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CiscoWorks RME SWIM 3.0 FAQ

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Introduction

Software Image Management (SWIM) is an application in Resource Manager Essentials (RME) that helps network administrators manage and upgrade software images on Cisco devices. RME is one of the products in the CiscoWorks2000 family. This document answers the most frequently asked questions (FAQ) about the SWIM application. The document covers details up to the SWIM 3.0 release. The SWIM 3.0 release comes bundled with the RME 3.0 release. If this document does not mention a specific version of SWIM, you can assume the version is 3.0. If any content applies to a specific release of SWIM, the document explicitly mentions the release number.

For more information on document conventions, refer to the [Conventions Used in Cisco Technical Tips](#).

Image Distribution

Q. When does SWIM use the remote copy protocol (rcp) to transfer images?

A. If you have selected the rcp preference in Edit Preferences, SWIM uses rcp to

transfer images (to upload and download) to Cisco IOS® Software devices that support CISCO-FLASH-MIB. Cisco Catalyst 5500/5000 switches and Cisco 700 series devices do not support rcp. Cisco IOS devices that do not support rcp include the Cisco 7000 series (route processor [RP]-based 7000 only) and MC3810. All other Cisco IOS devices support the rcp protocol. SWIM always uses the TFTP protocol for configuration file updates on Cisco IOS devices.

Q. How does SWIM ensure that file corruption does not occur during transfer?

A. SWIM computes the checksum of the image file. Then, SWIM compares this checksum to the checksum from the device after the copy of the image file to the device Flash. SWIM also verifies the size of the file on the Flash. If either the size or checksum do not match, SWIM aborts the distribution and marks the job status as an error.

Q. After an upgrade, why does SWIM sometimes leave behind image files in the tftpboot directory?

A. SWIM removes the image files from the tftpboot directory after the upgrade unless the TFTP fallback job option is set. If the TFTP fallback option is set, SWIM uploads the image from the device and leaves the image in the tftpboot directory for fallback. SWIM also modifies the boot system commands on the device to add a fallback command to boot from the original image on the RME TFTP server if the upgraded image does not boot.

Q. How much temporary space do you need during image distribution?

A. The amount of free space necessary depends on the image file size and the number of devices for simultaneous upgrade. If the TFTP fallback option is set, you need additional free disk space to keep the current image in the tftpboot directory. Both the tftpboot and temp directories use disk space.

Cisco IOS System Software Upgrades

Q. What is a Dual Flash Bank (DFB) device, and how does SWIM upgrade the device?

A. You can partition the Flash card into two equal banks. Each bank is a Flash partition. If you do not partition a Flash card, the Flash card is a Single Flash Bank (SFB), and the device is an SFB device. A device that has the Flash card divided into two partitions is a DFB device.

Flash is partitioned into two banks: flash1 and flash2. You must store software image files in a single partition. The total size of a Flash partition limits the maximum size of a software image. On a DFB run-from-Flash (RFF) device, SWIM supports an upgrade of the Flash partition that does not contain the image that currently runs. SWIM cannot upgrade the RFF partition on DFB devices. SWIM cannot perform the upgrade because the other partition, which can be upgraded directly, is the recommended partition for the store of a new software image.

The Cisco AS5200 device has two Flash cards: bootflash and flash. The flash is an RFF system and bootflash is a run-from-RAM (RFR) system. Bootflash stores bootldr images on the AS5200. Flash stores Cisco IOS Software.

Q. Does SWIM support software upgrades on dual Route Switch Processor (RSP)-based systems?

A. SWIM updates the software on the master RSP. SWIM copies the software image file to the master RSP Flash card (bootflash: slot0: slot1:) and updates the configuration file on the master RSP. SWIM cannot do a complete software-upgrade job on the slave RSP processor. SWIM only can copy the software image file to the slave RSP processor; SWIM cannot update the configuration file on that processor. You need to run a separate Distribute Images job to copy the software image file to the slave RSP processor. Because SWIM cannot update the configuration file on the slave RSP processor, choose **Don't touch config file > no reboot** in the job created to upgrade the software on the slave RSP processor.

Q. Why does SWIM require static IP routes or dynamic IP routing protocol for configuration for the upgrade of a run-from-Flash (RFF) partition on a Single Flash Bank (SFB) device?

A. SWIM upgrades SFB devices that are in Rxboot mode. Rxboot mode does not support IP routing, IP bridging, or Simple Network Management Protocol (SNMP). The Rxboot image can support only one IP interface. Before the reboot of the device while in the Rxboot mode, SWIM determines the:

- Interface that connects the device to RME servers. SWIM shuts down all interfaces except the one that connects to the RME server.
- Default gateway IP address for the forward of all IP traffic when the device is in the Rxboot mode.

SWIM queries the ipRouteEntry MIB variables ipRouteDest and ipRouteIfIndex to determine the default gateway IP address and the interface that connects. If the device configuration does not include static IP routes or dynamic IP routing protocol, the ipRouteEntry table is not set on the device. Consequently, SWIM cannot determine the default gateway and the interface that connects to RME.


Q. Although the configuration of the Single Flash Bank (SFB) device includes an IP default gateway, why does SWIM not upgrade the device?

A. SWIM requires an IP default gateway address and an interface that connects. If you configure only the IP default gateway with the configuration command (**ip default-gateway ip-address**), you do not generate the ipRouteEntry MIB table on the device. You can parse the IP default gateway from the configuration file; however, there is no reliable way to get the connecting interface from the device without the ipRouteEntry MIB. Without the ipRouteEntry MIB, SWIM does not allow upgrades, even if you have manually configured the IP gateway on the device.

Q. How do you change the IP default gateway configuration to allow SWIM to upgrade a device?

A. Use the IP default gateway configuration command to convert to a static IP route. Replace **ip default-gateway gateway_ip_address** with **ip route 0.0.0.0 0.0.0.0 gateway_ip_address**, which removes the **ip default-gateway** command from the configuration file. Check the output of the **show ip route** command to verify the correct configuration of a static IP route on the device.

Q. Why does SWIM require Cisco IOS Software Release 11.1 or later to run on a Single Flash Bank (SFB) device for an upgrade when you have configured the device with Frame Relay subinterfaces?

A. Releases earlier than Cisco IOS Software Release 11.1 do not include Frame Relay subinterfaces in ifTable and ipRouteTable in [RFC 1213](#) . SWIM requires information from these tables to perform Rxboot mode upgrades. Therefore, SWIM requires Cisco IOS Software Release 11.1 or later to run on an SFB device when the device has Frame Relay subinterfaces.

Bootldr Upgrades

Q. Which Cisco IOS devices support bootldr images?

A. These Cisco IOS device families support bootldr images:

- Cisco 4500 and 4700
- Cisco 7500, Route Switch Processor (RSP)-based 7000
- Cisco 7200
- Cisco AS5200, AS5300, and AS5800 Access Servers
- Route Switch Module (RSM) on Cisco Catalyst 5500/5000

Q. What SWIM function upgrades bootldr images?

A. This task requires an administrator privilege. To upgrade bootldr images:

1. Choose **Resource Manager Essentials > Software Management > Distribution > Distribute Images**. The Select Device Type window appears.
2. In the Select Device Type window, choose **Cisco IOS**, then click **Next**. The Select Cisco IOS Devices window appears.
3. Select the devices, and then click **Next**. The Recommended Image Upgrade window appears. The device information appears in columnar format.
 - The Bootldr field displays the version number of the bootldr image on the device.
 - The Options column displays a Bootldr list box. This list box shows bootldr images that are available in the library for upgrade.
4. Select an image from the Bootldr list box in the Options column.

Q. Does SWIM recommend bootldr images from Cisco.com in the Distribute Images function?

A. No, SWIM does not recommend the download of bootldr images directly from [Cisco.com](#) during the Distribute Images job creation. Instead, populate the software library with bootldr images before you run the Distribute Images job. The bootldr images can then distribute to the devices from the software library instead of from [Cisco.com](#).

Q. How can you get bootldr images into your software library?

A. To get the bootldr images into your software library:

1. Choose **Resource Manager Essentials > Software Management > Library >**

Add Images.

2. Enter a user name and password for the Administrator role. The Select Image Source window appears.
3. In the Select Image Source window, choose **CCO**, then click **Next**. The Select Devices window appears.
4. Select the devices you want to upgrade, and then click **Next**.
5. Enter your [Cisco.com](http://www.cisco.com) user name and password to access [Cisco.com](http://www.cisco.com) images. [Cisco.com](http://www.cisco.com) displays these frames:
 - o **Select a device/platform** to display the available software releases.
 - o **Software Versions** for the selected device.
 - o **Software Subset Images** for the selected device and release.
 - o **Images to be added to image software library** (if you have selected a software version).
6. In the Software Subset Images frame, choose the subset image BOOT IMAGE to download. If a bootldr image is unavailable from [Cisco.com](http://www.cisco.com) in this window, use FTP to import the bootldr image from [Cisco.com](http://www.cisco.com) at `ftp://username@ftp.cisco.com`.

Note: To access `ftp://username@ftp.cisco.com`, you need to replace *username* with your [Cisco.com](http://www.cisco.com) login. Also, enable passive FTP before you download the bootldr image. Refer to [Using the Downloads](#) for more information.

For example, this URL imports a bootldr image for the Cisco 7500 device:

- o `ftp://username@ftp.cisco.com/cisco/ios/11.0/11.0.22-BT/7500/`

After the import of the image to the RME server, choose **Resource Manager Essentials > Software Management > Library > Add Images** to import the image to the library.

Q. How do you identify bootldr image files?

A. Bootldr image files follow this name convention:

- *platform-boot-mz.version*

An example is `rsp-boot-mz.11.0(17)BT`. If the second part (feature part) of the image file name contains "boot", then the image is a bootldr image. The software library recognizes the file name and imports the image as a bootldr image. Bootldr images earlier than Cisco IOS Software Release 10.3 contain xboot in the feature part of the image. SWIM does not support such images.

Q. How does the SWIM bootldr recommendation process work?

A. Different hardware platforms in Cisco IOS Software have different bootldr images. For example, the bootldr image for the Cisco 4500 device is `c4500-boot-mz`; the bootldr image for the Cisco 7200 is `c7200-boot-mz`. From the library, SWIM determines which bootldr images belong to the same family as the target device. SWIM then recommends the most current of all available images.

Unlike system software images, bootldr images do not have RAM requirements. Therefore, SWIM does not perform prerequisite matches between the device and the image.

Q. Where is the storage location of the bootldr image on the Cisco IOS device?

A. SWIM always uses the bootflash card as the target Flash for the bootldr image. SWIM stores bootldr images on the bootflash card only, even though Cisco IOS Software allows the store of bootldr images on a Flash card. If you use other Flash cards for the store of bootldr images, problems can occur when you have stored other types of images, such as system software, Microcom, or Modem ISDN channel aggregation (MICA), in the same location.

Q. Does SWIM erase bootflash if there is not enough free space on bootflash?

A. If the bootflash card does not have enough free space to store the new bootldr image, SWIM erases the bootflash to make room for the new boot image. A verification warning alerts you of the bootflash erase. To see this warning, click the **Failure/Warning** link in the Status column of the Verify Image Upgrade window.

SWIM backs up and restores files on bootflash with sizes of less than 1 MB.

Q. Does SWIM change the configuration file for bootldr upgrades?

A. Upon bootldr upgrade, SWIM changes the device configuration file such that the configuration file that downloads to the device contains:

Note: Assume that the file name of the newly downloaded bootldr image is c4500-boot-mz.112-13.bin.

- **no boot bootldr**
- **boot bootldr c4500-boot-mz.112-13.bin**

Q. Can SWIM back up the current bootldr image while SWIM runs the Distribute Images job?

A. SWIM backs up the system software image only during the Cisco IOS Distribute Images job execution. The backup of bootldr images cannot take place. Use the Add Images function to import the bootldr image from device to library. (Choose **Resource Manager Essentials > Software Management > Library > Add Images.**)

Modem Upgrades

Q. What modem cards does SWIM support?

A. SWIM upgrades Modem ISDN channel aggregation (MICA) and Microcom 56K modems.

Q. What devices and software versions get support for the modem upgrades?

A. Support is available for Modem ISDN channel aggregation (MICA) portware upgrades on:

- Cisco AS5200 that runs Cisco IOS Software Release 11.3(2)T or later and Bootldr version 11.2(11)P or later.
- Cisco AS5300 that runs Cisco IOS Software Release 11.2(9)XA , 11.3(2)T, or later.
- Cisco 3640 that runs Cisco IOS Software Release 11.2(12)P, 11.3(2)T, or later.

Support is available for Microcom firmware upgrades on:

- AS5200 that runs Cisco IOS Software Release 11.2(10a)P or later.
- AS5300 that runs Cisco IOS Software Release 11.1(14)AA, 11.2(7a)P, or later.
- **Note:** Cisco AS5800 devices also have modems. However, the modem microcode for these devices is bundled with the system software only and receives upgrades as part of the system software upgrade.

Q. Which formats of Microcom firmware images does SWIM support?

A. The Microcom firmware for 56K modems is available in two formats:

- Controller firmware and the Digital Signal Processor (DSP) code as two files, for example, mcom-modem-fw-xx.bin and mcom-modem-dsp-xx.bin.
- A combination of firmware and the DSP code in a single format, for example, mcom-modem-code-xx.bin.

The Cisco AS5300 supports only the image combination. If the Cisco AS5200 runs a Cisco IOS Software release later than Cisco IOS Software Release 11.2(10)P, the AS5200 supports only the combination file format. SWIM supports only the combination format files (for example, mcom-modem-code-xx.bin). SWIM does not support separate firmware and DSP code files. You cannot import the files to the software library.

Q. Which format of Modem ISDN channel aggregation (MICA) portware do Cisco 3600 devices support?

A. The 3640 digital modem network modules can run two types of modem microcode.

- 3600-Specific Modem Microcode File—This file has a 3600-specific header and should have the characters c3600-mica in the file name. SWIM does not support such files.
- Cisco AS5300 Modem Microcode File—In Cisco IOS Software Release 11.2(12)P, 11.3(2)T, and later, the 3640 supports the AS5300 microcode files directly and the 3600-specific microcode files. The AS5300 microcode files have Executable and Linking Format headers that contain the version and other information about the image file. Even though the microcode file formats differ between the 3600 and the AS5300, the actual microcode that downloads to the MICA modems is the same.

SWIM supports only AS5300 format files. Therefore, the earliest Cisco IOS Software release that the 3640 supports is Cisco IOS Software Release 11.2(12)P.

Q. How do you import modem images to the SWIM library?

A. The Add Images function (if you choose **Resource Manager Essentials > Software Management > Library > Add Images**) does not support the import of modem images from [Cisco.com](http://www.cisco.com). You must first download these images to the file system on the RME server. You can then choose **Add Images > From File System** to import them to the software library. SWIM does not allow the download of modem images directly from [Cisco.com](http://www.cisco.com) to the device. Populate the software library with modem images before you run the Distribute Images function.

Q. Where are the modem images available on Cisco.com?

A. Modem images are available at [Downloads - Access Software](#).

You also can use either of these links from RME to download modem images:

- Choose **Management Connection > CCO Tools > Browse CCO MICA Portware**.
- Choose **Management Connection > CCO Tools > Browse CCO Microcom**.

Q. Why does the current firmware version on Microcom show Unknown in the Recommend Images window?

A. The Microcom version is unavailable when you use the Simple Network Management Protocol (SNMP) instrumentation. The cardSwVersion object does not return a version for the Microcom card, so SWIM shows the firmware version as Unknown.

Q. Why does the undo operation not receive support for modem upgrades?

A. To support the undo operation, SWIM must determine the version of software that runs and identify the image file on the device that corresponds. The image file must be present in the library or available on [Cisco.com](#). In the case of modem upgrades, SWIM cannot precisely determine the current software version on the modems in all cases. Moreover, different modems can run different software versions, which makes the undo process difficult to support.

Q. What connection mechanism does SWIM use for modem upgrades?

A. SWIM uses Simple Network Management Protocol (SNMP) to initiate the modem image file transfer to the device Flash. After SWIM copies the image to Flash, SWIM uses the Telnet interface to the device to run a command line interface (CLI) command that downloads the code to the modems. (The command is **copy flash modem**.)

Q. Does SWIM erase Flash for modem upgrades if there is not enough free space on Flash?

A. Yes, if the target Flash card does not have enough free space for the store of the new modem image, SWIM erases the target Flash. SWIM does not erase the Flash card if:

- the upgrade of the system software does not occur within the same job as the modem upgrade.
- the target Flash partition for the modem upgrade contains the current system software image.

Instead, SWIM prevents the modem upgrade on that Flash partition. On the Cisco AS5200, the bootflash card stores modem images, which can contain the bootloader image that currently runs. If there is not enough free space to contain the new modem image, SWIM erases the bootflash card. Back up and restore bootloader images in the case that an erase of the bootflash is necessary for the upgrade of the modem image. SWIM issues a verification warning if SWIM needs to erase the bootflash.

CIP Upgrades

Q. What is CIP?

A. CIP stands for Channel Interface Processor card. This interface card allows you to connect the Cisco 7000 router to IBM or IBM-compatible mainframes.

Q. Which devices support the Channel Interface Processor (CIP) microcode upgrade? What is the minimum software version necessary?

A. SWIM supports CIP upgrades on Cisco 7000 and 7500 routers that run Cisco IOS Software Release 11.1(1) or later.

Q. What is the minimum Channel Interface Processor (CIP) version that SWIM supports?

A. SWIM supports CIP version 22.0 at minimum.

Q. How can you import Channel Interface Processor (CIP) images to the SWIM library?

A. The Add Images function (if you choose **Resource Manager Essentials > Software Management > Library > Add Images**) does not support the import of CIP microcode images from Cisco.com. You first must download the images to the file system on the RME server. Then, choose **Add Images > From File System** to import them to the software library. SWIM does not recommend the download of CIP microcode directly from Cisco.com for an upgrade. Populate the software library with modem images before you run the Distribute Images function.

Q. Is there support for the undo operation for Channel Interface Processor (CIP) upgrades?

A. No, there is no support for the undo operation for CIP upgrades.

Q. What connection mechanism does SWIM use to upgrade Channel Interface Processor (CIP)?

A. SWIM uses the Telnet interface to the device to copy the CIP image to the flash. SWIM uses TFTP (via Simple Network Management Protocol [SNMP]) for the configuration upgrade to add the **boot** command to load CIP microcode.

Q. Does SWIM change the configuration file for the Channel Interface Processor (CIP) upgrade?

A. To load the new CIP microcode, the CIP upgrade process adds these configuration commands:

- **microcode cip flash *new_cip_image_name***
- **microcode reload**

Cisco Catalyst Software Upgrades

Q. In which order does SWIM upgrade modules on a Cisco Catalyst 5500/5000 device?

A. SWIM upgrades the Supervisor Engine module on the device before other modules. SWIM upgrades the remainder of the modules in slot-number order. For example, SWIM upgrades the module on Slot 3 before Slot 5.

Q. Is there support for the Not Reboot option for Cisco Catalyst devices in this release?

A. SWIM added the Not Reboot feature to RME. The feature allows you to control the immediate reset of Supervisor Engine cards after the copy of a new software image. By default, the cards do not reboot immediately. This option applies to Supervisor Engine cards only. Other modules, such as FDDI, ATM, and Token Ring, always reset immediately with the download of a new software image.

Q. Does the Supervisor Engine card reboot after the upgrade of all modules?

A. If you elect to reboot devices immediately after the upgrade of software, SWIM reloads the Supervisor Engine card. The reload of the card results in the reload of all modules, before the upgrade of software on other intelligent modules. This process supports instances in which the new module requires a newer version of Supervisor Engine software.

If you choose not to reboot the device after the download of software, you then must reload the Supervisor Engine module manually. You also should consider that software that you have newly loaded on a module may require new Supervisor Engine software. If new Supervisor Engine software is necessary, you should reload the Supervisor Engine module before you load the new software to the other intelligent modules (such as ATM, FDDI, and Token Ring). For example, you may download 3.1(1) FDDI software and 4.1(1) Supervisor Engine software in a single job. The 3.1(1) FDDI software may require 4.1(1) Supervisor Engine software. Then, you must reset the Supervisor Engine module before you can upgrade the FDDI software. In such cases, you must have already chosen the Reboot Immediately option.

Q. Does SWIM determine if the newly deployed Supervisor Engine software or module software is compatible with the module types (or module hardware versions)?

A. SWIM does not verify whether the newly deployed Supervisor Engine software supports all modules that are available on the chassis. Usually, with the upgrade of Supervisor Engine software to a newer release, the software provides backward compatibility for all the modules that exist on the chassis. But you should check the release notes of the Supervisor Engine software or module software to be sure that the software versions are compatible.

Q. Does SWIM support the upgrade of software on redundant Supervisor Engine card-based systems?

A. The redundant architecture of Cisco Catalyst devices ensures that when the device reboots after a software upgrade, the redundant Supervisor Engine automatically synchronizes all the data from the primary Supervisor Engine. No special processes are necessary.

Q. Why does the Cisco Catalyst Upgrade Path Verification not hesitate if you try to distribute a Supervisor Engine image from 3.1 to new Supervisor Engine images?

A. The Catalyst Upgrade Path Verification feature uses the knowledge base (\$ENV {NMSROOT}/objects/swim/data/UpgradeKbCat.dat) to perform validation.

A copy of this knowledge base is on [Cisco.com](http://www.cisco.com) also. If new Catalyst images require an Upgrade Path validation, an update occurs in the knowledge base on [Cisco.com](http://www.cisco.com). During Catalyst image distribution, the verification process warns you if the process cannot validate data for the new images from the local Knowledge Base. If you see the warning, choose **Resource Manager Essentials > Administrator > Software Management > Update Upgrade Path** to synchronize the local knowledge base with the new information in the [Cisco.com](http://www.cisco.com) knowledge base.

Supervisor Engine Software Upgrades

Q. Why do you see the Flash target selection list box for only some Cisco Catalyst devices in the Recommend Image Upgrade window?

A. Only Catalyst devices that have Supervisor Engine III cards (model WS-X5530) have the Flash list box under the Options column. The Supervisor Engine III card implements Cisco IOS Software-style Flash file systems and has support for multiple Flash cards. (The Supervisor Engine III card supports one internal Flash card with the name bootflash, and two Flash PC Cards with the names slot0 and slot1). Each Flash card can store multiple files. Supervisor Engine III software image file names follow this file name convention: cat5000-sup3.ver.

Supervisor Engine I and II cards do not have similar Flash functionality. Because these cards have only one Flash target to store a software image, SWIM does not ask for a Flash target. SWIM displays the location of the current image file and the file size, if available, in the Recommend Image Upgrade window for Supervisor Engine III modules. This information is unavailable for Supervisor Engine I and II cards.

The Supervisor Engine I or II do not run Supervisor Engine III images, nor does the Supervisor Engine III run Supervisor Engine I or II images. The Browse Library report displays whether the image can run on Supervisor Engine III. If the Image Name column displays Supervisor3, the image can run on Supervisor Engine III. If the Image Name displays Supervisor, the image can run only on Supervisor Engine I and II.

Q. Does SWIM update the configuration file on Cisco Catalyst 5500/5000 devices during the software upgrade?

A. SWIM updates the configuration file on Catalyst 5500/5000 devices only when the device has a Supervisor Engine III card. SWIM updates the **boot system** commands and the config register value if necessary. For Supervisor Engine I and II and other module upgrades, SWIM does not update the configuration file on the device. Instead, SWIM uses CISCO-STACK-MIB and TFTP to download the configuration file. Before SWIM changes the configuration file on the device, SWIM backs up the file to the Job Schedule directory.

The example below illustrates the SWIM update of the configuration file. Assume that a Supervisor Engine III card runs 3.1(1) software. Also, assume that the software image file is on slot0 with the name cat5000-sup3.3-1-1.bin.

The configuration file **boot system** commands before the upgrade are:

- **set boot system flash slot0:cat5000-sup3.3-1-1.bin**

SWIM has upgraded the software to 4.1(2). The new software image is on the same Flash card as cat5000-sup3-4-1-2.bin. SWIM then performs these configuration updates:

- **clear all boot system all**

Note: This removes all **boot system** commands on the device.

- **set boot system flash slot0:cat5000-sup3.4-1-2.bin**
- **set boot system flash slot0:cat5000-sup3.3-1-1.bin**

The update modifies the BOOT environment variable on the Supervisor Engine III card. You can display the environment values on the device if you issue the **show boot** command from the Supervisor Engine command-line interface (CLI).

The config register update occurs only if the least significant four bits of the config register are not all set to "1". For example, if the current config register value is 0x10F (with the least significant four bits all 1s), SWIM requires no change to the config register. If the current config register value is, for example, 0x111 or 0x11A, SWIM modifies the config register to 0x11F. The action generates this command:

- **set boot config-register 0x11F**

Q. Does SWIM determine if the Supervisor Engine has the minimum required RAM to run a new image?

A. SWIM uses the Minimum Required RAM field for the Supervisor Engine software image. You can set this field when you import the image into the library. If you do not input a value in this field, SWIM uses this matrix to determine the RAM requirement:

- **Image Type Software Version RAM Requirement**
 - I, II sup < 2.1(1) 4 MB
 - I, II sup > = 2.1(1) & < 3.1(1) 8 MB
 - I, II sup > = 3.1(1) & < 4.1(1) 8 MB (8 MB RAM image)
 - I, II sup > = 3.1(1) & < 4.1(1) 16 MB
 - I, II sup > = 4.1(1) 16 MB
 - III sup > = 3.1(1) 32 MB

Images that are 8 MB RAM are available in 3.1 and 3.2 software releases only for Supervisor Engine I and II cards.

SWIM tries to use CISCO-MEMORY-POOL MIB to determine the available memory on a device. The MIB is implemented from 4.1(1) Supervisor Engine software (on all different Supervisor Engine card types—I, II, and III). If a device runs the software that implements this MIB, SWIM performs a memory check between the image requirement and the size of DRAM that is on the device. If the device does not have enough RAM to run the image, SWIM generates a verification warning. If the current software on the device is earlier than 4.1, SWIM generates a generic verification warning about memory requirements.

Q. Are there restrictions on the downgrade of the software on the Supervisor Engine card and other modules?

A. You can downgrade Supervisor Engine card software to version 4.1(1) or later.

For example, if a Supervisor Engine card runs 4.2(1) software, you can downgrade the software to 4.1(2) or 4.1(1). However, you cannot downgrade the same Supervisor Engine card to 3.2(1b). If a Supervisor Engine card runs 3.2(2), you cannot downgrade the software to 3.1(1) or 2.4(1).

There are no restrictions for the downgrade of software on other modules, such as ATM, FDDI, and Token Ring. However, you should check the release notes of new software before you attempt downgrades on modules.

Q. Do you need to reconfigure the device when you downgrade the Supervisor Engine software?

A. When you downgrade Supervisor Engine software, parts of the configuration may be lost. You must check the configuration file and reconfigure as necessary. Use the backed up SWIM configuration file from the Job Schedule directory as a reference, or use the backed up configuration file from the Config Archive.

Q. Does SWIM handle the upgrade path requirements on Supervisor Engine cards?

A. During the Distribute Images function, SWIM recommends the latest Supervisor Engine software that meets the Supervisor Engine type and memory requirements. However, there may be additional upgrade path requirements. These examples illustrate:

- To upgrade Supervisor Engine software from 2.4(1) to 4.2(2), first upgrade to 2.4(5).
- To upgrade Supervisor Engine software to 4.2(2) from 3.1(1), first upgrade to 3.1(2a) or 3.2(1b).

SWIM does not handle upgrade path requirements. You should read the release notes of the target software release and follow the upgrade paths.

Q. In the 4.1(1) software release and later, Supervisor Engine III cards allow the storage of configuration files on Flash cards. Does SWIM preserve the backed up configuration files on Flash during a software upgrade?

A. SWIM erases a Flash card on Supervisor Engine III if the free space on the Flash card cannot store the target software image. SWIM does not erase files of sizes that are less than 1 MB during software upgrades. Because configuration files generally do not exceed 1 MB, SWIM does not erase these files.

Token Ring Software Upgrades

Q. Does SWIM allow you to upgrade epsboot images on Token Ring cards on Cisco Catalyst 5500/5000 devices?

A. SWIM does not allow upgrades of epsboot images on Catalyst 5500/5000 devices. An epsboot string in the file names can identify epsboot images. Epsboot upgrades are

not often necessary. You can perform the upgrades with the Supervisor Engine card command-line interface (CLI).

ATM Software Upgrades

Q. Why does the Add Image to Library (Source: CCO) task not display Token Ring LAN Emulation (LANE) or Permanent Virtual Circuit (PVC)-only ATM software images?

A. The Add Image to Library (Source: CCO) function in SWIM displays software images for only a subset of these ATM modules:

- WS-X5153
- WS-X5154
- WS-X5155
- WS-X5156
- WS-X5157
- WS-X5158

Software images for these modules have version numbers that range from 2.2 to 3.2(8).

The WS-X5153 to WS-X5158 modules can run:

- ATM LANE
- PVC Traffic Shaping
- Token Ring LANE software images

SWIM also supports the upgrade of software on these modules:

- WS-X5161
- WS-X5162
- WS-X5165
- WS-X5167
- WS-X5168

However, no mechanism exists to import the images from [Cisco.com](http://www.cisco.com) directly into the SWIM software library for these modules. The software images that run on the modules support LANE on Ethernet, Token Ring, and PVC traffic shaping. You must download the software images for these modules directly from [Cisco.com](http://www.cisco.com). Then, import the images into the library with the Add Image to Library function. The software images for these modules are available on [Cisco.com](http://www.cisco.com) if you refer to:

- [Downloads - LAN Switching Software](#)

SWIM does not support software management on WS-X5166 modules.

Q. How do you identify software image files for each of the ATM modules that SWIM does support? What are the file-name conventions on Cisco.com?

A. ATM software image file names and version numbers determine on which modules the software image can run and identify the features that receive support. This table provides details on version numbers and file-name conventions.

Module IDs	Image Feature/Version	Image File Name Format (Example)	Version to Input in SWIM
WS-X5153 to WS-X5158	Ethernet LAN Emulation (LANE) 2.2 to 3.2(7)	cat5000-atm. <i>ver_number</i> 3.2(7)cat5000-atm.3-2-7.bin	2.2-3.2 (7)
WS-X5153 to WS-X5158	Ethernet LANE 3.2(8)	c5atm-wblane. <i>Cisco IOS_Software_rel_number</i> c5atm-wblane.113-2.5.WA4.4m.bin	3.2(8)
WS-X5153 to WS-X5158	Token Ring LANE 70.x	c5k-trlane. <i>ver_number</i> c5k-trlane.70-1-1.bin	70.x
WS-X5153 to WS-X5158	Permanent Virtual Circuit (PVC) Traffic Shaping 50.x	cat5000-atm-pvcshape. <i>ver_number</i> cat5000-atm-pvcshape.50-1-1.bin	50.x
WS-X5153 to WS-X5158	PVC Traffic Shaping 51.x	c5atm-wbpvc. <i>Cisco IOS_Software_rel_number</i> c5atm-wbpvc.113-2.5.WA4.5.x.bin	51.x
WS-X5161, WS-X5162, WS-X5167, WS-X5168 (Truckee)	Ethernet LANE, Token Ring LANE, PVC Traffic Shaping 4.3, 4.4, ?	c5atm-wtall. <i>Cisco IOS_Software_rel_number</i> c5atm-wtall.113-2a.WA4.4b.bin	4(3), 4(4b), ?

When you import ATM software images into the library, use this [table](#) as a reference to input version numbers. ATM version-number conventions differ for different classes of ATM images. PVC, Token Ring LANE, and Truckee types of ATM images have unique version-number conventions. SWIM recognizes the version numbers that appear in the last column of the table. The input of an incompatible version number results in upgrade job failures.

ATM software release notes give the original version number of the image as well as a version number that is close to the SWIM version-number scheme. Check the release notes for version-number schemes.

Q. Why do the software version numbers that the show module command output displays from the Supervisor Engine command-line interface (CLI) and the version numbers that SWIM uses fail to match in some cases?

A. ATM module software for Cisco Catalyst devices uses Cisco IOS Software code as a basis. The software release for Truckee ATM modules as well as ATM software releases 3.2(7) and later use the Cisco IOS Software version-number scheme. SWIM does not recognize the Cisco IOS Software version-number scheme for Catalyst ATM software images. Use the simple version-number scheme that appears in the [table](#) in this document. (See the Version to Input in SWIM column.)

Output of the **show module** command of the Supervisor Engine CLI and the **show** command on the ATM module can display different versions. If the software that runs on the Supervisor Engine is earlier than 4.1, the Supervisor Engine software does not recognize the Cisco IOS Software version-number scheme of ATM images. Therefore, the Supervisor Engine displays a different version number than the output of the **show version** command on the ATM module.

Q. Does SWIM recommend the right ATM image for your ATM module type?

A. SWIM does not have the intelligence to recommend the right image for an ATM module. SWIM cannot distinguish among classes of ATM images. The SWIM software library recognizes PVC, WBLANE, TRLANE, and WTALLL classes of ATM images simply as ATM Image Type. Select the right type of image in the Recommend Image Upgrade window for ATM modules. By default, SWIM recommends the greatest version number of any ATM image. Because TRLANE images have version numbers greater than others, SWIM is likely to recommend TRLANE images over others.

Catalyst 2900XL Software Upgrades

Q. Should you use special images with SWIM for Cisco Catalyst 2900XL/3500XL devices?

A. The 2900XL/3500XL devices have three images:

- Regular Cisco IOS Software image.
- A TAR format HTML image that contains files for Visual Switch Manager.
- A TAR format image that contains both these images.

SWIM uses the TAR format image that contains the Cisco IOS Software and HTML image. This image posts on [Cisco.com](#), as do other images for 2900XL/3500XL. When you use RME for software upgrades, you should use images with the description "Enterprise-IOS and HTML-Use with RME 2.1 or later" or "Standard-IOS and HTML-Use with RME 2.1 or later". When you use Add Image to Library from [Cisco.com](#)/Slam Dunk, you are able to see only these images.

Q. Why do the Cisco Catalyst 2900XL/3500XL devices not support the image import from device operations?

A. The system software or the software image for 2900XL/3500XL devices is a TAR image that consists of the regular Cisco IOS Software image and HTML/gif files. When the image downloads to the switch, the image explodes into small individual files on the flash in different directories. The switch command-line interface (CLI) does not provide commands to combine all the files and make a new TAR file that SWIM can then upload. Therefore, there is no support for operations such as Add Image from Device, Baselining, and Synchronization.

Q. Why do software upgrades take longer on Cisco Catalyst 2900XL/3500XL devices?

A. SWIM uses command-line interface (CLI) to download software to 2900XL/3500XL devices. Because the software on these devices has many HTML/gif files on the Flash, the software must first delete all the files and then proceed with the new software download. Deletion of the images takes time, which is why software downloads to devices can take up to 20 minutes.

RSM, LS1010, and Catalyst 8500 Software Upgrades**Q. How do you upgrade Route Switch Module (RSM) and LightStream 1010 (LS1010) module software on Cisco Catalyst 5500/5000 and 6500/6000 series switches?**

A. The RSM (also called the VLAN router) on a Catalyst 5500/5000 or 6500/6000 switch and the LS1010 module on a Catalyst 5500/5000 switch run Cisco IOS Software. RSMs and LS1010 modules have individual IP addresses and Simple Network Management Protocol (SNMP) agents. The RME Inventory manages these modules as separate devices.

You can find the IP address of the RSM if you look at the Detailed Inventory report of the Catalyst 5500/5000 and 6500/6000 device that has the RSM on the chassis. The Module IP Address column in the Stack Modules section shows the IP addresses of all modules on the chassis. If you do not find the addition of RSM or LS1010 to Inventory, you must first add the module as a device to Inventory before you attempt SWIM functions. SWIM functions that run on Cisco IOS devices also can run on an RSM or an LS1010.

Q. Why does the Distribute Images task show all the images from Cisco.com for LightStream 1010 (LS1010) and Cisco Catalyst 8500 devices, even though you have configured Cisco.com filtering?

A. Although LS1010 and the 8500 devices run Cisco IOS Software images, differences exist in the means of image release. The images do not follow the Cisco IOS Software image releases, such as general deployment (GD), limited deployment (LD), and early deployment (ED). Therefore, SWIM cannot effectively filter LS1010-type and 8500-type images.

Software Upgrades for Cisco 700 Series**Q. What is the minimum version that Cisco 700 series ISDN routers support?**

A. For Cisco 760 Series ISDN routers, SWIM requires a minimum software version of 3.2(4) on the device. For Cisco 770 Series ISDN routers, the minimum version necessary is 4.0(1).

Q. What connection mechanism does SWIM use for Cisco 700 series upgrades?

A. SWIM uses the Telnet interface to the device to copy the 700 series image to the flash. SWIM uses TFTP protocol. The RME workstation is the TFTP client, and the device is the TFTP server.

Q. Both Cisco 760 and 770 series devices run the same image. Why do you see only some images with versions later than 4.0(1) for 770 series devices but see all images for 760 series devices?

A. When you load an image with a version earlier than 4.0(1) onto a 770 series device, the sysObjectId box changes to something other than Cisco-assigned. Also, RME identifies the device as a non-Cisco device. Therefore, SWIM does not list images with versions earlier than 4.0(1) for Cisco 770 series upgrades.

Q. Why do you not see the option to reboot the device later on the Job Control page for Cisco 700 series routers?

A. There is no option to reboot the device later because 700 series routers reboot at the time of the new image download.

Q. Why do you not see the option to modify the boot commands on the Job Control page for Cisco 700 series routers?

A. Only one image at a time can appear on the 700 series devices, which means the **boot** command does not apply to these devices.

Q. Why does SWIM report download failures for some images even though the device runs the new image after the job completes?

A. Some new Cisco 700 series images use nonstandard name convention or nonstandard versions. SWIM incorrectly parses the version number from file names of those images. After the download of the new image, the device reboots. SWIM retrieves the new image version from the device and compares that with the version that SWIM parsed. The two versions do not match. As a result, the software download appears to have failed, which generates as an error.

This problem occurs with c760-in.b-US.42-3.5.bin and c760-in.b-US.43.1.bin images for all countries.

Workaround

A. Enter the correct version number when you import the image from the file system. Or, to modify the version number, click the **Image** name in the Browse Library window.

For example, for c760-in.b-US.42-3.5.bin, enter **4.2(3.5)**. For c760-in.b-US.43.1.bin, enter **4.3(1)** as the version number.

New Features in SWIM 3.0

SWIM 3.0 is a major release that follows the release of SWIM 2.2 and supports several new devices and features.

Q. What new features does SWIM 3.0 support?

A. SWIM 3.0 supports:

- Upgrade analysis for the Cisco Catalyst 2900, 4500/4000, 5500/5000, and

- 6500/6000 series switches.
- Automatic extraction of image attributes for the Catalyst switch software images during import to the library.
- Upgrade path checks for Catalyst switches during Upgrade Analysis and Image Distribution.
- Report by Browse Bugs of only bugs against software features that run on the device.
- Scheduled Browse Bugs jobs.
- Consolidated Job Status reports on multiple image-distribution jobs.
- Work order report that includes verification warning messages.
- Authenticated proxy handling at connection to Cisco.com for image import and bug analysis.
- Incremental device support.
- Reorganized menu structure on the desktop.

Q. What new devices does SWIM 3.0 support?

A. SWIM 3.0 supports:

- Cisco uBR900 series routers.
- Cisco 1400 series routers.
- Cisco 1750 router.

New Features in SWIM 3.1

SWIM 3.1 is a minor release that follows SWIM 3.0. This release fixes major bugs found in earlier releases and supports new devices.

Q. What new features does SWIM 3.1 support?

A. SWIM 3.1 provides enhanced support for ATM modules for Cisco Catalyst devices.

Q. What new devices does SWIM 3.1 support?

A. SWIM 3.1 supports:

- Cisco Catalyst 2948G L3 switch.
- Catalyst 4908G L3 switch.
- Catalyst 4006 L2 switch.
- Catalyst 2980G switch.
- Cisco 7140 2FE router.
- Cisco 7140 8T router.
- Cisco GSR 12016 router.

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