



## Downloading and Installing Software Upgrades

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This appendix describes how to locate, download, and install software updates for the switch. Because software updates are stored in the switch file system, this appendix includes a section on browsing the file system. This appendix includes the following sections:

- [Upgrade Process Overview](#)
- [Quickstart Procedures for Software Upgrades](#)
- [Quickstart Procedures for Software Downgrades](#)
- [Browsing the File System](#)
- [Locating Software Updates](#)
- [Copying Software Files to the Switch](#)
- [Upgrade Procedures for PXM Cards and Service Modules](#)
- [Upgrade Procedures for RPM-PR and RPM-XF Cards](#)
- [Troubleshooting Upgrade Problems](#)

### Upgrade Process Overview

This appendix provides a series of quickstart procedures that describe how to perform graceful and non-graceful upgrades to the switch. To perform a graceful upgrade on a switch card, the card must be operating in redundant mode with another switch card of the same type. When performed properly, graceful upgrades have minimal impact on connections in progress and do not interrupt any established connections.

When a card to be upgraded is not operating in redundant mode, you must complete a non-graceful upgrade, which disrupts all traffic that passes through the card. For PXM cards, an ungraceful upgrade interrupts all traffic passing through the switch. For all other types of cards, an ungraceful upgrade affects only the traffic that passes through that card.

When you upgrade the software in a switch, you should refer to 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 5.1.00* for the latest information. Each type of switch card runs boot and runtime software. The recommended sequence for upgrading the software on switch cards is as follows:

1. boot software
2. runtime software

**Note**

If you plan to upgrade PXM cards and service modules, upgrade the PXM cards first. Wait until the PXM cards are operating in active and standby modes with the correct software before upgrading service modules.

**Note**

You do not need to upgrade any software on SRM cards.

Typically, the boot software requires less frequent upgrades. Some upgrades might only require updates to one type of switch card. 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 5.1.00* should explain which software components require upgrading.

When you upgrade the software on a switch card, proceed as follows:

- Decide whether you are performing a graceful or non-graceful upgrade
- Follow the appropriate quickstart procedure for that type of upgrade
- For additional information on a task within a quickstart procedure, see the appendix section to which the procedure refers

The next section presents the quickstart procedure for switch card software upgrades.

## Quickstart Procedures for Software Upgrades

The following sections provide quickstart procedures for the following upgrades:

- [Graceful PXM Boot Upgrades from Releases Prior to Release 3.0.10](#)
- [Graceful PXM Boot Upgrades from Release 3.0.10 and Later](#)
- [Non-Graceful PXM Boot Upgrades](#)
- [Graceful PXM and Service Module Runtime Software Upgrades](#)
- [Non-Graceful PXM and Service Module Runtime Software Upgrades](#)
- [Graceful Service Module Boot Software Upgrades](#)
- [Non-Graceful Service Module Boot Software Upgrades](#)
- [Graceful RPM Boot Software Upgrades](#)
- [Graceful RPM Runtime Software Upgrades](#)
- [Non-Graceful RPM Boot Software Upgrades](#)
- [Non-Graceful RPM Runtime Software Upgrades](#)

## Graceful PXM Boot Upgrades from Releases Prior to Release 3.0.10

When performed properly, graceful upgrades have minimal impact on connections in progress and do not interrupt any established connections.

All releases prior to Release 3.0.10 require entry into shellcon mode to complete a PXM boot upgrade. The PXM boot upgrade takes a little more time and a few more commands for these early releases.



### Note

This quickstart applies only if you are upgrading from a release prior to release 3.0.10. If you are upgrading from Release 3.0.10 or later, use the quickstart procedure in the “[Graceful PXM Boot Upgrades from Release 3.0.10 and Later](#)” section later in this chapter.

When a boot software upgrade is required, the procedure for upgrading redundant PXM cards is as follows:

1. Manually upgrade the boot software on the standby PXM.
2. Switch cards to make the upgraded standby card active.
3. After the standby card becomes the active card, manually upgrade the non-active card.

This process ensures a smooth transition to the new software and preserves all established calls. During the short period when the roles of the active and standby cards are switched, all calls that are not established are lost.





### Caution

Avoid making configuration changes while upgrading PXM software. Configuration changes can be lost when the PXM is reset during the upgrade.

To upgrade the boot software, use the following procedure.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<i>username</i> <i>password</i> <b>saveallcnf</b>	If you want to save the configuration before the upgrade, establish a CLI session with the <i>active</i> PXM card using a user name with SERVICE_GP privileges.  This optional step saves the current configuration to the hard disk. see the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 3	<i>username</i> <i>password</i>	Establish a CLI session with the <i>standby</i> PXM card using the CP port on the PXM-UI-S3 or PXM-UI-S3/B back card and a user name with CISCO_GP privileges.
Step 4	<b>sh</b> <b>sysBackupBoot</b> <Return> (3.0 and earlier)	Change to the PXM Backup Boot mode.  Note that the software versions 3.0 and earlier require you to press <b>Return</b> during the reboot sequence to enter backup boot mode.  See the “ <a href="#">Changing to PXM Backup Boot Mode</a> ” section in <a href="#">Appendix B, “PXM Backup Boot Procedures.”</a>

	Command	Purpose
Step 5	<b>sysPxmRemove</b>	At the backup boot prompt, enter the <b>sysPxmRemove</b> command: This step prevents the active card from resetting the standby card while you are working with it.
Step 6	<b>sysFlashBootBurn</b> "path/filename" <b>reboot 2</b> <sup>1</sup> <i>username</i> <i>password</i> <b>dspsd</b>	<p>Burn the boot code. Remember to enter quotation marks before and after the boot software filename, and specify the complete path. For example:</p> <pre><b>sysFlashBootBurn</b> "C:FW/pxm1e_004.000.000.201_bt_fw"</pre> <p><b>Note</b> Remember to enter quotation marks before and after the boot software filename. The filename you use depends on the release to which you are upgrading. For more information, refer to the <i>Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00</i> and the <i>Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.1.00</i>.</p> <p> <b>Caution</b> If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.</p> <p>See the <a href="#">"Upgrading PXM Boot Software from Releases Prior to 3.0.10"</a> section later in this appendix.</p>
Step 7	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card (which is the non-upgraded card). Use the CP port on the PXM-UI-S3 or PXM-UI-S3/B back card and a user name with CISCO_GP privileges.
Step 8	<b>switchcc</b> <b>y</b>	Switch the roles of the active and standby cards so you can upgrade the non-upgraded card in standby mode.
Step 9	<b>sh</b> <b>sysBackupBoot</b> <Return> (3.0 and earlier)	<p>Change to the PXM Backup Boot mode.</p> <p>Note that the software versions 3.0 and earlier require you to press <b>Return</b> during the reboot sequence to enter backup boot mode.</p> <p>See the <a href="#">"Changing to PXM Backup Boot Mode"</a> section in Appendix B, "PXM Backup Boot Procedures."</p>

	Command	Purpose
Step 10	<code>sysPxmRemove</code>	At the backup boot prompt, enter the <code>sysPxmRemove</code> command. This step prevents the active card from resetting the standby card while you are working with it.
Step 11	<code>sysFlashBootBurn</code> “ <i>path/filename</i> ”  <b>reboot 2</b> <sup>1</sup>  <i>username</i>  <i>password</i>  <b>dspcd</b>	Burn the boot code. For example, <pre>sysFlashBootBurn "C:FW/pxm1e_004.000.000.201_bt.fw"</pre> <p><b>Note</b> Remember to enter quotation marks before and after the boot software filename. The filename you use depends on the release to which you are upgrading. For more information, refer to the <i>Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00</i> and the <i>Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.1.00</i>.</p> <hr/> <p> <b>Caution</b> If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.</p> <hr/> <p>See the “<a href="#">Upgrading PXM Boot Software from Releases Prior to 3.0.10</a>” section later in this appendix.</p> <p>Both active and standby cards should now be upgraded. The card that was active before the upgrade is now operating in standby mode.</p>

1. Beginning with Release 4.0, you must enter **reboot 2**. For all prior releases, enter **reboot**.

## Graceful PXM Boot Upgrades from Release 3.0.10 and Later

When performed properly, graceful upgrades have minimal impact on connections in progress and do not interrupt any established connections.

Beginning with Release 3.0.10, the Cisco MGX software supports the **burnboot** command for PXM boot software upgrades. If you are upgrading a Release 3.0.10 or later switch, you no longer have to enter shellcon to complete the boot upgrade. The boot upgrade is simpler and quicker in Release 3.0.10 and later.



### Note

This quickstart applies only if you are upgrading from Release 3.0.10 or a later release. If you are upgrading from a release prior to 3.0.10, use the quickstart procedure in the “[Graceful PXM Boot Upgrades from Releases Prior to Release 3.0.10](#)” section earlier in this chapter.

When a boot software upgrade is required, the procedure for upgrading redundant PXM card is as follows:


1. Manually upgrade the boot software on the standby PXM.
2. Switch cards to make the upgraded standby card active.
3. After the standby card becomes the active card, manually upgrade the non-active card.

This process ensures a smooth transition to the new software and preserves all established calls. During the short period when the roles of the active and standby cards are switched, all calls that are not established are lost.



**Note** Avoid making configuration changes while upgrading PXM software. Configuration changes can be lost when the PXM is reset during the upgrade.

To upgrade the boot software, use the following procedure.


	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section, which appears later in this appendix.
Step 2	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name with SERVICE_GP privileges or higher.
Step 3	<b>saveallcnf</b>	This optional step saves the current configuration to the hard disk. See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 4	<b>burnboot</b> <slot> <revision> <b>dspcd</b> <slot>	Burn the boot software on the standby PXM card by specifying the slot number of the standby card. For example: <pre>M8850_LA.7.PXM.a &gt; burnboot 8 4.0(0.201)</pre>  <b>Caution</b> If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.  See the “ <a href="#">Upgrading PXM Boot Software from Release 3.0.10 and Later</a> ” section, which appears later in this appendix.
Step 5	<b>switchcc</b>	Activate the upgraded card and place the non-upgraded card in standby mode.
Step 6	<b>burnboot</b> <slot> <revision> <b>dspcd</b> <slot>	Burn the boot software on the non-upgraded, standby PXM card by specifying the slot number of the standby card. See the “ <a href="#">Upgrading PXM Boot Software from Releases Prior to 3.0.10</a> ” section, which appears later in this appendix.

## Non-Graceful PXM Boot Upgrades

Non-graceful upgrades disrupt all switch traffic and are usually used in lab installations where the use of standalone cards provides no opportunity for a graceful upgrade. The quickstart procedure provides an overview and quick reference for those who have already performed ungraceful upgrades on the switch.


**Note**

Avoid making configuration changes while upgrading PXM software. Configuration changes can be lost when the PXM is reset during the upgrade.

	Command	Purpose
Step 1	<code>ftp</code>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<code>username</code> <code>password</code>	Establish a CLI session with the active PXM card using the CP port on the PXM-UI-S3 or PXM-UI-S3/B back card and a user name with CISCO_GP privileges.
Step 3	<code>saveallcnf</code>	This optional step saves the current configuration to the hard disk. See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 4	<code>burnboot &lt;slot&gt; &lt;revision&gt;</code> <code>dspcd &lt;slot&gt;</code>	Burn the boot software on the standalone PXM card by specifying the appropriate slot number. For example: <pre>M8850_LA.7.PXM.a &gt; burnboot 7 4.0(0.201)</pre>  <b>Caution</b> If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.  See the “ <a href="#">Upgrading PXM Boot Software from Release 3.0.10 and Later</a> ” section, which appears later in this appendix.

## Graceful PXM and Service Module Runtime Software Upgrades

When performed properly, graceful upgrades have minimal impact on connections in progress and do not interrupt any established connections.

This quickstart procedure applies to PXM1E, PXM45 and to all service module cards except the RPM family of cards. The quickstart procedure provides more detail, but the overall procedure is as follows:

1. Load the new software on the standby PXM or service module.
2. Make the standby card active.
3. Load the new software on the formerly active (now standby) card.

**Note**

If you plan to upgrade PXM cards and service modules, upgrade the PXM cards first. Wait until the PXM cards are operating in active and standby modes with the correct software before upgrading service modules. The software version used by the PXM cards should be equal to or later than the version used on the service modules. When service module boot software is to be upgraded, it should be upgraded before upgrading the runtime software.

**Caution**

Avoid making configuration changes while upgrading PXM software. Configuration changes can be lost when the PXM is reset during the upgrade. While graceful upgrades can be aborted with the **abortrev** command, the **abortrev** command does reset both active and standby cards, so reverting back to an earlier software release is non-graceful.

**Note**

Cisco Systems recommends that you upgrade software on one service module at a time within a switch. Wait until each service module upgrade is complete before starting an upgrade on another service module.

To upgrade the runtime software, use the following procedure.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section, which appears later in this appendix.
Step 2		If the <i>Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00</i> or the <i>Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.1.00</i> call for a boot software upgrade, upgrade the boot software for the card you are upgrading. <b>Note</b> PXM cards should be upgraded first. For instructions on upgrading service module boot software, see the “ <a href="#">Graceful Service Module Boot Software Upgrades</a> ” section, which appears later in this appendix.
Step 3	<i>username</i> <i>password</i>	Establish a CLI session with the active PXM45 card using a user name with SERVICE_GP privileges.
Step 4	<b>saveallcnf</b>	This optional step saves the current switch configuration to the hard disk. See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 5	<b>dspcd</b> <b>commitrev</b> <slot> <revision>	Verify that all previous upgrades have been committed. If a previous upgrade is not committed, commit to the new upgrade. See the “ <a href="#">Committing to a Runtime Software Upgrade</a> ” section, which appears later in this appendix.



	Command	Purpose
Step 6	<b>loadrev</b> <slot> <revision> <b>dspcd</b>	Load the new runtime software on the standby PXM or service module.
Step 7	<b>runrev</b> <slot> <revision> <b>dspcd</b> <b>dspcd</b> <slot>	Switch over to the standby PXM or service module and load the new runtime software on the new standby (non-upgraded) card.
Step 8	<b>commitrev</b> <slot> <revision>	This command prevents an accidental switch back to a previous software revision if someone enters the <b>abortrev</b> command. Enter the <b>commitrev</b> command after the former active PXM45 comes up in the standby-U state. Cisco Systems recommends that you avoid configuration changes until after you have run the <b>commitrev</b> or <b>abortrev</b> commands.  See the “ <a href="#">Aborting a Runtime Software Upgrade</a> ” section and the “ <a href="#">Committing to a Runtime Software Upgrade</a> ” section, both of which appear later in this appendix.

## Non-Graceful PXM and Service Module Runtime Software Upgrades

Non-graceful upgrades disrupt switch traffic and are usually used in lab installations where the use of standalone cards provides no opportunity for a graceful upgrade. The quickstart procedure provides an overview and quick reference for those who have already performed ungraceful upgrades on the switch.



### Note

If you plan to upgrade PXM cards and service modules, upgrade the PXM cards first. Wait until the PXM cards are operating in active and standby modes with the correct software before upgrading service modules. The software version used by the PXM cards should be equal to or later than the version used on the service modules. When service module boot software is to be upgraded, it should be upgraded before upgrading the runtime software.



### Note

Avoid making configuration changes while upgrading PXM software. Configuration changes can be lost when the PXM is reset during the upgrade.



### Note

Cisco Systems recommends that you upgrade software on one service module at a time within a switch. Wait until each service module upgrade is complete before starting an upgrade on another service module.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section, which appears later in this appendix.
Step 2		If the <i>Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Switches, Release 5.1.00</i> or the <i>Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.1.00</i> call for a boot software upgrade, upgrade the boot software as described in the “ <a href="#">Graceful PXM Boot Upgrades from Release 3.0.10 and Later</a> ” section, which appears earlier in this appendix, or the “ <a href="#">Non-Graceful Service Module Boot Software Upgrades</a> ” section, which appears later in this appendix.
Step 3	<i>username</i> <i>password</i>	Establish a CLI session with the active PXM card using a user name with SERVICE_GP privileges.
Step 4	<b>saveallcnf</b>	This optional step saves the current configuration to the hard disk. See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 5	<b>dspcd</b> <b>commitrev &lt;slot&gt; &lt;revision&gt;</b>	Verify that all previous upgrades are committed. If a previous upgrade is not committed, commit to the new upgrade. See the “ <a href="#">Committing to a Runtime Software Upgrade</a> ” section, which appears later in this appendix.
Step 6	<b>loadrev &lt;slot&gt; &lt;revision&gt;</b> <b>dspcd</b>	Define the new software version to be used.
Step 7	<b>runrev &lt;slot&gt; &lt;revision&gt;</b> <b>dspcd</b>	Reset the card and run the new software version.
Step 8	<b>commitrev &lt;slot&gt; &lt;revision&gt;</b>	This command prevents an accidental switch back to a previous software revision if someone enters the <b>abortrev</b> command. Enter the <b>commitrev</b> command after the upgraded card reaches the active state. Cisco Systems recommends that you avoid configuration changes until after you have run the <b>commitrev</b> or <b>abortrev</b> commands. See the “ <a href="#">Aborting a Runtime Software Upgrade</a> ” section and the “ <a href="#">Committing to a Runtime Software Upgrade</a> ” section, both of which appear later in this appendix.

## Graceful Service Module Boot Software Upgrades


When performed properly, graceful upgrades have minimal impact on connections in progress and do not interrupt any established connections. This quickstart procedure applies to all service modules except the RPM family of cards and provides an overview and quick reference for those who have already performed graceful boot software upgrades on the switch.


**Note**

If you plan to upgrade PXM cards and service modules, upgrade the PXM cards first. Wait until the PXM cards are operating in active and standby modes with the correct software before upgrading service modules. The software version used by the PXM cards should be equal to or later than the version used on the service modules.


**Note**

Cisco Systems recommends that you upgrade software on one service module at a time within a switch. Wait until each service module upgrade is complete before starting an upgrade on another service module.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section, which appears later in this appendix.
Step 2	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name with SERVICE_GP privileges or higher.
Step 3	<b>saveallcnf</b>	This optional step saves the current configuration to the hard disk. See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 4	<b>burnboot</b> <slot> <revision> <b>dspcd</b> <slot>	<p>Burn the boot software on the standby service module by specifying the slot number of the standby card. For example:</p> <pre>M8850_LA.7.PXM.a &gt; burnboot 1 4.0(0.0)</pre> <p> <b>Caution</b> If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.</p> <p>See the “<a href="#">Upgrading Boot Software on Service Modules</a>” section, which appears later in this appendix.</p>
Step 5	<b>switchredcd</b> <fromSlot> <toSlot>	Activate the upgraded card and place the non-upgraded card in standby mode.
Step 6	<b>burnboot</b> <slot> <revision> <b>dspcd</b> <slot>	<p>Burn the boot software on the non-upgraded, standby service module by specifying the slot number of the standby card.</p> <p>See the “<a href="#">Upgrading Boot Software on Service Modules</a>” section, which appears later in this appendix.</p>

## Non-Graceful Service Module Boot Software Upgrades


Non-graceful upgrades disrupt all switch traffic and are usually used in lab installations where the use of standalone cards provides no opportunity for a graceful upgrade. This quickstart procedure applies to all service modules except the RPM family of cards and provides an overview and a quick reference for those who have already performed ungraceful upgrades on the switch.


**Note**

If you plan to upgrade PXM cards and service modules, upgrade the PXM cards first. Wait until the PXM cards are operating in active and standby modes with the correct software before upgrading service modules. The software version used by the PXM cards should be equal to or later than the version used on the service modules.


**Note**

Cisco Systems recommends that you upgrade software on one service module at a time within a switch. Wait until each service module upgrade is complete before starting an upgrade on another service module.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See the “ <a href="#">Copying Software Files to the Switch</a> ” section, which appears later in this appendix.
Step 2	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name with SERVICE_GP privileges or higher.
Step 3	<b>saveallcnf</b>	This optional step saves the current configuration to the hard disk. See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 4	<b>burnboot</b> <slot> <revision> <b>dspcd</b> <slot>	Burn the boot software on the standalone service module. For example: <pre>M8850_LA.7.PXM.a &gt; burnboot 1 4.0(0.0)</pre>  <b>Caution</b> If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.  See the “ <a href="#">Upgrading Boot Software on Service Modules</a> ” section, which appears later in this appendix.

## Graceful RPM Boot and Runtime Software Upgrades

The RPM cards support graceful boot software upgrades when 1:N redundancy is established in the switch between RPM cards. Boot software is generally upgraded less often than runtime software, so be sure to compare the recommended boot software version with the boot software running on your RPM cards before starting an upgrade. The correct boot software might already be installed.


**Note**


In this document, the general term “RPM” refers to RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

The following quickstart procedure describes how to upgrade boot and runtime software in one operation on redundant RPM cards.


**Note**

Redundancy must be established before you use this procedure. If redundancy has not been configured between two RPM cards, upgrade each RPM card using the procedure in the “[Non-Graceful RPM Boot Software Upgrades](#)” section later in this chapter. To add redundancy to an RPM card, see the “[Establishing Redundancy Between RPM Cards](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#)

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch (C:FW).  See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<b>copy</b>	Optional: Copy and rename the runtime file to a generic name for easy updates.  See the “ <a href="#">Upgrading RPM Runtime Software</a> ” section later in this chapter.  <b>Note</b> If you have already configured the RPM to use a generic name and you perform this step, you can skip Steps 11 through 18.
Step 3	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name at any access level.
Step 4	<b>cc</b> <primarySlot>	Select the slot in which the primary RPM card is installed.
Step 5	<b>enable</b> <i>password</i>	Enter Enable mode for the router.
Step 6	<b>dir x:</b>	Verify router access to the PXM hard disk and the boot upgrade software.
Step 7	<b>show flash:</b>	Display current contents of bootflash.
Step 8	<b>copy filename bootflash:</b> <b>dir bootflash:</b>	Copy the upgrade boot software to flash. For example:  <code>copy x:rpm-boot-mz_002.001.060.000 bootflash:</code>

	Command	Purpose
Step 9	<pre>config terminal boot bootldr bootflash:filename ^Z show bootvar</pre>	Configure the BOOTLDR variable to specify the new boot software.
Step 10	<pre>copy bootflash:filename x:filename del bootflash:filename show flash: squeeze flash:</pre>	<p>Reorganize files in bootflash. The switch always attempts to load the first bootable file in bootflash. If the BOOTLDR variable is not set, the new boot software must be the first file listed in the <b>show flash:</b> display. Copy files you want to save to the x: directory and delete all files that appear before the new boot software. Files are marked with the <b>del</b> command and actually deleted with the <b>squeeze flash:</b> command.</p> <p> <b>Caution</b> Verify that at least one valid boot or runtime image will not be deleted. If all boot and runtime images are deleted from bootflash, the RPM card must be returned to the factory for repair.</p>
Step 11	<pre>show bootvar</pre>	Display the current runtime software filename.
Step 12	<pre>config terminal</pre>	Enter the router global configuration mode.
Step 13	<pre>no boot system</pre>	<p>Remove the entire boot list. To remove a single file from the boot list, include a filename. For example:</p> <pre>Router(config)# no boot system x:rpm-js-mz_122-4.T</pre>
Step 14	<pre>boot system x:filename</pre>	<p>Add the new router runtime image to the boot list. For example:</p> <pre>Router(config)# boot system x:rpm-js-mz_122-4.T</pre>
Step 15	<pre>boot config e:auto_config_RPM-PR_slot#</pre>	<p>Configure the RPM card to store its configuration on the PXM hard disk.</p> <p><b>Note</b> This step only needs to be performed once. If this command is already in the startup configuration file, you do not need to enter it again.</p>
Step 16	<pre>^Z</pre>	Exit global configuration mode.
Step 17	<pre>copy run start</pre>	<p>Save the new configuration.</p> <p><b>Note</b> If you omit this step, the RPM card will continue to use the previous version of software.</p>
Step 18	<pre>show bootvar</pre>	Verify the change in the runtime software filename.
Step 19	<pre>switchredcd &lt;primarySlot&gt; &lt;secondarySlot&gt;</pre>	This step makes the secondary card active and resets the primary RPM card. When the primary card resets, it loads the upgraded boot and runtime software.
Step 20	<pre>cc &lt;secondarySlot&gt;</pre>	Select the slot in which the secondary RPM card is installed.

	Command	Purpose
Step 21	<pre>enable password dir x: show flash: copy filename bootflash: dir bootflash:  config terminal boot bootldr bootflash:filename ^Z show bootvar  copy bootflash:filename x:filename del bootflash:filename show flash: squeeze flash:</pre>	Repeat Steps 5 through 10 to move the upgraded boot software into bootflash.
Step 22	<pre>switchredcd &lt;secondarySlot&gt; &lt;primarySlot&gt;</pre>	<p>This step makes the upgraded primary card active and resets the secondary RPM card. When the secondary card resets, it loads the upgraded boot software from bootflash. Both primary and secondary cards should now be using upgraded boot software.</p> <p><b>Note</b> You do not need to upgrade runtime software on a secondary card. When a secondary card goes active, it loads the runtime software and configuration defined for the primary card.</p>
Step 23	—	If there are other primary RPM cards that need upgrading, repeat the part of this procedure that upgrades the primary card, then enter the <b>switchredcd</b> command once to reload the primary card. Finally, enter the <b>switchredcd</b> command a second time to make the upgraded primary card active.

## Graceful RPM Boot Software Upgrades

The RPM cards support graceful boot software upgrades when 1:N redundancy is established in the switch between RPM cards. Boot software is generally upgraded less often than runtime software, so be sure to compare the recommended boot software version with the boot software running on your RPM cards before starting an upgrade. The correct boot software might already be installed.




### Note

In this document, the general term “RPM” refers to RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

The following quickstart procedure describes how to upgrade redundant RPM cards.

**Note**

Redundancy must be established before you use this procedure. If redundancy has not been configured between two RPM cards, upgrade each RPM card using the procedure in the “[Non-Graceful RPM Boot Software Upgrades](#)” section later in this chapter. To add redundancy to an RPM card, see the “[Establishing Redundancy Between RPM Cards](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#)”

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch (C:FW).  See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name at any access level.
Step 3	<b>cc</b> <primarySlot>	Select the slot in which the primary RPM card is installed.
Step 4	<b>enable</b> <i>password</i>	Enter Enable mode for the router.
Step 5	<b>dir x:</b>	Verify router access to the PXM hard disk and the boot upgrade software.
Step 6	<b>show flash:</b>	Display current contents of bootflash.
Step 7	<b>copy filename bootflash:</b> <b>dir bootflash:</b>	Copy the upgrade boot software to flash. For example: <code>copy x:rpm-boot-mz_002.001.060.000 bootflash:</code>
Step 8	<b>config terminal</b> <b>boot bootldr bootflash:filename</b> <b>^Z</b> <b>show bootvar</b>	Configure the BOOTLDR variable to specify the new boot software.
Step 9	<b>copy bootflash:filename</b> <b>x:filename</b> <b>del bootflash:filename</b> <b>show flash:</b> <b>squeeze flash:</b>	Reorganize files in bootflash. The switch always attempts to load the first bootable file in bootflash. If the BOOTLDR variable is not set, the new boot software must be the first file listed in the <b>show flash:</b> display. Copy files you want to save to the x: directory and delete all files that appear before the new boot software. Files are marked with the <b>del</b> command and actually deleted with the <b>squeeze flash:</b> command.
	 <b>Caution</b>	Verify that at least one valid boot or runtime image will not be deleted. If all boot and runtime images are deleted from bootflash, the RPM card must be returned to the factory for repair.
Step 10	<b>switchredcd</b> <primarySlot> <secondarySlot>	This step makes the secondary card active and resets the primary RPM card. When the primary card resets, it loads the upgraded boot software from bootflash.
Step 11	<b>cc</b> <secondarySlot>	Select the slot in which the secondary RPM card is installed.



	Command	Purpose
Step 12	<pre>enable password dir x: show flash: copy filename bootflash: dir bootflash:  config terminal boot bootldr bootflash:filename ^Z show bootvar  copy bootflash:filename x:filename del bootflash:filename show flash: squeeze flash:</pre>	Repeat Steps 4 through 9 to move the upgraded boot software into bootflash.
Step 13	<pre>switchredcd &lt;secondarySlot&gt; &lt;primarySlot&gt;</pre>	This step makes the upgraded primary card active and resets the secondary RPM card. When the secondary card resets, it loads the upgraded boot software from bootflash. Both primary and secondary cards should now be using upgraded boot software.
Step 14	—	If there are other primary RPM cards that need upgrading, repeat the part of this procedure that upgrades the primary card, then enter the <b>switchredcd</b> command once to reload the primary card. Finally, enter the <b>switchredcd</b> command a second time to make the upgraded primary card active.

## Graceful RPM Runtime Software Upgrades

The RPM cards support graceful upgrades when 1:N redundancy is established in the switch between RPM cards.



### Note

In this document, the general term “RPM” refers to RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

The following quickstart procedure describes how to gracefully upgrade runtime software on redundant RPM cards.



### Note

Redundancy must be established before you use this procedure. If redundancy has not been configured between two RPM cards, upgrade each RPM card as described in the “[Non-Graceful RPM Runtime Software Upgrades](#)” section later in this chapter. To add redundancy to an RPM card, see the “[Establishing Redundancy Between RPM Cards](#)” section in [Chapter 6, “Preparing RPM Cards for Operation.”](#)”

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch (C:FW). See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<b>copy</b>	Optional: Copy and rename the runtime file to a generic name for easy updates. See the “ <a href="#">Upgrading RPM Runtime Software</a> ” section later in this chapter. <b>Note</b> If you have already configured the RPM to use a generic name, you can skip to Step 12.
Step 3	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name at any access level.
Step 4	<b>cc</b> <primarySlot>	Select the slot in which the primary RPM card is installed.
Step 5	<b>enable</b> <i>password</i>	Enter Enable mode for the router.
Step 6	<b>show bootvar</b>	Display the current runtime software filename.
Step 7	<b>config terminal</b>	Enter the router global configuration mode.
Step 8	<b>no boot system</b>	Remove the entire boot list. To remove a single file from the boot list, include a filename. For example:  Router(config)# no boot system x:rpm-js-mz_122-4.T
Step 9	<b>boot system x:filename</b>	Add the new router runtime image to the boot list. For example:  Router(config)# boot system x:rpm-js-mz_122-4.T
Step 10	<b>boot config</b> <b>e:auto_config_RPM-PR_slot#</b>	Configure the RPM card to store its configuration on the PXM hard disk.  <b>Note</b> This step only needs to be performed once. If this command is already in the startup configuration file, you do not need to enter it again.
Step 11	<b>^Z</b>	Exit global configuration mode.
Step 12	<b>copy run start</b>	Save the new configuration.  <b>Note</b> If you omit this step, the RPM card will continue to use the previous version of software.
Step 13	<b>show bootvar</b>	Verify the change in the runtime software filename.
Step 14	<b>switchredcd</b> <primarySlot> <secondarySlot>	This step makes the secondary card active and resets the primary RPM card. When the primary card resets, it loads the upgraded boot software from bootflash.

	Command	Purpose
Step 15	<b>switchredcd</b> <secondarySlot> <primarySlot>	This step makes the upgraded primary card active and resets the secondary RPM-PR card. When the secondary card resets, it loads the upgraded boot software from bootflash. Both primary and secondary cards should now be using upgraded runtime software.
Step 16		If there are other primary RPM cards that need upgrading, repeat the part of this procedure that upgrades the primary card, and then enter the <b>switchredcd</b> command once to reload the primary card. Finally, enter the <b>switchredcd</b> command a second time to make the upgraded primary card active.

## Non-Graceful RPM Boot Software Upgrades

Use the non-graceful upgrade procedure in this section when you need to upgrade RPM boot software and the RPM is operating in standalone mode. Non-graceful upgrades terminate all connections and disrupt service until the upgrade procedure is complete.




**Note** In this document, the general term “RPM” refers to RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.



**Note** If the RPM is operating in 1:N redundancy mode with another RPM, upgrade the cards as described in the “[Graceful RPM Boot Software Upgrades](#)” section earlier in this chapter.

The following quickstart procedure provides an overview and quick reference for those who have already performed RPM upgrades on the switch. For detailed instructions, see the “[Upgrade Procedures for RPM-PR and RPM-XF Cards](#)” section which appears later in this appendix.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch (C:FW).  See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name at any access level.
Step 3	<b>cc</b> <RPM_Slot>	Select the slot in which the RPM card is installed.
Step 4	<b>enable</b> <i>password</i>	Enter Enable mode for the router.
Step 5	<b>dir x:</b>	Verify router access to the hard disk and the boot upgrade software.
Step 6	<b>show flash:</b>	Display current contents of bootflash.
Step 7	<b>copy filename bootflash:</b> <b>dir bootflash:</b>	Copy the upgrade boot software to flash. For example: <code>copy x:rpm-boot-mz_002.001.000.000 bootflash:</code>

	Command	Purpose
Step 8	<pre>config terminal boot bootldr bootflash:filename ^Z show bootvar</pre>	Configure the BOOTLDR variable to specify the new boot software.
Step 9	<pre>copy bootflash:filename x:filename del bootflash:filename show flash: squeeze flash:</pre>	<p>Reorganize files in bootflash. The switch always attempts to load the first bootable file in bootflash. If the BOOTLDR variable is not set, the new boot software must be the first file listed in the <b>show flash:</b> display. Copy files you want to save to the x: directory and delete all files that appear before the new boot software. Files are marked with the <b>del</b> command and actually deleted with the <b>squeeze flash:</b> command.</p> <p> <b>Caution</b> Verify that at least one valid boot or runtime image will not be deleted. If all boot and runtime images are deleted from bootflash and the card is reset, the RPM card must be returned to the factory for repair.</p>
Step 10	<pre>cc &lt;active_PXM_slot&gt; resetcd &lt;RPM_Slot&gt;</pre>	This command sequence restarts the RPM card with the new boot image.

## Non-Graceful RPM Runtime Software Upgrades

Use the non-graceful upgrade procedure in this section when you need to upgrade RPM runtime software and the RPM is operating in standalone mode. Non-graceful upgrades terminate all connections and disrupt service until the upgrade procedure is complete.



### Note

In this document, the general term “RPM” refers to RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.



### Note

If the RPM is operating in 1:N redundancy mode with another RPM upgrade the cards as described in “[Graceful RPM Runtime Software Upgrades](#),” which appears earlier in this chapter.

The following quickstart procedure provides an overview and quick reference for those who have already performed RPM upgrades on the switch. For detailed instructions, see “[Upgrade Procedures for RPM-PR and RPM-XF Cards](#),” which appears later in this appendix.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch (C:FW). See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 2	<b>copy</b>	Copy and rename the runtime file to a generic name for easy updates. See the “ <a href="#">Non-Graceful RPM Runtime Software Upgrades</a> ” section later in this chapter. <b>Note</b> If you have already configured the RPM to use a generic name, you can skip to Step 12.
Step 3	<i>username</i> <i>password</i>	Establish a CLI session with the <i>active</i> PXM card using a user name at any access level.
Step 4	<b>cc</b> <RPM_Slot>	Select the slot in which the RPM card is installed.
Step 5	<b>enable</b> <i>password</i>	Enter Enable mode for the router.
Step 6	<b>show bootvar</b>	Display the current runtime software filename.
Step 7	<b>config terminal</b>	Enter the router global configuration mode.
Step 8	<b>no boot system</b>	Remove the entire boot list. To remove a single file from the boot list, include a filename. For example:  Router(config)# no boot system x:rpm-js-mz_122-4.T
Step 9	<b>boot system x:filename</b>	Add the new router runtime image to the boot list. For example:  Router(config)# boot system x:rpm-js-mz.122-4.T
Step 10	<b>boot config</b> <b>e:auto_config_RPM_slot#</b>	Configure the RPM card to store its configuration on the PXM hard disk.  <b>Note</b> This step only needs to be performed once. If this command is already in the startup configuration file, you do not need to enter it again.
Step 11	<b>^Z</b> <b>copy run start</b>	Exit global configuration mode and save the new configuration.
Step 12	<b>show bootvar</b>	Verify the change in the runtime software filename.
Step 13	<b>cc</b> <active_PXM_slot> <b>resetcd</b> <RPM_Slot>	This command sequence selects the active PXM card and restarts the RPM card with the new runtime image.
Step 14	<b>dspcds</b> <b>dspcd</b> <RPMR_Slot> <b>cc</b> <RPM_Slot>	Verify router reboot is complete.

# Quickstart Procedures for Software Downgrades

Cisco Systems, Inc. recommends that you avoid software downgrades, which replace a current software release with another that has a lower version number. However, there are some situations in which you might want to downgrade the software. For example, if you have been testing pre-release software in a lab, the software version number can be higher than a later official software release. Any time the software version number to which you are changing is lower than the current software version, the change is a downgrade, regardless of when the software versions are released.



## Note

For runtime software, the procedures in this section should be used only when downgrading after a complete upgrade. The **commitrev** command completes an upgrade. If an upgrade has not been completed, you can revert back to the previous software revision using the **abortrev** command as described in the “[Aborting a Runtime Software Upgrade](#)” section in this appendix.

The following sections provide quickstart procedures for the following downgrades:

- [PXM and AXSM Boot Downgrades](#)
- [Non-Graceful PXM Runtime Software Downgrades](#)
- [Non-Graceful AXSM Runtime Software Downgrades](#)

## PXM and AXSM Boot Downgrades

When redundant cards are used and the downgrade software is compatible with the existing runtime software, boot software downgrades can be graceful. To perform a graceful downgrade of boot software, follow the instructions for the appropriate graceful software upgrade:



## Caution

Cisco Systems, Inc. does not guarantee that any software downgrade is graceful, so assume that the downgrade is non-graceful and time the downgrade accordingly. The advantage to following the graceful upgrade procedures listed above is that you might be able to delay traffic interruption until the runtime software is downgraded.

When upgrading a standalone card, the downgrade is non-graceful, and you should follow the following [Graceful PXM Boot Upgrades from Release 3.0.10 and Later](#) procedures.

## Non-Graceful PXM Runtime Software Downgrades

To downgrade PXM runtime software, you must clear the entire switch configuration. All traffic is disrupted until the switch downgrade is complete and the configuration has been re-entered. The following quickstart procedure provides an overview for PXM runtime software downgrades.



## Note

The switch does not support a configuration restore to a downgraded software version. When you downgrade the PXM runtime software, you must re-enter the configuration.

	Command	Purpose
Step 1	<i>username</i> <i>password</i>	Establish a CLI session with the active PXM card using a user name with SERVICE_GP privileges.
Step 2	<b>saveallcnf</b>  <b>y</b>	Save the current switch configuration.  See the “ <a href="#">Saving a Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>  This step gives you the option to upgrade to the software version from which you are downgrading and use the former configuration.
Step 3	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. Also copy the saved configuration file from the C:CNF directory to a remote workstation so you have a backup file if something happens to the hard disk.  See the “ <a href="#">Copying Software Files to the Switch</a> ” section later in this appendix.
Step 4	<b>clrallcnf</b>  <b>y</b>	Clear the current configuration.  See the “ <a href="#">Clearing a Switch Configuration</a> ” section in <a href="#">Chapter 9, “Switch Operating Procedures.”</a>
Step 5	<b>sysVersionSet</b> “ <i>version</i> ”  <b>reboot 2</b> <sup>1</sup>	Select the runtime firmware version the switch will use on the PXM card and restart the switch with that firmware. For example:  <code>sysVersionSet “002.001.000.000”</code>  Note that these commands must be entered at the PXM backup boot prompt: pxmbkup>.  See the “ <a href="#">Initializing the Switch</a> ” section in <a href="#">Chapter 2, “Configuring General Switch Features.”</a>
Step 6		Reconfigure the PXM cards as described in the “ <a href="#">Configuration Quickstart</a> ” section in <a href="#">Chapter 2, “Configuring General Switch Features.”</a>

1. Beginning with Release 4.0, you must enter **reboot 2**. For all prior releases, enter **reboot**.

## Non-Graceful AXSM Runtime Software Downgrades

AXSM runtime software downgrades are always non-graceful when the PXM45 runtime software is also downgraded (because the PXM45 downgrade requires a clearing of the configuration). The quickstart procedure provides an overview of how to downgrade the AXSM software after the PXM45 runtime software has been downgraded.

	Command	Purpose
Step 1	<b>ftp</b>	Copy the boot and runtime files you want to use to the switch. See “ <a href="#">Copying Software Files to the Switch</a> ,” which appears later in this appendix.
Step 2		Refer to “ <a href="#">Configuration Quickstart</a> ” Chapter 4, “ <a href="#">Preparing Service Modules for Communication</a> .” The <b>setrev</b> command in the quickstart procedure clears the card configuration and assigns the downgrade software version to the card.

## Browsing the File System

The PXM hard disk stores log files, configuration files, and boot and runtime software. The switch operating system supports a set of UNIX-like commands that you can use to locate log files or manage software updates. [Table A-1](#) lists commands that you can use to browse the file system.



### Note

File and directory names in the switch file system are case sensitive. Also, some of the commands listed in [Table A-1](#) are not available at all administrator access levels.

**Table A-1 File System Commands at Switch Prompt**

Command	Description
<b>cd</b>	Change directories. Access level required: ANYUSER or above.
<b>copy</b>	Copies a file from one location to another. Syntax: <b>copy</b> <source file name> <destination file name> Access level required: GROUP1 or above.
<b>del</b>	Deletes a file. Syntax: <b>del</b> <file name> Access level required: GROUP1 or above.
<b>ll</b>	List directory contents using long format, which includes the name, size, modification date, and modification time for each file. This command also displays the total disk space and free disk space. Syntax: <b>ll</b> Access level required: ANYUSER or above.
<b>ls</b>	List directory contents using the short format, which displays filenames, total disk space, and free disk space. Syntax: <b>ls</b> Access level required: ANYUSER or above.



**Table A-1 File System Commands at Switch Prompt (continued)**

Command	Description
<b>pwd</b>	Display the present working directory. Syntax: <b>pwd</b> Access level required: ANYUSER or above.
<b>rename</b>	Renames a file. Syntax: <b>rename</b> <old file name> <new file name> Access level required: GROUP1 or above.
<b>whoami</b>	Lists the login name for the current session. Syntax: <b>whoami</b> Access level required: ANYUSER or above.

## Locating Software Updates

For information on locating software updates, see 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 5.1.00*.

## Copying Software Files to the Switch

This section describes how to copy software files to a Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8830, or Cisco MGX 8950 switch. The switch cards use boot software and runtime software. Each card uses the boot software to define communications between the card components and to enable cards to start up. The runtime software defines how the card operates after startup. RPM cards function on the runtime software and use the boot software only when they cannot load the runtime software.



### Note

The boot and runtime software are installed on the switch at the factory. Before you copy new files to the switch, verify that you need to update them by comparing the file versions on the disk to those recommended 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 5.1.00*.

Cisco MGX switches provide a File Transfer Protocol (FTP) service to support file transfers to the switch. If you have FTP client software and network connectivity to both the switch and the server where the software files are stored, you can use FTP to transfer files directly from the server to the switch.



### Note

The following procedure describes how to copy files to the switch when the runtime software is up and running (showing the node name switch prompt). When the runtime software cannot load, copy the software files to the switch as described in the “[Transferring Software Files to and from the Switch](#)” section in [Appendix B, “PXM Backup Boot Procedures.”](#)

**Step 1** 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 5.1.00* to locate a server from which you can download the files.

**Step 2** Using a workstation with FTP client software, transfer PXM, service module, and RPM files from the server to the switch directory C:/FW.

**Tip**

In the past, this guide recommended transferring RPM files to the E:RPM directory. You can still do this and reference the E:RPM directory by entering e: while in RPM enable mode. However, storing boot and runtime software in the E:RPM directory significantly increases the size of configuration files created with the **saveallcnf** command. E:RPM is still used to store configuration files that should be backed up.

The procedure you use for transferring the files depends on the FTP client software you are using. When initiating the FTP connection, remember the following:

- Select the switch by entering its IP address.
- When prompted for a username and password, enter the username and password you use when managing the switch.
- When configuring file transfer options, select binary mode for the file transfer.

**Step 3** To verify that the new files have been transferred to the switch, log into the switch and display the contents of the C:/FW directory.

**Step 4** Using a workstation with FTP client software, transfer SCT files from the server to the switch directory C:/SCT/TEMP.

**Step 5** To verify that the new SCT files have been transferred to the switch, log into the switch and display the contents of the C:/SCT/TEMP directory.

For more information on browsing the switch file system, see the “[Browsing the File System](#)” section earlier in this appendix.

## Upgrade Procedures for PXM Cards and Service Modules

The following sections describe procedures that support upgrades to PXM cards and to all service modules except the RPM family of cards. For complete upgrade procedures, see the “[Quickstart Procedures for Software Upgrades](#)” section, which appears earlier in this appendix. The procedures in this section detail some of the tasks listed in the quickstart procedures.

### Upgrading PXM Boot Software from Releases Prior to 3.0.10

This section describes how to upgrade the PXM boot software on a single PXM card running a release prior to Release 3.0.10. If you are performing a graceful upgrade, use the quickstart procedure described in “[Graceful PXM Boot Upgrades from Releases Prior to Release 3.0.10](#),” which appears earlier in this appendix. The following procedure provides detailed information on the upgrade task within the quickstart procedure.

- 
- Step 1** If you have not done so already, establish a CLI session with the PXM card using the CP port on the PXM-UI-S3 or PXM-UI-S3/B back card and a user name with CISCO\_GP privileges.
- Step 2** If you have not done so already, change to PXM Backup Boot mode as described in the “[Changing to PXM Backup Boot Mode](#)” section in [Appendix B, “PXM Backup Boot Procedures.”](#)
- Step 3** To burn the boot software on the PXM, enter the **sysFlashBootBurn** command as follows:

```
pxm45bkup> sysFlashBootBurn "path/filename"
```

**Caution**

If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.

Replace *filename* with the complete path to the boot file on the PXM45 hard drive. For example:

```
pxm45bkup> sysFlashBootBurn "C:FW/pxm45_004.000.000.201_bt_fw"
```

- Step 4** When the switch prompts you to confirm this action, type **y** and press **Return**.
- When the boot code burning process is complete, the switch displays a message similar to the following example:

```
Flash download completed ...  
value = 0 = 0x0
```

- Step 5** When the boot code has been burned, reset the card with the **reboot** command. For example:

```
pxm45bkup> reboot 2
```

**Note**

Beginning with Release 4.0, you must enter **reboot 2**. For all prior releases, enter **reboot**.

Be patient and wait for the Login prompt to appear.

- Step 6** When the Login prompt appears, log in to the switch as you do at the beginning of a CLI session. The switch prompt should appear.

**Step 7** To confirm that the PXM card is now using the correct boot code, enter the **dspscd** command.

The Boot FW Rev row in the display should show the new revision as shown in the following example:

```
8850_NY.7.PXM.a > dspscd
8850_NY                               System Rev: 02.01   Mar. 04, 2001 22:47:23 PST
MGX8850                               Node Alarm: NONE
Slot Number      7      Redundant Slot:  8

                                Front Card          Upper Card          Lower Card
                                -----
Inserted Card:      PXM45                UI Stratum3        PXM HardDiskDrive
Reserved Card:      PXM45                UI Stratum3        PXM HardDiskDrive
State:              Active              Active              Active
Serial Number:      SBK050302AF           SBK045203PJ        SBK044602HJ
Prim SW Rev:        3.0(0.0)             ---                ---
Sec SW Rev:         3.0(0.0)             ---                ---
Cur SW Rev:        3.0(0.0)             ---                ---
Boot FW Rev:        4.0(0.0)             ---                ---
800-level Rev:      A0                  A0                 A0
800-level Part#:    800-06147-08         800-05787-02      800-05052-04
CLEI Code:          BAA670YCAA           BA7IBCLAAA         BA7IADNAAA
Reset Reason:       On Power up
Card Alarm:         NONE
Failed Reason:      None
Miscellaneous Information:
```

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

After you confirm the upgrade to the PXM card, the boot software upgrade for that card is complete.

## Upgrading PXM Boot Software from Release 3.0.10 and Later

The upgrade procedure for the boot software on a single PXM card is the same for graceful and non-graceful upgrades. The difference between the graceful and non-graceful upgrades is the sequence of commands before and after the upgrade on a single card. For information on the proper sequence, see the “[Graceful PXM Boot Upgrades from Release 3.0.10 and Later](#)” section earlier in this appendix.



### Note

For PXM cards, this procedure applies only if you are upgrading from Release 3.0.10 or later. If you are upgrading from a release prior to Release 3.0.10, you need to follow the procedure in the “[Upgrading PXM Boot Software from Releases Prior to 3.0.10](#)” section earlier in this appendix.

To upgrade the boot software, use the following procedure.

- Step 1** Copy the new boot software files for the PXM card to the switch as described in the “[Copying Software Files to the Switch](#)” section, which appears earlier in this appendix.
- Step 2** Establish a CLI session with the switch using a user name with SERVICE\_GP privileges or higher.
- Step 3** To burn the new PXM boot code, enter the **burnboot** command as follows:

```
pop20one.7.PXM.a > burnboot <slot> <revision>
```

**Caution**

If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.

Replace *<slot>* with the slot number of a standalone PXM card, or a PXM card operating in standby mode. Replace *<revision>* with the software revision number to which you are upgrading. For example:

```
pop20one.7.PXM.a > burnboot 8 3.0(0.0)
```

**Step 4** When prompted to confirm the upgrade, type **y** and press **Return**.

After you confirm the upgrade, the new boot code is burned into the PXM and the card is reset. Be patient, the card reset takes some time. You can enter the **dspcds** command to display the status of the PXM card. At first, the status may show that the card slot is empty or the card is rebooting. Reenter the command periodically to see the current status of the card. When the card status returns to active or standby, you are ready to continue.

**Step 5** To confirm that the PXM card is now using the correct boot code, enter the **dspcd <slot>** command. The Boot FW Rev row in the display should show the new revision as shown in the following example:

```
M8950_SF.7.PXM.a > dspcd 7
M8950_SF                               System Rev: 02.01   Feb. 04, 2004 19:25:26 GMT
MGX8950 (JBP-2)                         Node Alarm: CRITICAL
Slot Number 7   Redundant Slot: 8
```

	Front Card	Upper Card	Lower Card
	-----	-----	-----
Inserted Card:	PXM45B	UI Stratum3	PXM HardDiskDrive
Reserved Card:	PXM45	UI Stratum3	PXM HardDiskDrive
State:	Active	Active	Active
Serial Number:	SAG053558VP	SBK0449017Q	SBK042700M6
Prim SW Rev:	3.0(0.0)	---	---
Sec SW Rev:	3.0(0.0)	---	---
Cur SW Rev:	3.0(0.0)	---	---
Boot FW Rev:	3.0(0.0)	---	---
800-level Rev:	A0	A0	A0
800-level Part#:	800-09266-04	800-05787-02	800-05052-04
CLEI Code:	BAA53MZCAB	BA7IBCLAAA	BA7IADNAAA
Reset Reason:	On Reset From Shell		
Card Alarm:	NONE		
Failed Reason:	None		
Miscellaneous Information:			

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

After you confirm the upgrade to the PXM card, the boot software upgrade for that card is complete.

## Upgrading Boot Software on Service Modules

The upgrade procedure for the boot software on a single service module is the same for graceful and non-graceful upgrades. The difference between the graceful and non-graceful upgrades is the sequence of commands before and after the upgrade on a single card. For information on the proper sequence for graceful upgrades, see the “[Graceful Service Module Boot Software Upgrades](#)” section earlier in this appendix.

To upgrade service module boot software, use the following procedure.

- Step 1** Copy the new boot software files for the service module to the switch as described in the “[Copying Software Files to the Switch](#)” section, which appears earlier in this appendix.
- Step 2** Establish a CLI session with the switch using a user name with SERVICE\_GP privileges or higher.
- Step 3** To burn the new service module boot code, enter the **burnboot** command as follows:

```
pop20one.7.PXM.a > burnboot <slot> <revision>
```

**Caution**

If the card is removed or reset, or if switch power is interrupted during the boot software upgrade, the upgrade will not complete, the card will not operate, and the card must be returned to Cisco for repair.

Replace *<slot>* with the slot number of a standalone service module or service module operating in standby mode. Replace *<revision>* with the software revision number to which you are upgrading. For example:

```
pop20one.7.PXM.a > burnboot 1 3.0(0.0)
```

- Step 4** When prompted to confirm the upgrade, type **y** and press **Return**.

After you confirm the upgrade, the new boot code is burned into the service module and the card is reset. Be patient, the card reset takes some time. You can enter the **dspcds** command to display the status of the card. At first, the status may show that the card slot is empty or the card is rebooting. Reenter the command periodically to see the current status of the card. When the card status returns to active or standby, you are ready to continue.

- Step 5** To confirm that the service module is now using the correct boot code, enter the **dspcd <slot>** command. The Boot FW Rev row in the display should show the new revision as shown in the following example:

```
8850_NY.7.PXM.a > dspcd 1
8850_NY                      System Rev: 02.01   Mar. 04, 2001 22:58:22 PST
MGX8850                      Node Alarm: NONE
Slot Number:    1      Redundant Slot: NONE

                Front Card          Upper Card          Lower Card
                -----
Inserted Card:  AXSM_40C12          SMFIR_2_OC12       SMFIR_2_OC12
Reserved Card:  AXSM_40C12          SMFIR_2_OC12       UnReserved
State:          Active              Active              Active
Serial Number:  SAK0344001V         SBK0406002K        SAK032800Q6
Prim SW Rev:    3.0(0.0)            ---                ---
Sec SW Rev:     3.0(0.0)            ---                ---
Cur SW Rev:    3.0(0.0)            ---                ---
Boot FW Rev:    3.0(0.0)            ---                ---
800-level Rev:
800-level Part#: 800-05774-05        800-05383-01       800-05383-01
CLEI Code:      1234567890          BAI9ADTAAA         0
Reset Reason:   On Power up
Card Alarm:     NONE
Failed Reason:  None
Miscellaneous Information:
```

After you confirm the upgrade to the service module, the boot software upgrade for that card is complete.

## Loading the Runtime Upgrade Software

This section describes how to load the runtime upgrade software in preparation for running it. Production switches should have redundant cards installed, so that upgrades can occur without interrupting traffic. For graceful upgrades, the upgrade software is loaded on the standby card first, and then the control is switched to upgraded card so that the other card can be upgraded. The best way to assess the upgrade status of a card is to enter the **dspcd** <slot> command. For example:

```
8850_NY.7.PXM.a > dspcd
8850_NY                      System Rev: 02.01   Mar. 04, 2001 22:47:23 PST
MGX8850                      Node Alarm: NONE
Slot Number      7      Redundant Slot:  8

                          Front Card          Upper Card          Lower Card
                          -----
Inserted Card:          PXM1E                UI Stratum3         PXM HardDiskDrive
Reserved Card:          PXM1E                UI Stratum3         PXM HardDiskDrive
State:                  Active              Active              Active
Serial Number:          SBK050302AF          SBK045203PJ         SBK044602HJ
Prim SW Rev:            4.0(0.0)           ---                ---
Sec SW Rev:             4.0(0.0)           ---                ---
Cur SW Rev:            4.0(0.0)           ---                ---
Boot FW Rev:           4.0(0.0)           ---                ---
800-level Rev:         A0                A0                 A0
800-level Part#:       800-06147-08          800-05787-02       800-05052-04
CLEI Code:             BAA670YCAA          BA7IBCLAAA         BA7IADNAAA
Reset Reason:          On Power up
Card Alarm:            NONE
Failed Reason:         None
Miscellaneous Information:
```

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

The primary (Prim SW Rev), secondary (Sec SW Rev), and current (Cur SW Rev) software revision labels indicate the status of an upgrade. In this example, these numbers match because the runtime software upgrade has not started. (Note that the boot software has been upgraded as indicated by the Boot FW Rev label.)

The primary software revision indicates which revision a card will run if it becomes active, and the secondary revision indicates an alternate revision that the card will use if the **abortrev** command is entered. (For more information on aborting an upgrade, see the “[Aborting a Runtime Software Upgrade](#)” section later in this appendix.) The current software revision represents the software the active card is using.

The normal sequence of commands for a runtime software upgrade is **loadrev**, **runrev**, and **commitrev**. [Table A-2](#) shows how the software revision levels change during a graceful runtime software upgrade.

Table A-2 Software Versions Reported During Graceful Upgrades

Upgrade Status		Before Upgrade		After loadrev		After runrev		After commitrev	
Slot Number	MGX 8850, MGX 8880, MGX 8950	Slot 7	Slot 8	Slot 7	Slot 8	Slot 7	Slot 8	Slot 7	Slot 8
	MGX 8830	Slot 1	Slot 2	Slot 1	Slot 2	Slot 1	Slot 2	Slot 1	Slot 2
Slot State		Active	Standby	Active	Standby	Standby	Active	Active	Standby
Primary software version		3.0(0)	3.0(0)	3.0(0)	3.0(0)	4.0(0.0)	4.0(0.0)	4.0(0.0)	4.0(0.0)
Secondary software version		3.0(0.0)	3.0(0.0)	4.0(0.0)	4.0(0.0)	3.0(0.0)	3.0(0.0)	4.0(0.0)	4.0(0.0)
Current software version		3.0(0.0)	3.0(0.0)	3.0(0.0)	4.0(0.0)	4.0(0.0)	4.0(0.0)	4.0(0.0)	4.0(0.0)

For non-graceful upgrades, the load process defines the software version to which the switch is about to be upgraded. Table A-3 shows how the revision levels change during a non-graceful upgrade.

Table A-3 Software Versions Reported During Non-Graceful Upgrades

Software Revision	Before Upgrade	After loadrev	After runrev	After commitrev
Primary	3.0(0.0)	3.0(0.0)	4.0(0.0)	4.0(0.0)
Secondary	3.0(0.0)	4.0(0.0)	3.0(0.0)	4.0(0.0)
Current	3.0(0.0)	3.0(0.0)	4.0(0.0)	4.0(0.0)

If you are performing a graceful upgrade, use the quickstart procedure described in the “[Graceful PXM and Service Module Runtime Software Upgrades](#)” section earlier in this appendix. The following procedure provides detailed information on the load task within the quickstart procedure.

- Step 1** To load the upgrade runtime software version on a PXM card or service module, enter the following command:

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

Replace *<slot>* with the card slot number for the card to be upgraded, and replace *<revision>* with the software version number for the update. For graceful upgrades, you can specify either the active or the standby card. The switch software will automatically load the upgrade software on the standby card when it is installed. The following example shows how to enter this command:

```
mgx8850a.7.PXM.a > loadrev 7 4.0(0.0)
```

After you enter the loadrev command, the standby card comes up in the standby-U state.

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* or the *Release Notes for the Cisco MGX 8880 Media Gateway, Release 5.1.00*. You can also determine the version number from the runtime software filename as described in the “[Determining the Software Version Number from Filenames](#)” section in [Chapter 9, “Switch Operating Procedures.”](#)

- Step 2** When prompted to confirm the command, type **y** and press **Return** to continue.



- Step 3** To verify that the load command was processed correctly, enter the **dspcd** *<slot>* command and check the status of the software revision levels. You can also view the revision levels with the **dsprevs** command.
- 

**Note**

In a standalone configuration, the switch does not start the upgraded software until the **runrev** command is entered. In a redundant configuration, the switch starts the upgraded software on the standby card. The standby card does not become active until the **runrev** command is entered.

---

## Starting the Upgrade Software

After you load the runtime upgrade software for a PXM or service module, enter the **runrev** command to start using the software. The version levels for graceful and non-graceful upgrades change as shown earlier in [Table A-2](#) and [Table A-3](#). The following procedure describes how to start the upgrade software.

---

- Step 1** To start using the new runtime software version on a PXM card or service module card, enter the following command:

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

Replace *<slot>* with the card slot number, and replace *<revision>* with the software version number specified with the **loadrev** command. For graceful upgrades, you can specify either the active or the standby card. The switch software will automatically run the upgrade software on the standby card when it is installed. The following example shows how to enter this command:

```
mgx8850a.7.PXM.a > runrev 7 4.0(0.0)
```

The active card is reset, and the former standby card comes up in the active-U state.

- Step 2** When prompted to confirm the command, type **y** and press **Return** to continue.
- Step 3** To verify that the load command was processed correctly, enter the **dspcd** *<slot>* command and check the status of the software revision levels. You can also view the revision levels with the **dsprevs** command.
- Step 4** When the former active card comes up in the standby-U state, enter the **commitrev** command to commit to that software version. This step is optional.

After the **runrev** command is entered, the switch starts running the new software revision. The secondary software revision shows that a previous revision is still available. Whenever the secondary software revision is different from the primary and current software revisions, you can revert back to the secondary software revision as described in the “[Aborting a Runtime Software Upgrade](#)” section later in this appendix.

---

## Aborting a Runtime Software Upgrade

After upgrading PXM or service module runtime software, you can revert to the previously used version of software as long as you have not used the **commitrev** command to finalize the upgrade. The **commitrev** command is described in the next section.

Keep the following in mind when you use the **abortrev** command to abort the new runtime software during an upgrade:

- If you enter the **abortrev** command on a redundant card set after the **loadrev** command was entered, and while the cards are in the Loadrev Done-U state, only the standby card will be reset.
- If you enter the **abortrev** command on a redundant card set after you entered the **runrev** command, while the cards are in the Runrev Done-U state, both the active and standby cards will be reset.
- If you enter the **abortrev** command on a single card, after you entered the **loadrev** command and the card is in the Loadrev Done-U state, the card will not be reset.
- If you enter the **abortrev** command on a single card, after you entered the **runrev** command and the card is in the Runrev Done-U state, will be reset.
- To display the current state of the card, enter the **dsprevs** command.

**Caution**

Reverting to the previously used version of runtime software resets both PXM cards and terminates all calls in progress.

To revert to the previously used runtime software version, use the following procedure.

- Step 1** Establish a configuration session using a user name with SERVICE\_GP privileges or higher.
- Step 2** To display the software revisions known to the switch, enter the **dspcd <slot>** command. (You can also view the revision levels with the **dsprevs** command.)
- Replace *slot* with the slot number of the active card. To complete the next step, you need to know the secondary software revision shown in the display.



**Note** If the primary and secondary software revisions are the same, there is no other revision level to revert back to.

- Step 3** To abort use of the primary software revision and revert back to the secondary software revision, enter the following command:

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

Replace *<slot>* with the card slot number for the active card, and replace *<revision>* with the software version number for the secondary software revision.

- Step 4** To verify that the standby card is running the previously used software version, enter the **dspcd <slot>** command to view the software version in use. You can also view the revision levels with the **dsprevs** command.

## Committing to a Runtime Software Upgrade

Committing to an upgrade does the following:

- Disables use of the **abortrev** command to revert back to the previously used version of software
- Enables upgrading of the current version of software

Once you are sure that an upgrade is stable, you can use the **commitrev** command commit to that software version. Committing to the current software version prevents other administrators from inadvertently reverting to the previous version. You must also commit to the current software version before you can upgrade to another software version.

To commit to the currently running runtime software version, use the following procedure.

- 
- Step 1** Establish a configuration session using a user name with SERVICE\_GP privileges or higher.
- Step 2** Determine if there is an unfinished upgrade by doing the following:
- a. If necessary, use the **cc** command to select the active PXM card.
  - b. Enter the **dspcd <slot>** command.
  - c. Check the **dspcd** command report to see if the same software revision is listed for the Primary Software Revision (Prim SW Rev), Secondary Software Revision (Sec SW Rev), and Current Software Revision (Curr SW Rev).

If all version numbers are identical, the runtime software can be upgraded. There is no need to commit to the current software revision.

- Step 3** To commit to the software version, enter the following command:

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

Replace *<slot>* with the card slot number for the active card, and replace *<revision>* with the software version number for the currently used software version. To display the software version number, use the **dspcd <slot>** command to view the software version in use. You can also view the revision levels with the **dsprevs** command.




---

**Note** Cisco Systems recommends that you avoid configuration changes until after you have run the **commitrev** or **abortrev** commands.

---

## Upgrade Procedures for RPM-PR and RPM-XF Cards

The following sections describe how to upgrade boot and runtime software on RPM-PR and RPM-XF cards.




---

**Note** In this document, the general term “RPM” refers to RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

---

### Upgrading RPM Boot Software

At the factory, a boot file is installed in the bootflash on the RPM card and is used to boot the card. The runtime software is updated more frequently than the boot software. However, the boot software is updated occasionally. When you are updating runtime software, check the release notes that accompany the runtime software to see if a boot software upgrade is required.

The boot software is stored in bootflash memory on the RPM card. To manage the software in bootflash, you access it as if it were a hard disk. For example, in copy and delete file commands, files are identified as `bootflash:filename` (which is similar to `x:filename`).

The following example shows a directory of bootflash contents:

```
Router (boot) #show flash:
-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time----- name
1  .D config  D4F7352A  40330  18      686 Jan 30 2001 18:18:41 auto_config_slot09
2  .D config  CBF007C1  40660   9      688 Feb 22 2001 15:33:11 slot9.cnf
3  .. image   F596869A  2973E8  27  2452744 Feb 28 2001 03:16:05
rpm-boot-mz_002.001.000.000
```


**Note**

Although you can display directory contents with the **dir bootflash:** command, the **show flash:** command provides more detail. Although bootflash and flash are separate entities on other Cisco Routers, both terms refer to the same entity on the RPM.

In the example above, the numbers in the left column indicate the order in which the RPM will try to load software. The second column shows that the first two files are marked for deletion (D). The last column lists the names of the files stored in bootflash.

When managing the bootflash, consider the following facts:

- If the BOOTLDR variable is set and the RPM card is reset, the RPM card attempts to load the boot software specified.
- If the BOOTLDR variable is *not* set and the RPM card is reset, the RPM card tries to load the first bootable image in bootflash. The first bootable image is the image that appears first in the **show flash:** command display, and this is usually the oldest file in bootflash. Therefore, if you do not use the BOOTLDR variable, the bootflash contents must be reorganized each time you upgrade boot software.
- The RPM card will not attempt to boot from automatic configuration files, which are named using the format `auto_config_slotnn`, where `nn` represents a slot in which an RPM card is installed.
- If the image that RPM tries to load does not load, you can reset the RPM from the active PXM card using the **resetcd <slot>** command.
- Files are not removed from bootflash until the **squeeze flash:** command is entered. If you delete a file and do not enter **squeeze flash:**, the RPM card will still attempt to boot from the first image it finds, whether it is marked for deletion or not.


**Caution**

If all bootable images are deleted from bootflash, the card must be returned to the factory to be reprogrammed.

If you do need to upgrade the boot software, you can copy the new boot file to the PXM disk, and then copy it to the bootflash. The following procedure describes how to upgrade the boot software.

- Step 1** Copy the new boot software file for the RPM card to the switch (C:FW) as described in the “[Copying Software Files to the Switch](#)” section earlier in this appendix.

**Tip**

In the past, this guide recommended transferring files to the E:RPM directory. You can still do this and reference the E:RPM directory by entering `e:` while in enable mode. However, storing boot and runtime software in the E:RPM directory significantly increases the size of configuration files created with the `saveallcnf` command. E:RPM is still used to store configuration files that should be backed up.

- Step 2** Establish a configuration session using any valid user name.

- Step 3** Enter the `cc` command to select the RPM card to update.

```
pop20two.7.PXM.a > cc 9
```

```
(session redirected)
```

```
Router>
```

The switch displays the Cisco IOS prompt for the router on the RPM card. From this point on, all commands are Cisco IOS commands.

**Note**

This procedure assumes that you are familiar with Cisco IOS commands (which is a topic that is beyond the scope of this book). This procedure details only those commands that are unique to setting up RPM on the switch. For general Cisco IOS commands, examples are given to show how to complete the task.

- Step 4** Enter Enable mode for the router.

```
Router>enable
Password:
Router#
```

- Step 5** To verify router access to the PXM hard disk and display the boot file name, enter `dir x:` command.

```
Router#dir x:
Directory of x:/
```

```

0 -rw-      2253552  May 11 2004 15:47:06 +00:00  mpsm_t1e1_030.000.004.016-P2.fw
0 -rw-     10655280  Apr 2 2004 08:46:30 +00:00  rpm-js-mz.123-2.T5
0 -rw-      3350304  Apr 2 2004 08:46:12 +00:00  rpm-boot-mz.123-2.T5
0 -rw-      1431512  May 11 2004 15:47:00 +00:00  mpsm_t1e1_030.000.004.016-P1_bt.fw
0 -rw-      1030532  May 11 2004 15:46:42 +00:00  frsm_vhs_022.000.005.019-A.fw
0 -rw-       891552  May 11 2004 15:46:38 +00:00  frsm_8t1e1_022.000.005.019-A.fw
0 -rw-      303936  May 11 2004 15:46:30 +00:00  cesm_t3e3_CE8_BT_1.0.02.fw
0 -rw-      641312  May 11 2004 15:46:28 +00:00  cesm_t3e3_022.000.005.019-A.fw
0 -rw-      743136  May 11 2004 15:46:24 +00:00  cesm_8t1e1_022.000.005.019-A.fw
0 -rw-      826392  May 11 2004 15:38:56 +00:00  vxsm_005.000.004.034-A_bt.fw
0 -rw-     10528336  May 11 2004 15:38:44 +00:00  vxsm_005.000.004.034-A.fw
0 -rw-      7939476  May 11 2004 15:38:06 +00:00  pxm45_005.000.004.034-A_mgx.fw
0 -rw-     1160328  May 11 2004 15:37:54 +00:00  pxm45_005.000.004.034-A_bt.fw
0 -rw-      468388  May 11 2004 15:46:46 +00:00  frsm_vhs_VHS_BT_1.0.06.fw
0 -rw-     1245112  May 11 2004 15:37:42 +00:00  mpsm155_005.000.004.034-P1_bt.fw
0 -rw-     4069552  May 11 2004 15:37:36 +00:00  mpsm155_005.000.004.034-P1.fw
0 -rw-       737896  May 11 2004 15:37:20 +00:00  frsm12_005.000.004.034-A_bt.fw
```

```

0 -rw-      2490064  May 11 2004 15:37:14 +00:00  frsm12_005.000.004.034-A.fw
0 -rw-      3674368  May 11 2004 15:36:54 +00:00  axsmxg_005.000.004.034-P1.fw
0 -rw-      838840   May 11 2004 15:36:46 +00:00  axsmxg_005.000.004.034-A_bt.fw
0 -rw-      742168   May 11 2004 15:36:44 +00:00  axsme_005.000.004.034-A_bt.fw
0 -rw-      297988   May 11 2004 15:46:40 +00:00  frsm_8tle1_FR8_BT_1.0.02.fw
0 -rw-      264592   May 11 2004 15:46:26 +00:00  cesm_8tle1_CE8_BT_1.0.02.fw
0 -rw-      3111904  May 11 2004 15:36:38 +00:00  axsme_005.000.004.034-A.fw
0 -rw-      744600   May 11 2004 15:36:32 +00:00  axsm_005.000.004.034-A_bt.fw
0 -rw-      3267520  May 11 2004 15:36:22 +00:00  axsm_005.000.004.034-A.fw
0 -rw-      248686   May 11 2004 15:32:56 +00:00  vism_8tle1_VI8_BT_3.2.00.fw
0 -rw-      4135448  May 11 2004 15:32:52 +00:00  vism_8tle1_003.053.103.007-I.fw
0 -rw-      4135000  May 11 2004 15:32:42 +00:00  vism_8tle1_003.003.103.007-I.fw

```

838616064 bytes total (721004544 bytes free)

**Step 6** To display the files in the bootflash, enter the **show flash:** command.

```

Router#show flash:
-#- ED --type-- --crc--- --seek-- nlen -length- -----date/time----- name
1  .. image    F596869A  296D88   27  2452744 Feb 28 2001 03:16:05 rpm-boot-mz_122-4.T

30315128 bytes available (2452872 bytes used)

```

**Step 7** To copy new boot software to the bootflash, enter the **copy** command.

```

Router#copy x:rpm-boot-mz_002.001.000.000 bootflash:
Destination filename [rpm-boot-mz_002.001.000.000]?
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCC
2334044 bytes copied in 35.768 secs (66686 bytes/sec)

```



**Tip** When prompted for the destination filename, press **enter** to use the source filename shown in the prompt. To change the destination filename, type a new filename after the prompt.

**Step 8** To verify that the file was copied, enter the **show flash:** command.

**Step 9** To set the BOOTLDR variable to specify the new boot software, complete the following steps:

- a. Enter the router global configuration mode

```

Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.

```

- b. Set the BOOTLDR variable to the new boot image to be loaded

```

Router(config)#boot bootldr bootflash:rpm-boot-mz_002.001.000.000

```

- c. Exit global configuration mode and save the new configuration.

```

Router(config)#^Z
Router#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

- d. Verify that the BOOTLDR variable is set

```

RPM-XF#show bootvar
BOOT variable = bootflash:rpmxf-.....
CONFIG_FILE variable =
BOOTLDR variable = bootflash:rpm-boot-mz_002.001.000.000
Configuration register is 0x2

```

**Step 10** To reorganize the bootflash so that the new boot software is loaded first when the BOOTLDR variable is not set, complete the following steps:

- a. Because all files that precede the new boot image in bootflash have to be deleted, copy bootflash files you want to save to the PXM hard disk using the following command.

```
Router#copy bootflash:filename x:filename
```

- b. Mark all the files that precede the new boot image in bootflash using the **del bootflash:** command as shown in the following example:

```
Router#del bootflash:
Delete filename []? rpm-js-mz
Delete bootflash:rpm-js-mz? [confirm]
Router#
```



**Tip** To unmark a bootflash file so that it won't be deleted when the **squeeze flash:** command is run, enter the **undelete <number>** command, where *number* is the file number displayed in the left-most column of the **show flash:** command display.

- c. To delete all files that are marked for deletion from bootflash, enter the **squeeze flash:** command as shown in the following example:

```
Router(boot)#squeeze flash:
All deleted files will be removed. Continue? [confirm]y
Squeeze operation may take a while. Continue? [confirm]

Squeeze of bootflash complete
```

- d. Copy any previously saved bootflash files you want to use from the PXM hard disk using the following command.

```
Router#copy x:filename bootflash:filename
```

You might want to copy previously saved configuration files back to bootflash, or you might want to copy an older boot image to be used if the newer version becomes corrupt.

- e. Enter the **show flash:** command to verify that the bootflash files are as you want them. The preferred boot software should appear first in the list.



**Caution**

If all bootable images are deleted from bootflash and the RPM card is restarted, the card must be returned to the factory to be reprogrammed. When you are done managing the bootflash, the **show flash:** command should display at least one bootable image, and the image you want the card to boot from should be the first bootable image in the list.



**Tip** If the **show flash:** command does not display a bootable image, copy a bootable image to bootflash as described earlier in this procedure. You can continue to manage the bootflash, even when there are no files in bootflash, until the router is restarted.

**Step 11** When you are sure the bootflash is ready for use, you can enter the **reload** command to restart the RPM card, or you can upgrade the runtime software as described in the next section.

**Tip**

If the bootflash contains bootable images and the sequence is such that the card will not start, you can enter rommon mode and load the bootable image. To get into rommon mode, establish a console connection to the RPM card, reset the RPM card using the **resetcd <slot>** command from the active PXM card, then quickly enter the **CTRL-I, Break** sequence at the RPM console. The command to send a **Break** depends on the computer platform and software you are using. It may take a couple of attempts to successfully get into rommon mode. When you are in rommon mode, the RPM card displays the *rommon 1 >* prompt.

Once in rommon mode, you can enter the **dir bootflash:** command to display the images in bootflash. To boot one of the images, enter a **boot** command using the following format: **boot bootflash:filename.**

## Upgrading RPM Runtime Software

The runtime software on the RPM-PR and RPM-XF cards can be loaded from the following sources:

- The C:FW directory on the PXM hard disk
- Bootflash
- A TFTP server on a LAN to which an RPM back card is connected.

**Note**

In this document, the general term “RPM” refers for both the RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

Cisco Systems recommends that you configure the RPM card to load from the C:FW directory on the PXM hard disk. Images will load much faster from bootflash, but if you are using multiple RPM cards, it takes longer to complete an upgrade because the runtime software must be copied to each RPM card’s bootflash instead of to a single location.

At startup, the RPM card attempts to load the software in the order listed in the startup-config file. The following example shows an excerpt from a startup-config file:

```
!
boot system x:rpm-js-mz_122-4.T
boot system bootflash:rpm-js-mz_122-4.T
boot config c:auto_config_slot09
logging rate-limit console 10 except errors
enable password *****
!
```

**Tip**

The *c:* reference in the previous example refers to the E:RPM directory on the PXM hard disk. When configuring the RPM to store configuration files on E:RPM, enter commands that reference the *e:* drive. When displaying the configuration, the *e:* drive is always displayed as *c:*.

In the startup-config file example, the RPM card attempts to load the runtime software from the PXM card (x:rpm-js-mz\_122-4.T) first, and if that fails, it attempts to load the image copy stored in bootflash. This configuration takes longer to upgrade, but it assures the card can reboot if someone accidentally removes the file on the PXM hard disk.



To configure the RPM to load upgraded runtime software from the PXM hard disk, you need to do the following:

- Copy the upgraded file to the PXM hard disk
- Update the boot system variable in the router startup-config file to load the new file.
- Reset the RPM card so that it loads the new file.

RPM cards can be configured for 1:N redundancy as well as for non-redundant configurations. The procedures for both types of configuration are in the sections that follow.

**Tip**

To simplify runtime software updates, copy the runtime file in the C:FW directory and rename it to a generic name such as rpm-js-mz. The production runtime filenames have version numbers appended to them, but you can change this. This approach allows you to perform future upgrades by copying the file to the hard disk, renaming a copy of the file to your generic name, and resetting each card. The approach eliminates the need to reconfigure Cisco IOS commands on each card to recognize the new filename.

## Upgrading RPM Runtime Software for 1:N Redundancy

Redundancy must be established before you use the procedure in this section. If redundancy has not been established, upgrade each RPM card using the procedure in the next section, “Upgrading Without Redundancy”.

**Note**

In this document, the general term “RPM” refers for both the RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

To upgrade the RPM runtime software for 1:N redundancy, use the following procedure.

- Step 1** Copy the new runtime software file for the RPM card to the switch (C:FW) as described in the “[Copying Software Files to the Switch](#)” section earlier in this appendix.
- Step 2** If you are using a generic filename for your runtime images, copy the file on the PXM hard disk and rename the copy. For example:

```
8850_LA.8.PXM.a > copy rpm-js-mz_122-4.T rpm-js-mz
```

- Step 3** Establish a configuration session using any valid user name.
- Step 4** If your RPM is already configured to use a file with a generic name, skip to Step 13.
- Step 5** Enter the **cc** command to select the RPM card to update.

```
pop20two.7.PXM.a > cc 9
```

```
(session redirected)
```

```
Router>
```

The switch displays the Cisco IOS prompt for the router on the RPM card. From this point on, all commands are Cisco IOS commands.



**Note** This procedure assumes that you are familiar with Cisco IOS commands (which are a topic that is beyond the scope of this book). This procedure details only those commands that are unique to setting up RPM on the switch. For general Cisco IOS commands, examples are given to show how to complete the task.

**Step 6** Enter Enable mode for the router.

```
Router>enable
Password:
Router#
```

**Step 7** Display the startup runtime software filename by entering the **show bootvar** command.

```
Router#show bootvar
BOOT variable = x:rpm-js-mz_122-4.T,12;
CONFIG_FILE variable = c:auto_config_slot09
BOOTLDR variable does not exist
Configuration register is 0x2
```

In the example above, the startup runtime software file is x:rpm-js-mz\_122-4.T, and it has a version number attached to it. Another way to view the boot list is to enter the **show startup-config** command and look for the **boot system** commands.

**Step 8** Enter the router global configuration mode.

```
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 9** If you need to change the boot system filenames, remove the existing boot list using the **boot system** command as follows:

```
Router(config)# no boot system
```

**Step 10** Create a new boot list by entering one or more **boot system** commands as follows:

```
Router(config)# boot system x:filename
```

Replace the filename variable with the name of the new runtime file that was previously transferred to the C:FW directory on the switch. For example:

```
Router(config)# boot system x:rpm-js-mz
```

If you want to enter additional boot system commands, enter them in the order in which you want the RPM card to use them. The following example adds a statement to load from bootflash if the runtime file is not found on the PXM hard disk:

```
Router(config)# boot system bootflash:rpm-js-mz_122-4.T
```



**Note** Before the RPM card can load runtime software from bootflash, you must copy the runtime software to the bootflash. The procedure for copying files from the PXM hard disk to bootflash is described in the previous section.

**Step 11** Exit global configuration mode and save the new configuration.

```
Router(config)#^Z
Router#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

**Step 12** To verify the change, enter the **show bootvar** or **show run** commands.

**Step 13** Switch to the active PXM card and reset the RPM card. For example:

```
Router#cc 8

(session redirected)

8850_LA.8.PXM.a > resetcd 9
The card in slot number 9, will be reset. Please confirm action
resetcd: Do you want to proceed (Yes/No)? y
```

**Step 14** Switch to the secondary card using the **switchredcd** command as follows:

```
8850_LA.8.PXM.a > switchredcd <fromSlot> <toSlot>
```

Replace *<fromSlot>* with the slot number of the primary card. Replace *<toSlot>* with the slot number of the secondary card.

This step makes the secondary card active and resets the primary RPM card. When the primary card resets, it loads the upgraded software.

**Step 15** Switch back to the primary card using the **switchredcd** command as follows:

```
8850_LA.8.PXM.a > switchredcd <fromSlot> <toSlot>
```

Replace *<fromSlot>* with the slot number of the secondary card. Replace *<toSlot>* with the slot number of the primary card.

This step makes the primary card active and resets the secondary RPM card. When the reset is complete, the secondary card is ready to run the upgraded software.

**Step 16** To verify that the router reboot is complete, enter the **dspcds** or **dspcd <slot>** commands. The reboot is complete when the card state displays as *Active*. Another way to verify router operation is to enter the **cc slot** command. If you can access the router from the switch prompt, the router reboot is complete.

**Step 17** If there are other primary cards with redundant (secondary) cards, repeat this procedure for each primary card.

## Upgrading RPM Runtime Software for Non-Redundant Cards

To upgrade the RPM-PR or RPM-XF runtime software for nonredundant cards, use the following procedure.



### Note

In this document, the general term “RPM” refers for both the RPM-PR and RPM-XF cards. If a step or procedure is specific to only one of the RPM cards, it will be called out in the text.

**Step 1** Copy the new runtime software file for the RPM card to the switch (C:FW) as described in the “[Copying Software Files to the Switch](#)” section earlier in this appendix.



### Tip

In the past, this guide recommended transferring files to the E:RPM directory. You can still do this and reference the E:RPM directory by entering **e:** while in enable mode. However, storing boot and runtime software in the E:RPM directory significantly increases the size of configuration files created with the **saveallcnf** command. E:RPM is still used to store configuration files that should be backed up.

**Step 2** If you are using a generic filename for your runtime images, copy the file on the PXM hard disk and rename the copy. For example:

```
8850_LA.8.PXM.a > copy rpm-js-mz_122-4.T rpm-js-mz
```

**Step 3** Establish a configuration session using any valid user name.

**Step 4** If your RPM is already configured to use a file with a generic name, skip to Step 13.

**Step 5** Enter the **cc** command to select the RPM card to update.

```
pop20two.7.PXM.a > cc 9
```

```
(session redirected)
```

```
Router>
```

The switch displays the Cisco IOS prompt for the router on the RPM card. From this point on, all commands are Cisco IOS commands.



**Note** This procedure assumes that you are familiar with Cisco IOS commands (which is a topic that is beyond the scope of this book). This procedure details only those commands that are unique to setting up RPM on the switch. For general Cisco IOS commands, examples are given to show how to complete the task.

**Step 6** Configure the RPM card to store its configuration on the PXM hard disk by entering the following command:

```
Router> boot config e:auto_config_slot#
```

**Step 7** Enter Enable mode for the router.

```
Router>enable
Password:
Router#
```

**Step 8** Display the startup runtime software filename by entering the **show bootvar** command.

```
Router#show bootvar
BOOT variable = x:rpm-js-mz_122-4.T,12;
CONFIG_FILE variable = c:auto_config_slot09
BOOTLDR variable does not exist
Configuration register is 0x2
```

In the example above, the startup runtime software file is `x:rpm-js-mz_122-4.T`, and it has a version number attached to it. Another way to view the boot list is to enter the **show startup-config** command and look for the **boot system** commands.

**Step 9** Enter the router global configuration mode.

```
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 10** If you need to change the boot system filenames, remove the existing boot list using the **boot system** command as follows:

```
Router(config)# no boot system
```

**Step 11** Create a new boot list by entering one or more **boot system** commands as follows:

```
Router(config)# boot system x:filename
```

Replace the filename variable with the name of the new runtime file that was previously transferred to the C:FW directory on the switch. For example:

```
Router(config)# boot system x:rpm-js-mz
```

If you want to enter additional boot system commands, enter them in the order in which you want the RPM card to use them. The following example adds a statement to load from bootflash if the runtime file is not found on the PXM hard disk:

```
Router(config)# boot system bootflash:rpm-js-mz_122-4.T
```




---

**Note** Before the RPM card can load runtime software from bootflash, you must copy the runtime software to the bootflash. The procedure for copying files from the PXM hard disk to bootflash is described in the previous section.

---

**Step 12** Exit global configuration mode and save the new configuration.

```
Router(config)#^Z
Router#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

**Step 13** To verify the change, enter the **show bootvar** or **show run** commands.

**Step 14** Switch to the active PXM card and reset the RPM card. For example:

```
Router#cc 8

(session redirected)

8850_LA.8.PXM.a > resetcd 9
The card in slot number 9, will be reset. Please confirm action
resetcd: Do you want to proceed (Yes/No)? y
```

---

## Troubleshooting Upgrade Problems

Table A-4 lists symptoms of upgrade problems and suggestion on how to correct them.



**Tip**

---

When troubleshooting problems on standby PXM cards or cards that do not start up to the active state, establish communications through the boot IP address or through the console port.

---

Table A-4 Troubleshooting Upgrade Problems

Primary Symptom	Secondary Symptom	Suggested Action
<b>loadrev</b> or <b>runrev</b> command fails	—	<p>The <b>loadrev</b> command is blocked when a previous upgrade has not been completed with the <b>commitrev</b> command. Enter the <b>dsprevs</b> command to locate the cards that are still being upgraded.</p> <p>For more information on a particular card, enter the <b>dspcd &lt;slot&gt;</b> command and verify that the current, primary, and secondary software revision numbers are identical. If the numbers are not identical, issue the <b>commitrev &lt;slot&gt;</b> command.</p> <p>Enter the <b>dspecds</b> and verify that the standby card is in standby state. Also look for a -U or -D in the <b>dspecds</b> command display, which indicates that the card is in the process of being upgraded (-U) or downgraded (-D). The <b>loadrev</b> and <b>runrev</b> commands are blocked whenever the standby card is not in standby state or an upgrade or downgrade is in progress.</p>
After restart, the switch stops displaying messages and does not display a prompt.	—	Press <b>Return</b> to display the prompt.
After restart, switch stops at backup boot prompt: <b>pxmlbkup&gt;</b> or <b>pxm45bkup</b> .  (Use a console port connection to see this. If you missed the startup messages, enter the <b>reboot 2</b> <sup>1</sup> command.)	<p>The switch displays the following message: <i>Can not open file C:/version.</i></p> <p>The switch displays the following message: <i>Unable to determine size of C:/FW/filename.</i></p>	<p>The version file is probably missing. Create the version file as described in the “<a href="#">Initializing the Switch</a>” section in <a href="#">Chapter 2</a>, “<a href="#">Configuring General Switch Features.</a>”</p> <p>The version recorded in the version file doesn’t match software installed in the C:FW directory.</p> <p>Enter the <b>sysVersionShow</b> command to see which file the PXM is trying to load.</p> <p>Verify that the correct software is installed on the switch using the commands described in the “<a href="#">Browsing the File System in Backup Boot Mode</a>” section in <a href="#">Appendix B</a>, “<a href="#">PXM Backup Boot Procedures.</a>”</p> <p>If the runtime software is not on the hard disk, copy it to the hard disk as described in the “<a href="#">Transferring Software Files to and from the Switch</a>” section in <a href="#">Appendix B</a>, “<a href="#">PXM Backup Boot Procedures.</a>”</p> <p>If a typo is entered when initializing the switch, re-enter the <b>sysVersionSet</b> command, enter the <b>sysVersionShow</b> command to verify the correct setting, and then reboot the switch with the <b>reboot 2</b><sup>1</sup> command.</p>
	The switch displays the following message: <i>Please run sysDiskCfgCreate.</i>	The hard disk is formatted, but not ready for operation. Enter the <b>sysDiskCfgCreate</b> command. For more information, see the “ <a href="#">Initializing the PXM Hard Disk</a> ” section in <a href="#">Appendix B</a> , “ <a href="#">PXM Backup Boot Procedures.</a> ”

Table A-4 Troubleshooting Upgrade Problems (continued)

Primary Symptom	Secondary Symptom	Suggested Action
Standby PXM continually reboots.  You can view the rebooting process through the console port.	—	<p>The active PXM card cannot bring up the standby card. The following procedure assumes that this card has just been installed in the switch and that you have given the standby card sufficient time to synchronize with the Active card.</p> <p>Interrupt the boot cycle by pressing <b>Return</b>. Timing is important, so you might have to press <b>Return</b> multiple times. When the <code>pxm1ebkup</code> or <code>pxm45bkup</code> prompt appears, immediately enter the <b>sysPxmRemove</b> command to prevent the Active card from rebooting the standby card while you are working on it.</p> <p>Enter the <b>sysChangeEnet</b> command and verify that the <code>inet on ethernet (e)</code> and <code>gateway inet (g)</code> values are set to the boot and gateway IP address set with the <b>bootChange</b> command on the active card. Also, verify that the <code>boot device</code> is set to <code>lnPci</code>. The <b>sysChangeEnet</b> command works like the <b>bootChange</b> command, which is described in the “<a href="#">Setting the Boot IP Address</a>” section in <a href="#">Chapter 2, “Configuring General Switch Features.”</a></p> <p>Enter the <b>sysClrallcnf</b> command to clear any configuration data on the standby card set. This command does not clear the boot IP address set with the <b>sysChangeEnet</b> command.</p>
After restart, the switch stops at shell prompt: <code>pxm1e&gt;</code> or <code>pxm45&gt;</code> .	—	<p>If the <b>Return</b> key is pressed at one of the auto-boot prompts during start up, the switch stops in shell mode. Enter the <b>reboot 2</b><sup>1</sup> command to restart the switch and avoid pressing the <b>Return</b> key.</p>
The non-active PXM will not transition out of the active init state.	One or more non-standby PXM cards are in a transitional state.	<p>A non-standby PXM card is a standalone PXM card or the card within a redundant PXM pair that is trying to go active. When a non-standby PXM card is in a transitional state, such as the init state, the PXM cannot transition to the standby state. When all non-standby cards have reached a steady (non-transitional) state, the PXM will transition to a steady state. Steady states are as follows: active ready, failed, mismatch, empty, empty reserved, and standby ready.</p> <p><b>Note</b> When either card in a redundant PXM pair is active, that PXM pair is not preventing the standby PXM from transitioning to a steady state. The standby PXM is only affected when both cards in a redundant pair are in a transitional state.</p>

1. Beginning with Release 4.0, you must enter **reboot 2**. For all prior releases, enter **reboot**.

