



Switch Maintenance Procedures

This chapter describes the configuration changes that are needed after a switch has been initialized, started, and configured, and you want to do any of the following tasks:

- Manual reset of the PXM
- Add cards
- Replace cards
- Upgrade cards
- Decommission a card slot
- Decommission an RPM slot

Service module and SRM slots must be decommissioned when you want to change the type of card that runs in the slot.

Manually Resetting the PXM

If a PXM should ever require resetting and the CLI is not working, there is an escape sequence that allows you to reset the PXM. Use the following procedure to reset a PXM.

Step 1 Establish a physical connection to the PXM 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 Press **ESC**, **CTRL-X** to reset the PXM.

Adding Cards

After the initial installation and configuration of a MGX 8850 (PXM1E/PXM45), Cisco MGX 8850/B, MGX 8830, or Cisco MGX 8830/B switch, you can add additional cards to empty slots in the chassis. When you add a card, as opposed to replacing a card, you must configure the switch to recognize the new card. The following sections describe how to configure the switch to recognize the following card additions:

- A standby PXM
- Service modules (AUSM, AXSM, CESM, FRSM, and VISM)
- SRM
- RPM

Adding a Standby PXM Card

During installation, single or redundant PXM cards can be installed in the switch. The procedure for initializing cards after installation is described in the “[Initializing the Switch](#)” section in [Chapter 2](#), “[Configuring General Switch Features](#).”

When you add a PXM card to the switch, you are adding a standby PXM card to a switch with a single active PXM card.



Note

If you are replacing a PXM card that previously operated as either an active or standby card in this switch, refer to the “[Replacing Cards](#)” section later in this chapter.

When adding a standby PXM card to your switch, you need to physically install the PXM card and the back cards in the following order:

1. PXM interface card (for PXM1E) or PXM-HD card (for PXM45)
2. PXM-UI-S3 or PXM-UI-S3/B card
3. PXM front card

After the new standby PXM front and back cards are installed, the active PXM card will initialize the standby card set. The initialization procedure takes some time. You can verify that initialization is complete by entering the **dspcd** command with the standby slot number, for example, **dspcd 8**. If the front card state is Standby, initialization is complete.

Adding Service Modules

When you add any new service module to a switch, you are adding new front and back cards to a slot that is not pre-configured for any card. The following procedure describes how to add service modules to unconfigured slots.



Note

If the slot has been previously configured for a service module, you can either replace that card with a card of the same type or you can decommission the slot. If you are replacing a service module that previously operated in this switch, see the “[Replacing Cards](#)” section later in this chapter.

**Note**

This procedure applies to any of the following service modules: AUSM, AXSM, CESM, FRSM, VISM, and VXSM.

- Step 1** Before installing the hardware, enter the **dspcd** command to verify that the slot in which you want to add the card is not configured. In the following example, the **dspcd** report shows that slot 3 is not configured.

```
M8950_DC.7.PXM.a > dspcd 3
M8950_DC                      System Rev: 05.00   Mar. 31, 2004 06:20:34 GMT
MGX8950 (JBP-2)                Node Alarm: CRITICAL
Slot Number: 3      Redundant Slot: NONE

                Front Card          Back Card
                -----            -
Inserted Card:  ---                  ---
Reserved Card:  UnReserved          UnReserved
State:         Empty                Empty
Serial Number:  ---                  ---
Prim SW Rev:   ---                  ---
Sec SW Rev:    ---                  ---
Cur SW Rev:   ---                  ---
Boot FW Rev:   ---                  ---
800-level Rev: ---                  ---
800-level Part#: ---                ---
CLEI Code:     ---                  ---
Reset Reason:  On Power up
Card Alarm:    NONE
Failed Reason: None
Miscellaneous Information:
```

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

- Step 2** Install the service module and the appropriate back cards in an unconfigured slot as described in the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.

After the new service module front and back cards are installed, the Fail LED on the front card flashes and none of the LEDs on the back cards are lit. If you enter the **dspcds** command, the card state in the display appears as Failed.

- Step 3** To initialize the slot for the service module, enter the following command:

```
mgx8850a.7.PXM.a > setrev <slot> <revision>
```

Replace *<slot>* with the card slot number for the new service module. Replace *<revision>* with the software version number for the runtime firmware the card will use. You can find the software version number in the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45)*, *Cisco MGX 8950*, and *Cisco MGX 8830 Switches, Release 5.1.00* and the *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.0.02*. To determine the version number from the runtime firmware filename, see the “[Determining the Software Version Number from Filenames](#)” section in [Chapter 9, “Switch Operating Procedures.”](#)

**Note**

After installation, each card should be initialized with the **setrev** command only once. For instructions on upgrading the software on a card, see [Appendix A, “Downloading and Installing Software Upgrades.”](#)

Step 4 When prompted to confirm the command and reset the card, type **y** and press **Return**.

After you confirm the command, the slot initializes, the runtime firmware loads on the service module card, and the card resets. Be patient. The card reset takes a couple of minutes. While the card is resetting, you can enter the **dspcds** command to display the status of the service module card. If you enter the command frequently, you will see the card state change from Empty to Boot/Empty to Empty to Init/Empty and finally to Active/Active.

Step 5 To verify that the new card is running the correct firmware, enter the **dspcd** command with the correct slot number. The following example shows that the AXSM-XG card in slot 16 is running firmware version 5.0(0).

```
M8950_DC.7.PXM.a > dspcd 16
M8950_DC                               System Rev: 05.00   Mar. 31, 2004 06:22:26 GMT
MGX8950 (JBP-2)                         Node Alarm: CRITICAL
Slot Number: 16   Redundant Slot: NONE
```

	Front Card	Back Card
	-----	-----
Inserted Card:	AXSM-4-2488-XG	SMF-4-2488-SFP
Reserved Card:	AXSM-4-2488-XG	SMF-4-2488-SFP
State:	Active	Active
Serial Number:	SAG06142PX4	SAG06200DFZ
Prim SW Rev:	5.0(0)	---
Sec SW Rev:	5.0(0)	---
Cur SW Rev:	5.0(0)	---
Boot FW Rev:	5.0(0)	---
800-level Rev:	03	02
800-level Part#:	800-16987-02	800-19913-02
CLEI Code:	0	0
Reset Reason:	On Power up	
Card Alarm:	NONE	
Failed Reason:	None	
Miscellaneous Information:		

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

After you confirm that the service module has been added and is running the correct software, you can start bringing up lines as described in the appropriate service module software configuration guide.

Adding SRM Cards

When you add an SRM card to a switch, you are adding new front and back cards to a slot that is not configured for an SRM card. The following procedure describes how to add SRM cards to unconfigured slots.



Note

If the slot has been previously configured for an SRM card, you can either replace that card with a card of the same type or you can decommission the slot.

-
- Step 1** Before installing the hardware, enter the **dspcd** command to verify that the slot in which you want to add the card is not configured. In the following example, the **dspcd** report shows that slot 14 is not configured.

```
pop20one.7.PXM.a > dspcd 14
ERR: The slot specified, has no card configured in it.
ERR: Syntax: dspcd ["slot_number"]
        slot number -- optional;
```

- Step 2** Install the SRM card and the appropriate back cards in an unconfigured slot as described in the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.
- Step 3** Configure SRM communications.
-

Adding RPM Cards

When you add an RPM card to a switch, you are adding new front and back cards to a slot that is not configured for an RPM card. The following procedure describes how to add RPM cards to unconfigured slots.



Note

If the slot has been previously configured for an RPM card, you can either replace that card with a card of the same type or you can decommission the slot. If you are replacing an RPM card that previously operated in this switch, see the “[Replacing RPM Cards](#)” section later in this chapter. For instructions on decommissioning a slot, see the “[Replacing PXM1E-4-155 Cards with PXM1E-8-155 Cards](#)” section later in this chapter.

- Step 1** Before installing the hardware, enter the **dspcd** command to verify that the slot in which you want to add the card has not been configured. In the following example, the **dspcd** report shows that slot 14 is not configured.

```
pop20one.7.PXM.a > dspcd 14
ERR: The slot specified, has no card configured in it.
ERR: Syntax: dspcd ["slot_number"]
        slot number -- optional;
```

- Step 2** Install the RPM card and the appropriate back cards in an unconfigured slot as described in the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.
- Step 3** Initialize the RPM card as described in the “[Initializing RPM Cards](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#)
- Step 4** Verify the RPM software version level as described in the “[Verifying the Software Version in Use](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#)
- Step 5** Establish card redundancy as described in the “[Establishing Redundancy Between RPM Cards](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#)
- Step 6** Configure RPM communications as described in the *Cisco MGX 8850 Route Processor Module Installation and Configuration Guide*.
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Replacing Cards

The procedures in this section describe how to replace cards with another card of the same type. The following sections describe how to do the following:

- Replace PXM cards
- Replace PXM45/A or PXM45/B cards with PXM45/C cards
- Replace AXSM cards with AXSM/B cards
- Replace service modules (AUSM, AXSM, CESM, FRSM, and VISM)
- Replace SRM cards with SRME/B
- Replace RPM cards



Caution

When replacing T1 or T3 cards are replaced with E1 or E3 cards, or vice versa, you must enter the **clrsmcnf** command for the appropriate slot before you install the replacement card. For details about using **clrsmcnf** command, refer to the “Clearing a Slot Configuration” section in [Chapter 9, “Switch Operating Procedures.”](#)

Replacing PXM Cards

PXM front and back cards can be replaced when the switch is operating. If a PXM is operating in standalone mode, all calls are interrupted until the PXM is replaced and operating correctly. If the switch is using redundant PXM cards, you can replace the standby card without interrupting calls. To determine if the card you want to replace is active, enter the **dspecd slot** command. If the card you want to replace is the active card, enter the **switchcc** command to place the card in standby mode.

Because PXM card sets store configuration information that controls switch operation, a nativity check is performed each time a PXM front card or hard disk card is added or replaced. If a PXM has been configured in a Cisco MGX switch, the backplane serial number is stored on the PXM front card and on the PXM hard disk (the hard disk is on the PXM1E front card or on a PXM45 back card). If a PXM card is inserted into a chassis or the card is reset with a command such as **resetsys**, the nativity check is run to determine if the PXM cards are native to the chassis. If the chassis serial numbers configured on all PXM cards match the switch chassis serial number, the cards are all native and no special action is required.

The purpose of the nativity check is to resolve configuration differences between PXM cards. Some configuration is stored on the PXM front card and hard disk. This information includes the runtime software version to be used. The actual runtime software is stored on the PXM hard disk.



Note

When you replace a PXM card, the replacement card uses the boot software stored on the replacement card and the runtime software configured for slots 7 and 8 in Cisco MGX 8850, MGX 8880, and MGX 8950 switches, or slots 1 and 2 in the Cisco MGX 8830. If the boot software stored on the replacement card is not the correct version, you should upgrade it while the card is operating in standby mode. For instructions on upgrading boot software, see to [Appendix A, “Downloading and Installing Software Upgrades.”](#)

If one or more cards are replaced, the nativity check identifies which cards are new to the switch chassis and uses the nativity check results to determine which cards hold the valid configuration. This feature can automatically respond to most configuration mismatches, but some mismatches do require a manual response.

The following sections describe how the automatic response feature works for standalone and redundant PXM installations, and how to respond when the system cannot automatically resolve conflicts.

Automatic Response for Standalone PXM Installations

For standalone installations, the nativity check feature detects and responds to PXM cards as shown in [Table 10-1](#).

Table 10-1 Automatic Response to Nativity Checks in Standalone Installations

Event	PXM Type	Nativity Check Results	Response
PXM front card and hard disk card have not changed.	PXM1E	Native front card.	No action is required.
	PXM45	Native front card and native hard disk card.	
PXM front card has been replaced with an unconfigured card.	PXM1E	New PXM1E.	There is no existing configuration to use. You must configure the switch or restore a saved configuration.
	PXM45	New PXM45 and native hard disk card.	The switch builds the PXM45 front card configuration from the configuration on the hard disk.
PXM front card has been replaced with a previously configured front card from another chassis.	PXM1E	Non-native front card.	You must manually resolve the configuration conflict as described in the “ Manually Responding to Nativity Checks ” section which appears later in this chapter.
	PXM45	Non-native front card and native hard disk card.	The switch rebuilds the PXM45 front card configuration from the configuration on the hard disk.
The hard disk card has been replaced with an unconfigured card.	PXM45	Native front card, new hard disk card.	The hard disk configuration cannot be completely built from the configuration on the front card. You must manually resolve the configuration conflict as described in the “ Manually Responding to Nativity Checks ” section which appears later in this chapter.
The hard disk card has been replaced with a previously configured hard disk card from another chassis.	PXM45	Native front card, non-native hard disk card.	The hard disk configuration cannot be completely rebuilt from the configuration on the front card. You must manually resolve the configuration conflict as described in the “ Manually Responding to Nativity Checks ” section which appears later in this chapter.
PXM front card and hard disk card are replaced with unconfigured cards.	PXM45	New front card and new hard disk card.	There is no existing configuration to use. You must configure the switch or restore a saved configuration.

Table 10-1 Automatic Response to Nativity Checks in Standalone Installations (continued)

Event	PXM Type	Nativity Check Results	Response
PXM front card and hard disk card are replaced with a set that was configured in another switch.	PXM45	Non-native front card and non-native hard disk card.	The standalone PXM enters the failed state. You must manually resolve the configuration conflict as described in the “ Manually Responding to Nativity Checks ” section which appears later in this chapter.
Both PXM front card and hard disk card are replaced with cards that were configured in different switches.	PXM45	Non-native front card and non-native hard disk card.	In this scenario, you can clear the configuration stored on the PXM cards, restore a configuration from a saved file, or you can use the configuration stored on the hard disk. You must manually resolve the configuration conflict as described in “ Manually Responding to Nativity Checks ,” which appears later in this chapter.

Automatic Response for Redundant PXM Installations

For redundant PXM installations, the nativity check is performed only on the active PXM card set. If an active PXM card set is operating correctly, you can replace any card in the standby or non-active card set, and the active card set will attempt to configure the replacement card and bring it up in standby mode.

When the entire switch is reset, the nativity check is used to determine which card set gains mastership. The card set that gains mastership will attempt to go active and will resolve nativity conflicts as described in [Table 10-1](#). [Table 10-2](#) shows how the nativity check is used to assign mastership to a PXM card set.

Table 10-2 Mastership Assignment to PXM Card Sets after Nativity Check

Primary Slot ¹	Secondary Slot ²				
	Both cards non-native	Front card non-native	Both cards non-native, matched serial numbers	Hard disk card non-native	Both cards non-native, mismatched serial numbers
Both cards non-native	No active card set.	Secondary ² card set is active.	No active card set.	No active card set.	No active card set.
Front card non-native	Primary ¹ card set is active.	Primary ¹ card set is active.	Primary ¹ card set is active.	Primary ¹ card set is active.	Primary ¹ card set is active.
Both cards non-native, matched serial numbers	No active card set.	Secondary ² card set is active.	No active card set.	No active card set.	No active card set.
Hard disk card non-native	No active card set.	Secondary ² card set is active.	No active card set.	No active card set.	No active card set.
Both cards non-native, mismatched serial numbers	No active card set.	Secondary ² card set is active.	No active card set.	No active card set.	No active card set.

1. The primary PXM slot is Slot 1 on MGX 8830 switches, Slot 7 on MGX 8850 and MGX 8950 switches, and slot 7 on the MGX 8880 Media Gateway.
2. The secondary PXM slot is Slot 2 on MGX 8830 switches, Slot 8 on MGX 8850 and MGX 8950 switches, and slot 8 on the MGX 8880 Media Gateway.

Manually Responding to Nativity Checks

When a switch cannot automatically resolve a nativity check conflict, the first step to resolution is to use the switch to tell determine the source of the problem and a possible recovery method.

For releases prior to 3.0(20), enter the **sh** command to enter shell mode, and then enter the **shmFailHelp** command to determine the problem. After you discover the problem, enter the **shmFailRecoveryHelp** command to display recommended solutions for problems. For many situations, the **shmFailRecoveryHelp** command will recommend a response. For example, the **shmFailRecoveryHelp** command might recommend that you enter the **shmRecoverIgRbldDisk** command to ignore the nativity check and configure the entire switch using the configuration on the hard disk.

For release 3.0(20) and later, enter the **dspcdhealth** command to see the failure reason and a recommended recovery method. The following example shows the format of this command display:

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

* PXM Failed for the following reasons:
*   Fail                               Recovery
*   Reason                             Method
*   =====                           =====
```

Some typical responses to nativity check conflicts include:

- If you saved a configuration with the **saveallcnf** command, you can restore the configuration with the **restoreallcnf** command.
- If there is no configuration available, you can enter a **clrallcnf** command to establish the PXM card sets as new, unconfigured cards in the chassis.
- If a configuration exists on a PXM45 hard drive card, you can use that configuration to configure the front card and establish nativity for the card set.

If the switch cannot resolve a nativity check conflict and all the cards are operating properly, the PXM cards enter stage 1 CLI mode, which offers a reduced set of commands that you can use to resolve the conflict.

When operating in stage 1 CLI mode, you can FTP files to the switch in preparation for a new configuration or a configuration restore. You can FTP files to the switch using the procedures described for copying files to the switch in [Appendix A, “Downloading and Installing Software Upgrades.”](#)

To rebuild the configuration from a configured PXM45 hard disk card in the switch, do the following tasks:

- Clear the configuration (**clrallcnf**) on the PXM45 front card using a PXM hard disk card for which the configuration can be erased. (Do not use the PXM45 slot that hosts the configuration you want to use.)
- Install the unconfigured PXM45 front card and the configured PXM45 hard disk card in a chassis without a redundant card set.

The switch will build the PXM45 front card configuration from the configuration on the hard disk.

Replacing PXM1E-4-155 Cards with PXM1E-8-155 Cards

The PXM1E-8-155 card set consists of a front card, a UI-S3/B back card, and one of two back cards:

- MCC-8-155 STM1 electrical back card—Supports APS redundancy.
- SFP-8-155 optical back card— Supports APS and Y-cable redundancy. Physical interfaces require installation field replaceable units (FRUs).

Consider the following information when replacing an existing PXM1E-4-155 card set with a PXM1E-8-155 card set:

- The switch must be running software Release 4.0 or later before you can replace a PXM1E-4-155 card with a PXM1E-8-155 card.
- PXM1E front and back cards can be replaced while the switch is operating.
- If a PXM1E-4-155 card set is operating in standalone mode, all calls are interrupted until the PXM1E-4-155 card set is replaced with a fully functioning PXM1E-8-155.
- If the switch is using redundant PXM1E-4-155 card sets with an APS connector, you can upgrade to a PXM1E-8-155 card set without interrupting traffic.
- If the switch is using redundant PXM1E-4-155 card sets without an APS connector, an upgrade to a PXM1E-8-155 card set will interrupt traffic.
- Originally, FRUs were built into the PXM1E-4-155 cards. The PXM1E-8-155 card's SFP-8-155 optical back card requires you to install one FRU for each physical connection on the card. For example, if the PXM1E-4-155 card you are replacing has four connections configured, you will need at least four FRUs in the SFP-8-155 optical back card in order to bring up the same connections on the new PXM1E-8-155 card.
- If you want to upgrade without interrupting traffic, the FRU types must match the type of PXM1E-4-155 back card you are replacing. For example, if you are replacing a SMFIR-4-OC 3 back card that has four lines configured, you must install four SMF-IR FRUs on the SFP-8-155 back card.

For detailed information about installing FRUs on a PXM1E-8-155 card, or to see what a FRU looks like, see the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.



Note Cisco recommends that you have at least four FRUs per PXM1E-4-155 card to ensure that all connections will be active when you replace a configured PXM1E-4-155 card with a PXM1E-8-155 card.

- SC cables are not compatible with PXM1E-8-155 cards. Replace SC cables with the new LC cables. Before you replace a PXM1E-4-155 with a PXM1E-8-155 card, ensure that you have the appropriate number of LC cables required to replace all SC cables that were originally connected to the PXM1E-4-155 card. You also need to ensure that you have the proper type of LC cable. If you will be connecting the LC cable to an SC connector, you need an SC conversion cable that has an LC connector on one end, and an SC connector on the other end. If you will be connecting the LC cable to another LC connector, you need a cable with an LC connector on both ends.

For detailed information about SC and LC cables, see the *Cisco MGX 8800/8900 Hardware Installation Guide, Releases 2 - 5.1*.



Note Do not do any provisioning on the switch while you are replacing the PXM1E cards.

The sections that follow provide both graceful and ungraceful upgrade procedures for PXM1E-8-155 cards.

Gracefully Replacing a Redundant PXM1E-4-155 Card Set with a Redundant PXM1E-8-155 Card Set

A graceful upgrade is an upgrade that upgrades hardware or software without interrupting established calls. The following conditions must be met before you can gracefully upgrade to a PXM1E-8-155 card set:

- The PXM1E-4-155 is running Release 4.0 or later.
- Intercard APS is configured on the PXM1E-4-155 card set you want to replace. This means that an APS connector is installed on the PXM1E-4-155 back cards. If an APS mini-backplane has not been installed, you need to install it on the PXM1E-4-155 back cards before proceeding with the upgrade.
- If you are installing SFP-8-155 back cards, you have the proper number of LC-to-SC conversion cables. Without LC-to-SC conversion cables, traffic will be interrupted.

Use the following procedure to gracefully replace a redundant PXM1E-4-155 card set with a redundant PXM1E-8-155 card set.

-
- Step 1** Enter the **dspecds** command to verify that the current PXM1E-4-155 card is running Release 4 or later. If the card is running a release that is prior to Release 4, you need to upgrade the entire switch to Release 4 or later as described in [Appendix A, “Downloading and Installing Software Upgrades.”](#)
- Step 2** Enter the **saveallcnf** command to save the existing configuration on the current PXM1E-4-155 card, and FTP that configuration file to a remote location. This ensures that you will be able to go back to your old switch configuration if you need to.
- Step 3** Ensure that the active PXM1E-4-155 back card is firmly screwed into the chassis by gently tugging on the back card. If the card feels loose, or if one back card is seated slightly higher or lower in the chassis than the other back card, one of the cards may not be seated properly.



Warning It is imperative that the active back cards are firmly screwed in and seated properly in the chassis before you remove the standby card set. If the active back cards are even slightly misaligned, traffic may be lost or interrupted during card replacement.

- Step 4** Physically remove the standby PXM1E-4-155 card set (front and back cards) from the switch on which you are performing the upgrade.
- Step 5** If you are installing an SFP-8-155 back card, insert FRU connectors into the appropriate ports on the back card before installing new card set into the switch.
- If you are installing an MCC-8-155 back card, skip Step 5 and move on to Step 6.



Note Cisco recommends that you install FRUs on the PXM1E-8-155 ports that correspond to the configured ports on the removed standby PXM1E-4-155 back card. For example, if you had a physical SC line connected to port 1 on the removed standby PXM1E-4-155 back card, you need to install a FRU on port 1 of the installed SFP-8-155 back card.

- Step 6** Insert the PXM1E-8-155 card set into the appropriate slots. Insert the front card first; then insert the back cards.



Warning Ensure that the new back cards are firmly screwed into the chassis by gently tugging on them. If one of the standby back cards feels loose, or if the standby back cards are seated slightly higher or lower in the chassis than the active back cards, the new back cards may not be seated properly.

Step 7 Remove any Y-cables and straight cables connected to the removed standby PXM1E-4-155 back card. If there are no cables attached to the removed standby PXM1E-4-155 back card, proceed to [Step 9](#).

Step 8 Replace SC cables that will be connected to the FRUs in the installed PXM1E-8-155 card with SC-conversion cables. Connect one end of the LC cable to the appropriate FRU on the installed PXM1E-8-155 card. Connect the far end of the LC cable to an SC conversion cable, as described in the [“Replacing PXM1E SC Cables with LC Cables via SC Conversion Cables”](#) section later in this chapter.



Note SC conversion cables are required for graceful upgrades.

Step 9 Log into the switch and configure boot parameters on the new PXM1E-8-155 card, as described in the [“Setting the LAN IP Addresses”](#) section in [Chapter 2, “Configuring General Switch Features.”](#)

Step 10 Enter the **dspecds** command and verify that the PXM1E-8-155 comes up in the standby-ready state.

Step 11 Enter the **switchcc** command to switch the roles of the active and standby cards so you can upgrade the non-upgraded card in standby mode. The PXM1E-8-155 now becomes the active card, and the PXM1E-4-155 becomes the standby card.

Step 12 Enter the **dspecds** command to verify that the PXM1E-8-155 comes up in the active-ready state.

Step 13 Physically remove the standby PXM1E-4-155 card set from the switch on which you are performing the upgrade.

Step 14 If you are installing an SFP-8-155 back card, insert FRU connectors into the appropriate ports on the back card before installing new card set into the switch.

If you are installing an MCC-8-155 back card, skip Step 14 and move on to Step 15.



Note Cisco recommends that you install FRUs on the PXM1E-8-155 ports that correspond to the configured ports on the removed standby PXM1E-4-155 back card. For example, if you had a physical SC line connected to port 1 on the removed standby PXM1E-4-155 back card, you need to install a FRU on port 1 of the installed SFP-8-155 back card.

Step 15 Insert the PXM1E-8-155 card set into the appropriate slots. Insert the front card first; then insert the back cards.



Warning Ensure that the new back cards are firmly screwed into the chassis by gently tugging on them. If one of the standby back cards feels loose, or if the standby back cards are seated slightly higher or lower in the chassis than the active back cards, the new back cards may not be seated properly.

Step 16 Remove any Y-cables and straight cables connected to the removed standby PXM1E-4-155 back card. If there were no cables attached to the removed standby PXM1E-4-155 back card, proceed to [Step 18](#).

Step 17 Replace SC cables that will be connected to the FRUs in the installed PXM1E-8-155 card with SC-conversion cables. Connect one end of the LC cable to the appropriate FRU on the installed PXM1E-8-155 card. Connect the far end of the LC cable to an SC conversion cable as described in the [“Replacing PXM1E SC Cables with LC Cables via SC Conversion Cables”](#) section later in this chapter.



Note SC conversion cables are required for graceful upgrades.

- Step 18** Enter the **dspecds** command and verify that the standby PXM1E-8-155 comes up in the standby-ready state.
- Step 19** At the active PXM1E-8-155, enter the **commithw <Slot Number> 1** command to commit the hardware upgrade on the switch. Replace *<Slot Number>* with the slot number for the active PXM1E-8-155 card. In a Cisco MGX 8850 (PXM1E) switch, the *<Slot Number>* parameter can be 7 or 8. In a Cisco MGX 8830 switch, the *<Slot Number>* parameter can be 1 or 2. The number **1** specifies that this card has been upgraded from a PXM1E-4-155 to a PXM1E-8-155.
- In the following example, the user commits the hardware upgrade on the PXM1E-8-155 in slot 2 of an MGX 8830 switch.
- ```
pxm1e.2.PXM.a > commithw 2 1
```
- Step 20** Enter the **dspecd <slotnumber>** command to verify that the reserved front card is a PXM1E-8-155. Replace *<slotnumber>* with the slot number of the active PXM1E card.
- Step 21** If you have APS lines on the installed PXM1E-8-155 card, enter the **dspaps** command to verify that the APS lines are OK and clear of alarms.

### Non-gracefully Upgrading a Single PXM1E-4-155 to a PXM1E-8-155

A nongraceful upgrade is a software or hardware upgrade that interrupts some or all established calls. When you perform a nongraceful PXM1E upgrade, all calls are interrupted. To non-gracefully replace a single PXM1E-4-155 to a PXM1E-8-155, use the following procedure:

- Step 1** Enter the **dspecds** command to verify that the current PXM1E-4-155 card is running Release 4 or later. If the card is running a release that is prior to Release 4, you need upgrade the entire switch to Release 4 or later as described in [Appendix A, “Downloading and Installing Software Upgrades.”](#)
- Step 2** Enter the **saveallcnf** command to save the existing configuration on the current PXM1E-4-155 card, and FTP that configuration file to a remote location. This ensures that you will be able to go back to your old switch configuration if you need to.
- Step 3** Physically remove the PXM1E-4-155 card set (front and back cards) from the switch on which you are performing the upgrade, and replace it with the PXM1E-8-155 card set.
- Step 4** If you are installing an SFP-8-155 back card, insert FRU connectors into the appropriate ports on the back card before installing new card set into the switch.

If you are installing an MCC-8-155 back card, skip Step 4 and move on to Step 5.



**Note** Cisco recommends that you install FRUs on the PXM1E-8-155 ports that correspond to the configured ports on the removed standby PXM1E-4-155 back card. For example, if you had a physical SC line connected to port 1 on the removed standby PXM1E-4-155 back card, you need to install a FRU on port 1 of the installed SFP-8-155 back card.

- Step 5** Insert the PXM1E-8-155 card set into the appropriate slots. Insert the front card first; then insert the back cards.
- Step 6** Ensure that the new back cards are firmly screwed into the chassis by gently tugging on them. If one of the standby back cards feels loose, the new back cards may not be seated properly.
- Step 7** Remove any cables connected to the removed PXM1E-4-155 back card. If there were no cables attached to the removed standby PXM1E-4-155 back card, proceed to [Step 8](#).

- Step 8** Replace SC cables that will be connected to the FRUs in the installed PXM1E-8-155 card with appropriate LC cables or SC conversion cables.



**Note** If the LC cable will be linked to an SC cable on the far-end, you will need a cable with an LC connector on one end and SC connector on the other end. If the LC cable will be linked to another LC connector on the far end, you will need a cable with an LC connector on both ends.

- Step 9** Log into the switch and configure boot parameters on the new PXM1E-8-155 card, as described in the “Setting the LAN IP Addresses” section in [Chapter 2, “Configuring General Switch Features.”](#)
- Step 10** Enter the **dspcds** command to verify that the PXM1E-8-155 comes up in the active-ready state.
- Step 11** FTP the original PXM1E-4-155 configuration file onto current switch. This is the file that you saved to a remote location in Step 2.
- Step 12** Enter the **restoreallcnf** command to restore the old configurations on the current switch.
- Step 13** Enter the **commit hw <Slot Number> 1** command to commit the hardware upgrade on the switch. Replace *<Slot Number>* with the slot number for the active PXM1E-8-155 card. In a Cisco MGX 8850 (PXM1E) switch, the *<Slot Number>* parameter can be 7 or 8. In a Cisco MGX 8830 switch, the *<Slot Number>* parameter can be 1 or 2. The number **1** specifies that this card has been upgraded from a PXM1E-4-155 to a PXM1E-8-155.

In the following example, the user commits the hardware upgrade on the PXM1E-8-155 in slot 2 of an MGX 8830 switch.

```
pxm1e.2.PXM.a > commit hw 2 1
```

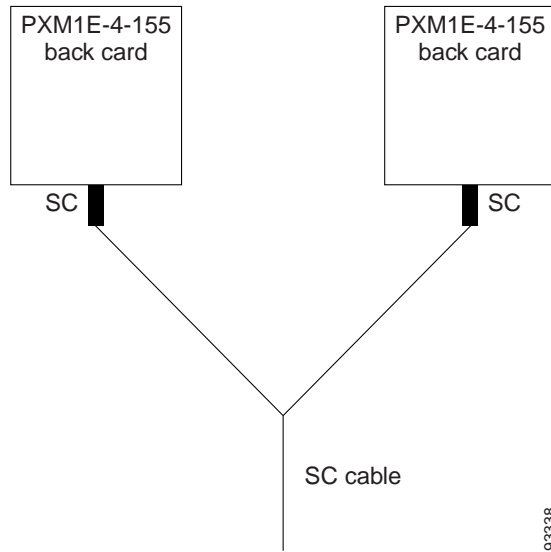
- Step 14** Enter the **dspcd <slotnumber>** command to verify that the reserved front card is a PXM1E-8-155. Replace *<slotnumber>* with the slot number of the active PXM1E card.

## Replacing PXM1E SC Cables with LC Cables via SC Conversion Cables

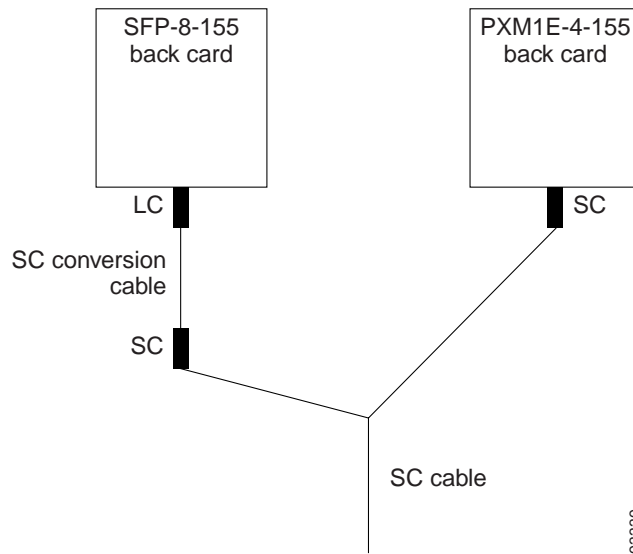
When performing a graceful upgrade of a PXM1E-4-155 card set that uses SC cables to a PXM1E-8-155 card set, you will need to install SC conversion cables to complete the upgrade. SC conversion cables have an LC connector on one end, and an SC connector on the other. The LC connector fits into the FRUs you install in the SFP-8-155 back card. The SC connector can connect to another SC cable.

Use the following procedure during a graceful PXM-8-155 upgrade if you need to install SC conversion cables.

- Step 1** [Figure 10-1](#) shows an example of a PXM1E-4-155 back card Y-cable configuration that uses SC cables. This is what the configuration looks like prior to the PXM-8-155 upgrade.

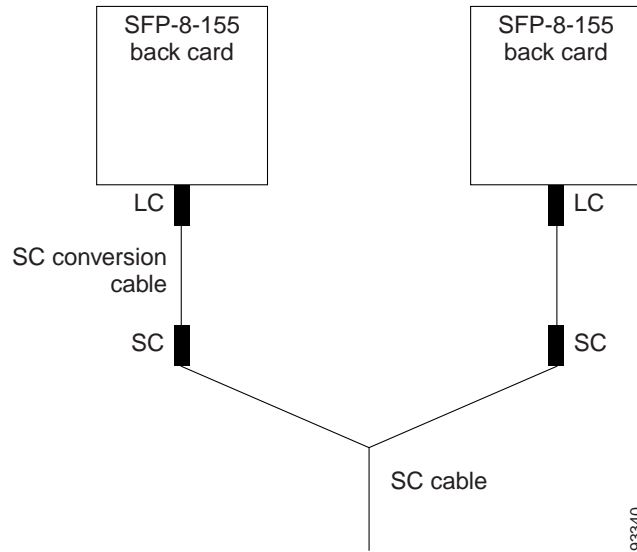
**Figure 10-1** PXM1E-4-155 Back Cards with SC Cable

- Step 2** After you have installed the first standby SFP-8-155 back card, you need to install the SC conversion cable or cables into the appropriate FRU or FRUS. Connect the LC end of the cable into the proper FRU on the SFP-8-155 card. Connect the SC end of the cable to the end of the SC cable you disconnected from the removed PXM1E-4-155 back card. The configuration should look similar to [Figure 10-2](#).

**Figure 10-2** Standby SFP-8-155 Back Card with SC Conversion Cable

- Step 3** After you have installed the second SFP-8-155 back card, install the SC conversion cable or cables into the appropriate FRU or FRUs, just as you did in Step 2. The configuration should look similar to [Figure 10-3](#).

Figure 10-3 Both SFP-8-155 Back Cards with SC Conversion Cables



If the upgraded SFP-8-155 back cards connect to CPE that is already using LC cables, you still need to use SC conversion cables. Without the SC conversion cables, you can not do a graceful upgrade and traffic will be interrupted. This is because the CPE at the other end of the original SC connection has an LC to SC conversion cable. If you want to upgrade to a straight LC cable, you will have to disconnect the original SC conversion cable, and this will interrupt traffic.

## Replacing PXM45/A or PXM45/B Cards with PXM45/C Cards

PXM45/A and PXM45/B front cards can be replaced with PXM45/C cards while the switch is operating. If a PXM45 is operating in standalone mode, all calls are interrupted until the PXM45 is replaced and the PXM45/C card is operating correctly. If the switch is using redundant PXM45s, enter the **switchcc** command, if necessary, to ensure that the card you want to replace is operating in standby mode. For redundant PXM45 cards, you are ready to replace the standby card as soon as the other card becomes active. You do not need to wait for the standby card to reach standby mode.



### Note

The PXM45/C card requires a PXM-UI-S3/B back card. The PXM45/C will not run with the PXM-UI-S3 back card.



### Note

Before replacing PXM45 cards with PXM45/C cards, you need to upgrade all cards on the switch to Release 4 or later.



### Note

If you are running CWM on your switch, you must upgrade CWM to Release 12 before replacing PXM45 cards with PXM45/C cards.



## Gracefully upgrade from a Redundant PXM45 Card Set to a Redundant PXM45/C Card Set

To gracefully upgrade from a redundant PXM45 card set to a redundant PXM45/C card set, use the following procedure:

- 
- Step 1** Enter the **dspcds** command to verify that the current PXM45 card is running Release 4 or later.
  - Step 2** If you are running CWM on your network, ensure that all workstations are running CWM Release 12.
  - Step 3** Enter the **saveallcnf** command to save the existing configuration on the current PXM45 card, and FTP that configuration file to a remote location. This ensures that you will be able to go back to your old switch configuration if you need to.
  - Step 4** Physically remove the standby PXM45 card set (front and back cards) from the switch on which you are performing the upgrade, and replace it with the PXM45/C card set. Replace the back cards before replacing the front cards.
  - Step 5** Log into the switch and configure boot parameters on the new PXM45/C card.
  - Step 6** Enter the **dspcds** command and verify that the PXM45/C comes up in the standby-ready state.
  - Step 7** Enter the **switchcc** command to witch the roles of the active and standby cards so you can upgrade the non-upgraded card in standby mode. The PXM45/C now becomes the active card, and the PXM45 becomes the standby card.
  - Step 8** Enter the **dspcds** command to verify that the PXM45/C comes up in the active-ready state.
  - Step 9** Physically remove the standby PXM45 from the switch on which you are performing the upgrade, and replace it with the PXM45/C.
  - Step 10** Enter the **dspcds** command and verify that the standby PXM45/C comes up in the standby-ready state.
- 

## Non-gracefully Upgrade a Single PXM45 to a PXM45/C

To non-gracefully upgrade from a single PXM45 to a PXM45/C, use the following procedure:

- 
- Step 1** Enter the **dspcds** command to verify that the current PXM45 card is running Release 4 or later.
  - Step 2** If you are running CWM on your network, ensure that all workstations are running CWM Release 12.
  - Step 3** Enter the **saveallcnf** command to save the existing configuration on the current PXM45 card, and FTP that configuration file to a remote location. This ensures that you will be able to go back to your old switch configuration if you need to.
  - Step 4** Physically remove the PXM45 card set (front and back cards) from the switch on which you are performing the upgrade, and replace it with the PXM45/C card set.
  - Step 5** Log into the switch and configure boot parameters on the new PXM45/C card.
  - Step 6** Enter the **dspcds** command to verify that the PXM45/C comes up in the active-ready state.
  - Step 7** FTP the original PXM45 configuration file onto current switch. This is the file that you saved to a remote location in Step 2.
  - Step 8** Enter the **restoreallcnf** command to restore the old configurations on the current switch.
  - Step 9** Enter the **dspcd <slotnumber>** command to verify that the reserved front card is a PXM45/C. Replace **<slotnumber>** with the slot number of the active PXM45 card.
-

After you replace the PXM45 card, enter the **dspcd** or **dsprev** command to view the boot software version. If the boot software version is not correct for your switch, upgrade it as described in [Appendix A, “Downloading and Installing Software Upgrades.”](#)

**Note**

When replacing PXM45 cards with PXM45/C cards, the switch performs the same nativity check described earlier in this chapter.

## Replacing AXSM Cards with AXSM/B Cards

You can replace AXSM cards with AXSM/B cards of the same type. For example, you can replace an AXSM-4-622 with an AXSM-4-622/B. The following sections describe these upgrade scenarios:

- Upgrading a standalone AXSM
- Upgrading an AXSM in a redundant card set

### Upgrading a Standalone AXSM

You can upgrade a standalone AXSM, but all communications are interrupted during the upgrade.

**Tip**

To avoid interrupting communications, consider installing a redundant AXSM card. You can then upgrade the AXSM using the procedure for a redundant card set.

To upgrade a standalone AXSM, use the following procedure.

**Step 1** Determine if you need to upgrade the AXSM runtime software before or after the hardware upgrade. For information on the runtime software required, refer to the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00* or the *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.0.02*.

**Step 2** Replace the standby AXSM with the AXSM/B card.

**Note**

When replacing OC-3, OC-12, and OC-48 versions of the AXSM, you might need to change the back cards to /B versions.

The configuration for AXSM cards is stored on the PXM45. The switch will configure the new AXSM/B card and bring it up in active mode.

**Step 3** Enter the **dspcd** or **dsprev** command to verify that the AXSM/B card is using the correct boot software version.

**Note**

The switch automatically selects and loads the correct runtime software for the AXSM based on the configuration for that slot. The switch does not automatically burn boot code for an AXSM. For instructions on upgrading boot code, see [Appendix A, “Downloading and Installing Software Upgrades.”](#)

If intracard APS is not configured on the card before the upgrade, the card will function as an AXSM/B card.

If intracard APS is configured, the card will operate as an AXSM card. To upgrade to the AXSM/B operating mode, you must enter the **enableaxsmbaps** command at the PXM. Once the AXSM/B starts operating in AXSM/B mode, the card can no longer return to AXSM operating mode.

## Upgrading an AXSM in a Redundant Card Set

When upgrading a redundant AXSM card set, you can complete the upgrade without interrupting established calls by using the following procedure.

**Step 1** Determine if you need to upgrade the AXSM runtime software before or after the hardware upgrade. For information on the runtime software required, refer to the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00* or the *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.0.02*.

**Step 2** Use the **switchredcd** command as necessary so that the AXSM card to be replaced is operating in standby mode.

**Step 3** Replace the standby AXSM with the AXSM/B card.



**Note** When replacing OC-3, OC-12, and OC-48 versions of the AXSM, you might need to change the back cards to /B versions.

The configuration for AXSM cards is stored on the PXM45. The switch will configure the new AXSM/B card and bring it up in standby mode. In standby mode, the card will operate as an AXSM/A card.

**Step 4** Enter the **dspscd** or **dsprev** command to verify that the AXSM/B card is using the correct boot software version.



**Note** The switch automatically selects and loads the correct runtime software for the AXSM based on the configuration for that slot. The switch does not automatically burn boot code for an AXSM. For instructions on upgrading boot code, see [Appendix A, “Downloading and Installing Software Upgrades.”](#)

**Step 5** If you need to replace both AXSM cards in the redundant pair, repeat Steps 1 through 4 for the other card.

**Step 6** When both cards have been upgraded to AXSM/B cards, enter the **enableaxsmbaps** command at the PXM prompt.

This step causes the redundant AXSM/B cards to stop emulating AXSM cards and operate as AXSM/B cards. Once the AXSM/B cards start operating in as AXSM/B card, the cards can no longer return to AXSM operating mode.

## Replacing Service Modules

The procedure you use for replacing a service module depends on whether you are replacing the service module with the same type of service module or with a different type. The following sections describe the following procedures:

- [Replacing Service Modules with the Same Type of Service Module](#)

- [Replacing Eight-Port T1 and E1 Service Modules with MPSM-8-T1E1](#)
- [Replacing Service Modules with a Different Type of Service Module](#)

## Replacing Service Modules with the Same Type of Service Module

If a service module front or back card fails, remove the old card and insert a new card of the same type in the same slot. If the card is a standalone card, all communications are interrupted. If the card is part of a redundant card set, you can replace the standby card without disrupting traffic through the active card.

The configuration for each service module is stored on the PXM. The switch automatically configures the replacement service module and starts it up. If the card is a standalone card, the card will start up as an active card. If the card is part of a redundant pair, the card will start up in standby mode.



### Note

---

The switch automatically selects and loads the correct runtime software for a service module based on the configuration for that slot. The switch does not automatically burn the boot code for a service module.

---

## Replacing Eight-Port T1 and E1 Service Modules with MPSM-8-T1E1

The MPSM-8-T1E1 card is designed to replace older eight-port T1 and E1 service modules designed to provide ATM, circuit emulation, and Frame Relay services. The following sections list the cards that can be upgraded to MPSM-8-T1E1 and the procedures for upgrading cards that are operating in standalone and redundant configurations.

### Service Modules that Can Be Upgraded to MPSM-8-T1E1

The following service modules can be upgraded to or replaced with MPSM-8-T1E1:

- AUSM8E1/B
- AUSM8T1/B
- CESM-8E1
- CESM-8T1
- CESM-8T1/B (provided that the single timeslot multiframe capabilities are not being used)
- FRSM-8E1
- FRSM-8E1-C
- FRSM-8T1
- FRSM-8T1-C



### Note

---

There are feature differences between the service modules listed above and the MPSM-8-T1E1. For more information, refer to the appropriate service module configuration guide, all of which are listed in [Table 1-1](#).

---

## Upgrading Standalone Configurations

When upgrading a standalone service module to MPSM-8-T1E1, you must upgrade both the software and the hardware. The software configuration and feature licenses remain intact during the upgrade, but all active connections are terminated.



### Tip

To avoid service interruption for standalone service modules, configure card redundancy and use the procedure in the [“Replacing a Primary Card in a Redundancy Group”](#) section that follows this section.

**Step 1** If you have not done so already, upgrade the PXM software to a version that supports the MPSM software you will be using. For more information, refer to the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00*.

**Step 2** If you have not done so already, copy the MPSM runtime software to the switch as described in the [“Copying Software Files to the Switch”](#) section in [Appendix A, “Downloading and Installing Software Upgrades.”](#)

MPSM runtime files are named using the following format: `mpsm_t1e1_030.000.000.000.fw`. The numerals in the file name indicate the software version as described in [“Determining the Software Version Number from Filenames”](#) in [Chapter 9, “Switch Operating Procedures.”](#)

**Step 3** Establish a configuration session using a user name with `SERVICE_GP` privileges or higher.

**Step 4** Use the `loadrev` command to prepare the standalone service module slot for the MPSM software. The command format is:

```
M8850_SF.7.PXM.a > loadrev <slotNo> <mpsm-rev> mpsm
```

Replace the `slotNo` variable with the slot number for the legacy service module, and replace the `mpsm-rev` variable with the version number of the MPSM software. For information on determining the software version number using the filename, see [“Determining the Software Version Number from Filenames”](#) in [Chapter 9, “Switch Operating Procedures.”](#)

The `mpsm` parameter is required to enable loading of MPSM software for a slot that is configured for another type of card. The following example shows how this command is used:

```
M8850_SF.7.PXM.a > loadrev 13 30.0(0.85)A mpsm
one or more card(s) in the logical slot may be reset.
loadrev: Do you want to proceed (Yes/No)? y
```

**Step 5** Use the `runrev` command to configure the standalone service module slot to run the MPSM software. The command format is:

```
M8850_SF.7.PXM.a > runrev <slotNo> <mpsm-rev> mpsm
```

Replace the `slotNo` variable with the slot number for the legacy service module, and replace the `mpsm-rev` variable with the version number of the MPSM software. The version number is the same number used with the `loadrev` command.

Again, the `mpsm` parameter is required to enable the operation of MPSM software for a slot that is configured for another type of card. The following example shows how this command is used:

```
M8850_SF.7.PXM.a > runrev 13 30.0(0.85)A mpsm
one or more card(s) in the logical slot may be reset.
runrev: Do you want to proceed (Yes/No)? y
```

After you enter the `runrev` command, the standalone service module will reset and the card state, which you can view with the `dspecds` command, will change to `mismatch`.

**Step 6** Remove the standalone service module from the slot you have prepared for the MPSM.

**Step 7** Insert the MPSM-8-T1E1 card in the slot used in the previous steps.

The MPSM-8-T1E1 will cycle through the *Boot*, *Init*, and *Standby* states, and become *Active*. If the software version specified in the **loadrev** and **runrev** commands is already stored in the flash memory on the MPSM, this process is faster than the start up time for the replaced service module. If the software version isn't in flash, it must be downloaded from the PXM and the bring up time will be about the same as for the replaced service module.

**Step 8** To finalize the upgrade, enter the **commitrev** command. The command format is:

```
M8850_SF.7.PXM.a > commitrev <slotNo> <mpsm-rev>
```

Use the same slot number and revision number used in the previous steps. For example:

```
M8850_SF.7.PXM.a > commitrev 13 30.0(0.85)A
```

## Replacing the Secondary Card in a Redundancy Group

When upgrading the secondary card in a redundant service module configuration to MPSM-8-T1E1, you must upgrade both the software and the hardware. The software configuration and feature licenses remain intact during the upgrade, but there is no redundancy protection for primary cards during the upgrade.

The following procedure describes how to upgrade the secondary card in a redundant configuration to MPSM-8-T1E1.

**Step 1** If you have not done so already, upgrade the PXM software to a version that supports the MPSM software you will be using. For more information, refer to the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45)*, *Cisco MGX 8950*, and *Cisco MGX 8830 Switches, Release 5.1.00* or the *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.0.02*.

**Step 2** If you have not done so already, copy the MPSM runtime software to the switch as described in the “[Copying Software Files to the Switch](#)” section in [Appendix A](#), “[Downloading and Installing Software Upgrades](#).”

MPSM runtime files are named using the following format: `mpsm_t1e1_030.000.000.000.fw`. The numerals in the file name indicate the software version as described in “[Determining the Software Version Number from Filenames](#)” in [Chapter 9](#), “[Switch Operating Procedures](#).”

**Step 3** Establish a configuration session using a user name with `SERVICE_GP` privileges or higher.

**Step 4** Remove the redundancy configuration for each primary card in the redundant group using the **delred** command. The command format is:

```
PXM1E_SJ.8.PXM.a > delred <primarySlotNo>
```

**Step 5** Remove the secondary card you are replacing. This should be one of the card types listed in the “[Service Modules that Can Be Upgraded to MPSM-8-T1E1](#)” section.

**Step 6** Insert a MPSM-8-T1E1 in the secondary slot.

**Step 7** Use the **setrev** command to initialize the MPSM card as described in the “[Initializing Service Modules](#)” section in [Chapter 4](#), “[Preparing Service Modules for Communication](#).”

**Step 8** Use the **addred** command to establish redundancy between the primary cards reconfigured in Step 4 and the new MPSM card as described in the “[Establishing Redundancy Between Two Service Modules](#)” section in [Chapter 4](#), “[Preparing Service Modules for Communication](#).”

After redundancy has been added to all primary service modules, the redundant configuration is restored and the MPSM-8-T1E1 now serves as the secondary card for all protected cards. To upgrade primary cards to MPSM-8-T1E1, use the procedure in the next section.

**Note**

When the primary card is not an MPSM-8-T1E1 and the primary card is running a software version released prior to Release 5, provisioning is blocked whenever the secondary MPSM-8-T1E1 is active. To prevent blocking provisioning, upgrade all primary cards to the latest release after upgrading the secondary card to MPSM-8-T1E1.

## Replacing a Primary Card in a Redundancy Group

When upgrading the primary card in a redundant service module configuration to MPSM-8-T1E1, you must upgrade both the software and the hardware. The software configuration and feature licenses remain intact during the upgrade, but active connections are briefly interrupted when switching between primary and secondary cards.

When upgrading redundant service module configurations, keep the following in mind:

- The secondary card must be an MPSM-8-T1E1.
- If the secondary card is not an MPSM-8-T1E1, the secondary card must be upgraded before upgrading a primary card.

The following procedure describes how to upgrade a primary card in a redundant configuration to MPSM-8-T1E1.

- Step 1** If you have not done so already, upgrade the secondary card to MPSM-8-T1E1 as described in the previous section.
- Step 2** Establish a configuration session using a user name with SERVICE\_GP privileges or higher.
- Step 3** Use the **loadrev** command to prepare the primary card slot for the MPSM software. The command format is:

```
M8850_SF.7.PXM.a > loadrev <slotNo> <mpsm-rev> mpsm
```

Replace the *slotNo* variable with the slot number for the legacy service module, and replace the *mpsm-rev* variable with the version number of the MPSM software. For information on determining the software version number using the filename, see [“Determining the Software Version Number from Filenames”](#) in Chapter 9, “Switch Operating Procedures.”

The **mpsm** parameter is required to enable loading of MPSM software for a slot that is configured for a different type of card. The following example shows how this command is used:

```
M8850_SF.7.PXM.a > loadrev 13 30.0(0.85)A mpsm
one or more card(s) in the logical slot may be reset.
loadrev: Do you want to proceed (Yes/No)? y
```

- Step 4** Use the **runrev** command to configure the primary card slot to run the MPSM software. The command format is:

```
M8850_SF.7.PXM.a > runrev <slotNo> <mpsm-rev> mpsm
```

Replace the *slotNo* variable with the primary card slot number, and replace the *mpsm-rev* variable with the version number of the MPSM software. The version number is the same number used with the **loadrev** command.

Again, the **mpsm** parameter is required to enable the operation of MPSM software for a slot that is configured for a different type of card. The following example shows how this command is used:

```
M8850_SF.7.PXM.a > runrev 13 30.0(0.85)A mpsm
one or more card(s) in the logical slot may be reset.
runrev: Do you want to proceed (Yes/No)? y
```

After you enter the **runrev** command, the primary card will reset and the card state, which you can view with the **dspcds** command, will change to *mismatch*. The secondary card will become active and take over the run-time operations for the primary card.

**Step 5** Remove the primary card from the slot you have prepared for the MPSM.

**Step 6** Insert the MPSM-8-T1E1 card in the slot used in the previous steps.

The MPSM-8-T1E1 will cycle through the *Boot* and *Init*, and enter the *Standby* state. If the software version specified in the **loadrev** and **runrev** commands is already stored in the flash memory on the MPSM, this process is faster than the start up time for previous primary card. If the software version isn't in flash, it must be downloaded from the PXM and the bring up time will be about the same as for the previous primary card.

**Step 7** To finalize the upgrade, enter the **commitrev** command. The command format is:

```
M8850_SF.7.PXM.a > commitrev <slotNo> <mpsm-rev>
```

Use the same slot number and revision number used in the previous steps. For example:

```
M8850_SF.7.PXM.a > commitrev 13 30.0(0.85)A
```

After you enter this command, the switch automatically makes the primary card active and resets the secondary card.

## Replacing Service Modules with a Different Type of Service Module

To replace one type of service module front card with a different type, you must first delete the configuration for the previously installed service module. The easiest way to do this is by using the **clsrmcnf -all** command as described in the “[Clearing a Slot Configuration](#)” section of [Chapter 9](#), “[Switch Operating Procedures](#).”

## Replacing SRM Cards with SRME/B

The SRME/B card is designed to replace SRME and SRM-3T3 cards and to work with the back cards used by SRME and SRM-3T3. When upgrading SRM cards, you must upgrade both the software and the hardware. After an upgrade, the SRME/B uses the configuration previously assigned to the SRME or SRM-3T3. The following procedure describes how to replace SRM cards with SRME/B.

**Step 1** If you have not done so already, upgrade the PXM software to a version that supports the SRME/B, which is Release 5 or later. For more information, refer to the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45)*, *Cisco MGX 8950*, and *Cisco MGX 8830 Switches, Release 5.1.00* or the *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.0.02*.

**Step 2** If this is a redundant PXM and SRM configuration, replace the standby SRM front card with SRME/B. Otherwise, replace the standalone SRM front card.



### Note

If this is a standalone PXM and SRM installation, replacing the standalone SRM interrupts all SRM services.



**Note**

The SRME/B line configuration parameters (which are used only for bulk distribution) are similar to that of the SRM-3T3, but there are some differences. Replacing a SRM-3T3 with an SRME/B sets all parameters to the defaults assigned to the SRME/B.

If this is a redundant configuration, the SRME/B will start up in standby state. If this is a standalone configuration, the SRM should come up in the active state, and the standalone replacement is complete.

**Step 3** If this is a redundant configuration, use the **switchcc** command to switch control from the active PXM and SRM cards to the standby PXM and SRM cards. The new SRME/B becomes the active card and the other SRM can be replaced.

**Step 4** If this is a redundant configuration, replace the current standby SRM front card with an SRME/B.

## Replacing RPM Cards

If you have properly initialized an RPM card as described in the “[Initializing RPM Cards](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#) the configuration for the RPM card is stored on the PXM hard disk.

To replace a standalone RPM card, remove the old card and insert a new card of the same type in the same slot. The switch will automatically configure the card and start it up.

**Note**

RPM-PR and RPM-B cards are not interchangeable. When replacing an RPM-PR card, you must replace it with another RPM-PR card. If you want to change types of cards, you must first decommission the slot as described in the “[Replacing PXM1E-4-155 Cards with PXM1E-8-155 Cards](#)” section which appears later in this chapter.

To replace an RPM card that is configured for redundancy, first switch control to the standby card, then replace the card while it is operating in standby mode. If the card you are replacing has failed, there is no reason to switch cards, as the failure should have triggered a switch to the standby card. If you need to switch cards, enter the **softswitch** command as described in the “[Switching Between Redundant RPM Cards](#)” section in [Chapter 9, “Switch Operating Procedures.”](#)

**Note**

After you replace a card that is configured for redundancy, it starts up in standby mode. If the active card is configured to operate as a standby card for multiple RPM cards, enter a **softswitch** command so that the active card returns to its normal standby state.

## Decommissioning an AXSM Slot

When an AXSM card is installed and configured, the configuration is associated with a specific slot number and stored on the PXM45 card. If you replace the AXSM with another card of the same type, the new card will start operating with the established configuration. Any configuration which has been used previously on that card will be discarded, because the configuration is assigned to the slot, not the physical card.

If you want to use a previously configured AXSM slot for a different type of AXSM card, you must first decommission the slot to remove the existing configuration. Otherwise, the switch will attempt to run the old configuration on the new card, and the new card will not operate correctly.

**Note**

If you enter the **cnfportsig** command to change default port values, you must run the **delpnport** command to delete the port from the PXM45. If you do not run **delpnport** on the PXM45, the port will remain in a provisioning state on the PXM45.

To decommission a slot, you need to remove the existing connections, partitions, and ports as described below.

**Step 1** Establish a configuration session using a user name with CISCO\_GP privileges.

**Step 2** Use the **cc** command to select the AXSM slot you want to decommission.

**Note**

The AXSM card installed in the slot you are decommissioning must be the same type of card for which the slot was configured. You cannot decommission a slot with an AXSM card type that does not match the configured card type.

**Step 3** To display the connections you need to delete, enter the following command:

```
mgx8850a.10.AXSM.a > dspcons
```

The following is a sample **dspcons** display.

```
pop20one.7.PXM.a > dspcons
```

| Local Port                                                 | Vpi.Vci | Remote Port | Vpi.Vci | State | Owner  |
|------------------------------------------------------------|---------|-------------|---------|-------|--------|
| 10:2.2:2                                                   | 100 100 | Routed      | 100 100 | FAIL  | MASTER |
| Local Addr: 47.00918100000000107b65f33c.0000010a1802.00    |         |             |         |       |        |
| Remote Addr: 47.009181000000002a123f213f.000001011802.00\\ |         |             |         |       |        |

**Step 4** Write down the interface, VPI, and VCI numbers for each connection. You need these numbers to complete the next step.

**Step 5** Delete all connections by entering the following command for each connection:

```
mgx8850a.10.AXSM.a > delcon <ifNum> <VPI> <VCI>
```

**Step 6** When all connections are deleted, bring down the interface by entering the following command:

```
mgx8850a.10.AXSM.a > dnport <ifNum>
```

**Step 7** To display a list showing the partitions for this card, enter the **dspparts** command.

**Step 8** Write down the interface number and partition number for each partition on the card. You will need this information to complete the next step.

**Step 9** Delete all resource partitions by entering the following command for each resource partition:

```
mgx8850a.10.AXSM.a > delpart <ifNum> <partId>
```

Replace *ifnum* with the interface number of the port, and replace *partitionID* with the partition number assigned to the port.

**Step 10** To verify that the partitions have been deleted, enter the **dspparts** command.

**Step 11** To display a list showing the ports configured for this card, enter the **dsports** command.

- Step 12** Write down the interface number for each port on the card. You need this information to complete the next step.
- Step 13** Delete all ports by entering the following command for each port:
- ```
mgx8850a.10.AXSM.a > delport <ifNum> <partId>
```
- Replace *ifnum* with the interface number of the port.
- Step 14** To verify that the ports have been deleted, enter the **dsports** command.
- Step 15** To display a list showing the lines that are administratively up, enter the **dsplns** command.
- Step 16** Write down the line number for each line that is up. You need will this information to complete the next step.
- Step 17** Bring down all lines by entering the following command for each line:
- ```
mgx8850a.10.AXSM.a > dnlm <bay.line>
```
- Step 18** To verify that the lines have been brought down, enter the **dsplns** command.
- When all lines have been brought down, the slot is decommissioned and you can add an AXSM card of a different type in that slot as described in “[Adding Service Modules](#),” which appears earlier in this chapter.
- 

## Decommissioning an RPM Slot

To decommission an RPM slot, you must remove all configuration items configured for that card. You can do this by entering each command in the startup-config file with the key word **no** in front of it. These configuration items are described in the *Cisco MGX Route Processor Module (RPM-PR) Installation and Configuration Guide, Release 2.1* and *Cisco MGX Route Processor Module (RPM-XF) Installation and Configuration Guide, Release 5.1*.

