the external clocking type:  
**cnfclklevel 4**: to enable Stratum-4 clocking.  
**cnfclklevel 3**: to enable Stratum-3 clocking.




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**Note** Stratum 3 clocking is available with the PXM -UI-S3 back card. Stratum-4 clocking is only available with internal clock sources or with the PXM1-UI back card.

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**Note** See the [“Configuring Synchronization for the Shelf” section on page 6-6](#) for more information on configuring external clock sources.

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**Note** See the [“Making External Clock Connections” section on page 2-4](#) for information on the physical connections for external clocking. This section also contains a description of the PXM1-UI and PXM-UI-S3 back cards.

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**Step 14** Configure (as needed) double-speed clocks for individual cell buses by entering **cnfcbclk**:

**cnfcbclk** <cellBus> <clockRate>

The *cellBus* is a string in the range CB1–CB8 that identifies the cell bus.

The *clockRate* is a number that identifies the rate in megahertz; choices are 21 or 42.

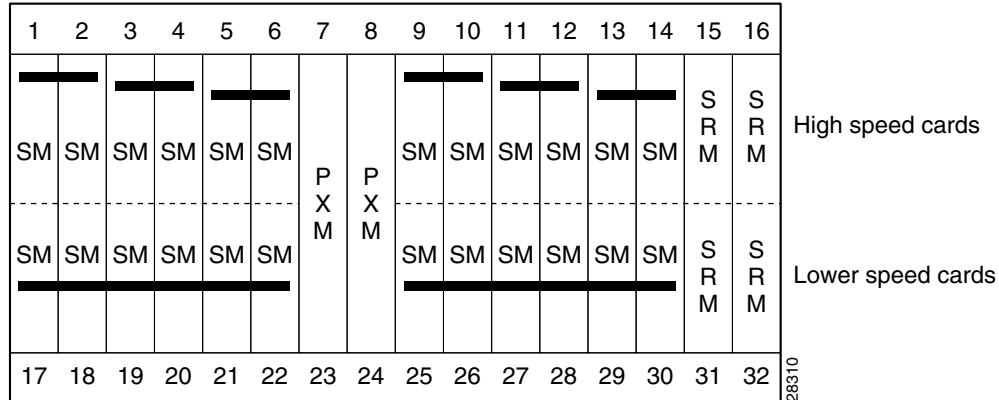
The distribution of the eight cell buses follows.

- cell bus 1 (CB1) connects slots 1 and 2 to the PXM1
- cell bus 2 (CB2) connects slots 3 and 4 to the PXM1
- cell bus 3 (CB3) connects slots 5 and 6 to the PXM1
- cell bus 4 (CB4) connects slots 9 and 10 to the PXM1
- cell bus 5 (CB5) connects slots 11 and 12 to the PXM1
- cell bus 6 (CB6) connects slots 13 and 14 to the PXM1
- cell bus 7 (CB7) connects slots 17, 18, 19, 20, 21, and 22 to the PXM1
- cell bus 8 (CB8) connects slots 25, 26, 27, 28, 29, and 30 to the PXM1

In the top bay, each of the six cell buses serves two card slots. In the bottom bay, each of the two cell buses serves six card slots. Therefore, each top slot has three times the available bandwidth of the lower slots and is therefore better suited to the higher speed cards. The bandwidth concentration for cell buses in the upper and lower bays is illustrated in [Figure 5-3](#).

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Figure 5-3 Bandwidth Concentration in Upper and Lower Bays



## Downloading Firmware to a Service Module

This section contains instructions to load service module firmware from a workstation to the hard drive on the PXM1. This is done when upgrading the existing firmware or because no runtime firmware resides on the hard drive.

Service modules do not retain runtime firmware. The hard drive on the PXM1 may come with default firmware for the service modules, but the details of the customer order actually determine whether firmware is on the disk. If default firmware exists on the hard drive, the PXM1 downloads it upon power-up or when you reset the card.



### Note

If you download firmware from a workstation to the hard drive, the PXM1 does not automatically load the firmware to the card. You must reset the card (**resetcd** on the CLI) to download firmware from disk to the card. With the single execution of a command, you can load either generic firmware for all cards of a certain type or firmware destined to a specific slot.

You can download firmware from the workstation by performing the following steps.

- Step 1** Start the tftp application by entering the **tftp** command
- ```
$tftp <IP address>
```
- then enter
- ```
>bin
```
- Step 2** To download generic firmware for a type of service module to the PXM1 hard drive, enter the **put** command
- ```
>put cardtype.fw POPEYE@SM_1_0.FW
```
- cardtype* is the firmware for a type of card; the shelf number always is 1; and the 0 represents the slot number for the purpose of generic download. An example of *cardtype.fw* is “frsm8t1e1_10.0.11.fw.” Note the space between “.fw” and “POPEYE.”
- Step 3** To load slot-specific firmware at a particular card, enter the **put** command.
- ```
>put cardtype.fw POPEYE@SM_1_slot.FW
```

*cardtype* is the firmware, and *slot* is the number of the card slot. Note the space between “.fw” and “POPEYE.” Repeat this step for each slot as needed.




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**Note** Slot-specific firmware overwrites the current firmware at a slot.

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With slot-specific firmware, the card does not come up if you do either of the following actions.

- Specify the wrong firmware, the firmware specified by *cardtype* does not match the targeted card at *slot*.
- Insert a different card (which does not use the firmware specified for the slot).

An example command for downloading specific firmware for an FRSM-2CT3 in slot 3 is

```
>put frsm2ct3_10.0.01.fw POPEYE@SM_1_3.FW
```

where “frsm2ct3\_10.0.0” refers to the firmware for the FRSM-2CT3, and “3” is the slot.




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**Note** See the Release Notes for the current names of firmware files and release directories.

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**Step 4** When you finish downloading firmware, enter **quit** to quit the TFTP application.

**Step 5** At the CLI on either the workstation or the ACSII terminal, display the firmware files. Note that the directory specification **ll c:/FW** has no quote marks.

```
cisco22.1.7.PXM.a> ll c:/FW
```

**Step 6** If you want to download the firmware from the disk to a card, enter **resetcd**.

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