



## Manage Device Software Images

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- [Set Up Software Image Management, on page 1](#)
- [Copy Software Images from Devices to the Image Repository \(Create a Baseline\), on page 6](#)
- [How Do I Find Out Which Images Are Used by Network Devices?, on page 7](#)
- [How Do I Know a Device Has the Latest Image?, on page 7](#)
- [How Do I Know Whether I have Permission to Download Software from Cisco.com, on page 7](#)
- [View the Images That Are Saved in the Image Repository, on page 7](#)
- [Find Out Which Devices Are Using an Image, on page 8](#)
- [View Recommended Images on Cisco.com, on page 8](#)
- [Download Images from Cisco.com, on page 9](#)
- [Add \(Import\) Software Images to the Repository, on page 9](#)
- [Import Software Images to the Virtual Image Repository, on page 12](#)
- [Change the Device Requirements for Upgrading a Software Image, on page 12](#)
- [Verify That Devices Meet Image Requirements \(Upgrade Analysis\), on page 13](#)
- [Distribute a New Software Image to Devices, on page 13](#)
- [Activate a New Software Image on Devices, on page 15](#)
- [Deploy Software Images to Wireless/DC Devices, on page 16](#)
- [Supported Image Format for Stack Devices, on page 17](#)
- [Commit Cisco IOS XR Images Across Device Reloads, on page 17](#)
- [Check the Network Audit for Software Image Operations, on page 18](#)
- [ASD Exceptions and Error Conditions, on page 19](#)
- [Upgrade Controller Software using Rolling AP Upgrade, on page 21](#)

## Set Up Software Image Management

- [Make Sure Devices Are Configured Correctly, on page 2](#)
- [Verify the FTP/TFTP/SFTP/SCP Settings on the Server, on page 2](#)
- [How to Control Images that are Saved to the Image Repository During Inventory Collection, on page 2](#)
- [Adjust Criteria for Cisco.com Image Recommendations, on page 4](#)
- [Adjust Image Transfer and Distribution Preferences, on page 5](#)
- [Change Cisco.com Credentials for Software Image Operations, on page 6](#)

## Make Sure Devices Are Configured Correctly

can transfer files to and from devices only if the SNMP read-write community strings configured on your devices match the strings that were specified when the devices were added to .




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**Note** To improve security, no longer uses some of the SSH CBC (Cipher Block Chaining) ciphers that older Cisco IOS-XE and IOS-XR versions use, as they have been deemed weak. For devices running Cisco IOS-XE, ensure that you upgrade to version 16.5.x or later. And for devices running Cisco IOS-XR, upgrade to version 6.1.2 or later. Otherwise, several Software Image Management operations will fail.

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## Verify the FTP/TFTP/SFTP/SCP Settings on the Server

If you will be using FTP, TFTP, SFTP, or SCP make sure that it is enabled and properly configured.

## How to Control Images that are Saved to the Image Repository During Inventory Collection

Because collecting software images can slow the data collection process, by default, does not collect and store device software images in the image repository when it performs inventory collection. Users with Administration privileges can change that setting using the following procedure.

- 
- Step 1** Choose Administration > Settings > System Settings, then choose Inventory.
  - Step 2** To retrieve and store device images in the image repository when performs inventory collection, check the Collect images along with inventory collection check box.
  - Step 3** Click Save.
- 

## Software Image Management Processes and Supported Devices

The following table describes the different processes involved in managing software images and whether the processes are supported in the Unified Wireless LAN Controllers and devices.




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**Note** Refer the [Supported Device List](#) for additional information on Platforms such as Protocols supported during Image Import, Image Distribution via Local File Server, Software Image Management Server and Support for TFTP FallBack, or ISSU and Activation without Distribution.

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Table 1: Software Image Management Processes and Supported Devices

Software Image Management Processes	Description	Unified WLCs	3850 Cisco IOS XE 3.2.2	5760 Cisco IOS XE 3.2.2
Image import from device	Ability to import software image from devices that are already managed by . The software image can then be distributed to other devices.	Not supported because the software image cannot be reassembled into a package.	Supported <b>Note</b> When the device is running in install mode, the running image will be “packages.conf”. does not support importing of image in this format in the install mode.	Supported <b>Note</b> When the device is running in install mode, the running image will be “packages.conf”. Prime Infrastructure does not support importing of image in this format in the install mode.
Image import from file	Ability to import software image from known location on a file server to . The software image can then be distributed to other devices.	Supported	Supported	Supported
Image import from URL	Ability to import software image from network accessible locations (URI/URL) to . The software image can then be distributed to other devices.	Supported	Supported	Supported
Import Image using Protocol	Ability to import software image from an FTP location to . The software image can then be distributed to other devices.	Supported	Supported	Supported
Image upgrade/distribution	Ability to upgrade software image on the managed devices from . This allows you to upgrade the software image for multiple devices based on demand or at a later point in time as scheduled. The feedback and status are displayed during the upgrade and devices can be restarted, if required. In large deployments, you can stagger reboots so that the service at a site is not completely down during the upgrade window.	Supported	Supported	Supported

Software Image Management Processes	Description	Unified WLCs	3850 Cisco IOS XE 3.2.2	5760 Cisco IOS XE 3.2.2
Image recommendation	Ability to recommend a compatible image for the devices that are managed from and downloaded from Cisco.com.	Not supported because the flash requirement is not available.	Supported	Supported
Image upgrade analysis	Ability to analyze the software images to determine the hardware upgrades required before you can perform the software upgrade.	Not supported because there is no minimum requirement for RAM or ROM. The newly upgraded image replaces the existing image after an upgrade.	Supported	Supported

## Adjust Criteria for Cisco.com Image Recommendations

You can use Cisco.com to get information about recommended images based on criteria you provide. The following procedure shows how you can adjust those recommendations. The following table also lists the default settings.



**Note** To use these features, the device must support image recommendations.

**Step 1** Choose Administration > Settings > System Settings, then choose .

**Step 2** Adjust the recommendation settings as follows.

Setting	Description	Default
Recommend latest maintenance version of each major release	Only considers images if it is the latest maintenance version of each major release	Disabled
Recommend same image feature	Only considers images with same feature set as running device image	Disabled
Recommend versions higher than the current version	Only considers images that are higher than the running device image	Disabled
Include CCO for recommendation	Retrieves images from Cisco.com and the image repository	Enabled

**Step 3** Click Save.

## Adjust Image Transfer and Distribution Preferences

Use this procedure to specify the default protocols should use when transferring images from the software image management server to devices. You can also configure to perform, by default, a variety of tasks associated with image transfers and distributions—for example, whether to back up the current image before an upgrade, reboot the device after the upgrade, continue to the next device if a serial upgrade fails, and so forth. Users with Administration privileges can change that setting using the following procedure.

This procedure only sets the defaults. You can override these defaults when you perform the actual distribute operation.

**Step 1** Choose Administration > Settings > System Settings, then choose Inventory.

**Step 2** Specify the default protocol should use when transferring images in the Image Transfer Protocol Order. Arrange the protocols in order of preference. If the first protocol listed fails, will use the next protocol in the list.

**Note** When distributing an image to a device, use the most secure protocols supported by the device (for example, SCP instead of TFTP). TFTP tends to time out when transferring very large files or when the server and client are geographically distant from each other. If you choose SCP for the image distribution, ensure that the device is managed in with full user privilege (Privileged EXEC mode); otherwise the distribution will fail due to copy privilege error (SCP: protocol error: Privilege denied).

**Step 3** Specify the default protocol should use when configuring images on devices in the Image Config Protocol Order area. Arrange the protocols in order of preference.

**Step 4** Specify the tasks that should perform when distributing images:

Setting	Description	Default
Continue distribution on failure	If distributing images to multiple devices and distribution to a device fails, continues the distribution to other devices	Enabled
TFTP fallback	Inserts the TFTP fallback command into the running image so that it can be reloaded if image distribution fails	Disabled
		Disabled
Insert boot command	Inserts the boot command into the running image, after image distribution	Disabled

**Step 5** Click Save.

## Add a Software Image Management Server to Manage Groups of Devices

To distribute images to a group of devices, add a software image management server and specify the protocol it should use for image distribution. You can add a maximum of three servers.

- 
- Step 1** Add the server.
- Choose Administration > Servers > Software Image Management Servers.
  - Click the Add Row icon and enter the server name, IP address, and device group the server will support.
  - Click Save.
- Step 2** Configure the server protocol settings.
- Check the check box next to the server name, then click Manage Protocols.
  - Click the Add Row icon and enter the software image management protocol details (username, password, and so forth).
  - Click Save.
- 

## Change Cisco.com Credentials for Software Image Operations

When connects to Cisco.com to perform software image management operations (for example, to check image recommendations), it uses the credentials stored in the Account Settings page. You can change those settings using the following procedure.

- 
- Step 1** Choose Administration > Settings > System Settings, then choose General > Account Settings.
- Step 2** Click the Cisco.com Credentials tab.
- Step 3** Change the settings, then click Save.
- 

## Copy Software Images from Devices to the Image Repository (Create a Baseline)

Depending on your system settings, may copy device software images to the image repository during inventory collection (see [How to Control Images that are Saved to the Image Repository During Inventory Collection, on page 2](#)). If you need to perform this operation manually, use the following procedure, which imports software images directly from devices into the image repository.

Before you begin, ensure that images are physically present on the devices (rather than remotely loaded).



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**Note** If you are importing many images, perform this operation at a time that is least likely to impact production.

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- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** Click the Add/Import icon.
- Step 3** Click Submit.
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## How Do I Find Out Which Images Are Used by Network Devices?

To view a list of the images used by network devices, choose Reports > Reports Launch Pad > Device > Detailed Software.

To list the top ten images use by network devices (and how many devices are using those images), choose Inventory > Device Management > Software Images. Click Software Image Repository under Useful Links, then then click the Image Dashboard icon in the top-right corner of the page.

## How Do I Know a Device Has the Latest Image?

If your device type supports image recommendations, you can use the following procedure to check if a device has the latest image from Cisco.com. Otherwise, use the [Cisco.com product support pages](#) to get this information.

- 
- Step 1** Choose Inventory > Device Management > Network Devices, then click the device name hyperlink to open the Device Details page.
- Step 2** Click the Software Image tab and scroll down to the Recommended Images area. lists all of the images from Cisco.com that are recommended for the device.
- 

## How Do I Know Whether I have Permission to Download Software from Cisco.com

and it allows you to download the software images directly from Cisco.com. In order to download a EULA or K9 software image from Cisco.com, you must accept/renew the [EULA agreement](#) or [K9 Agreement](#) periodically.

does not display deferred software images. For detailed information, see Cisco Prime Infrastructure 3.2 Supported Devices list.

If you encounter any error message while importing software image from Cisco.com, see [ASD Exceptions and Error Conditions, on page 19](#).

## View the Images That Are Saved in the Image Repository

Use this procedure to list all of the software images saved in the image repository. The images are organized by image type and stored in the corresponding software image group folder.

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- Step 1** Choose Inventory > Device Management > Software Images. lists the images that are saved in the image repository within the Software Image Summary panel.

- Import new images into the image repository from network devices; file systems on client machines, IPv4 or IPv6 servers (URLs), FTP servers, and Cisco.com. See [Add \(Import\) Software Images to the Repository, on page 9](#).
- Adjust the requirements that a device must meet in order to upgrade to this image. See [Change the Device Requirements for Upgrading a Software Image, on page 12](#).
- Perform an upgrade analysis. See [Verify That Devices Meet Image Requirements \(Upgrade Analysis\), on page 13](#).
- Copy new software images to devices. .
- Activate images, which makes a new image the device's running image. See [Activate a New Software Image on Devices, on page 15](#).
- Commit Cisco IOS XR images, which persists the image across device reloads and creates a rollback point. See [Commit Cisco IOS XR Images Across Device Reloads, on page 17](#).

**Step 2** Go to Software Image repository and click a software image hyperlink to open the Image Information page that lists the file and image name, family, version, file size, and so forth.

From here you can:

- See which devices are using this image by checking the Device Details area at the bottom of the page.
- Adjust the requirements that a device must meet in order to upgrade to this image. (See [Change the Device Requirements for Upgrading a Software Image, on page 12](#).)

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## Find Out Which Devices Are Using an Image

**Step 1** Choose Inventory > Device Management > Software Images.

**Step 2** In the Software Image Summary panel, locate the image that you are interested in by expanding the image categories in the navigation area or entering partial text in one of the Quick Filter fields. For example, entering 3.1 in the Version field would list Versions 3.12.02S, 3.13.01S, and so forth.

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## View Recommended Images on Cisco.com

If your devices support Cisco.com image recommendations, you can use this procedure to check which images your devices should be using.

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**Step 1** Choose Inventory > Device Management > Software Images.

**Step 2** Click Software Image Repository under Useful Links.

**Step 3** Choose one of the following image sources:

- Select Image from Local Repository to select an image stored locally. Then, under Local Repository:



- Step 4** Select the image to distribute, then click Apply.
- Step 5** Choose the image name in the Distribute Image Name field to change your selection and pick a new image, then click Save.
- 

## Download Images from Cisco.com

Depending on your device type, (see [Adjust Criteria for Cisco.com Image Recommendations, on page 4](#)), will use the Cisco.com credentials that are set by the administrator. If default credentials are not set, you must enter valid credentials. (See [Change Cisco.com Credentials for Software Image Operations, on page 6](#)).

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- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** Click the Add/Import icon.
- Step 3** In the Import Images dialog:
- Click Cisco.com.
  - If the credentials are not auto-populated, enter a valid Cisco.com user name and password.
  - Accept End User License Agreement and Strong Encryption Eligibility Agreement.
  - Click Login.
- Step 4** Click Device Selection tab.
- Step 5** You can click the Select devices by toggle button to choose devices from Group or Device option. You can select maximum 20 devices.
- Step 6** If you choose Group option, select the Device groups and select the devices listed under Choose Devices pane. The selected devices are listed under the Selected Devices pane.
- Step 7** Click Image Selection tab.
- Step 8** Select images and click the Schedule tab.
- Step 9** Click Submit.
- Step 10** Verify that the images are listed on the Software Images page. (Click the Software Image Repository Link in the Useful Links section.)
- 

## Add (Import) Software Images to the Repository

displays the recommended latest software images for the device type you specify, and it allows you to download the software images directly from cisco.com. does not display deferred software images. For detailed information, see list.



**Note** In order to download a K9 software image from cisco.com, you must accept/renew the <https://software.cisco.com/download/eula.html> K9 agreement periodically.

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The following topics explain the different ways you can add software images to the image repository. For an example of how to troubleshoot a failed import, see [Manage Jobs Using the Jobs Dashboard](#).

- [Add a Software Image That Is Running on a Managed Device](#), on page 10
- [Add a Software Image from an IPv4 or IPv6 Server \(URL\)](#), on page 10
- [Add a Software Image for an FTP Protocol Server \(Protocol\)](#), on page 11
- [Add a Software Image from a Client Machine File System](#), on page 11

## Add a Software Image That Is Running on a Managed Device

This method retrieves a software image from a managed device and saves it in the image repository.



**Note** When distributing an image to a device, use the most secure protocols supported by the device (for example, SCP instead of TFTP). TFTP tends to time out when transferring very large files or when the server and client are geographically distant from each other. If you choose SCP for the image distribution, ensure that the device is managed in with full user privilege (Privileged EXEC mode); otherwise the distribution will fail due to copy privilege error (SCP: protocol error: Privilege denied).

Note that TFTP is supported only when copying images from the device to the server and not the other way around.

Limitations:

- For Cisco IOS-XR devices, direct import of images from the device is not supported by ; SMU and PIE imports are also not supported on these devices.
- For Cisco IOS-XE devices, if the device is loaded with the 'packages.conf' file, then images cannot be imported directly from that device.

- 
- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** Click the Add/Import icon.
- Step 3** To view the status of the job, click the job link in the pop-up message or choose Administration > Job Dashboard.
- Step 4** Verify that the image is listed on the Software Images page (Inventory > Device Management > Software Images).
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## Add a Software Image from an IPv4 or IPv6 Server (URL)

You can import software image from network-accessible IPv4 or IPv6 servers.  
supports to import Non-Cisco standard image.

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- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** Click the Add/Import icon.
- Step 3** In the Import Images dialog:
- a) Click URL.

- b) In the URL To Collect Image field, enter a URL in the following format (you can also use an HTTP URL where user credentials are not required):  
http://username:password@server-ip/filename
- c) In the Schedule area, schedule the job to run immediately, at a later time, or on a regular basis.
- d) Click Submit.

- Step 4** To view the status of the job, click the job link in the pop-up message or choose Administration > Job Dashboard.
  - Step 5** Verify that the image is listed on the Software Images page (Inventory > Device Management > Software Images).
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## Add a Software Image for an FTP Protocol Server (Protocol)

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- Step 1** Choose Inventory > Device Management > Software Images.
  - Step 2** Click the Add/Import icon.
  - Step 3** In the Import Images dialog:
    - a) Click Protocol.
    - b) Enter FTP in the Protocol field, then enter the FTP user name, password, server name or IP address, and file name. The following is a file name example:  
/ftpfolder/asr901-universalk9-mz.154-3.S4.bin
    - c) In the Schedule area, schedule the job to run immediately, at a later time, or on a regular basis.
    - d) Click Submit.
  - Step 4** To view the status of the job, click the job link in the pop-up message or choose Administration > Job Dashboard.
  - Step 5** Verify that the image is listed on the Software Images page (Inventory > Device Management > Software Images).
- 

## Add a Software Image from a Client Machine File System

### Before you begin

When you import the software image file, the browser session is blocked temporarily. If the upload operation exceeds the idle timeout limit of the browser session, then you will be logged out of and the file import operation will be aborted. So it is recommended that you increase the idle timeout limit before you begin with this import operation. To increase the idle timeout, see [Cisco Prime Infrastructure Administrator Guide](#).

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- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** Click the Add/Import icon.
- Step 3** In the Import Images dialog:
  - a) Click File.
  - b) Click the Browse button and navigate to the software image file.
  - c) In the Schedule area, schedule the job to run immediately, at a later time, or on a regular basis.
  - d) Click Submit.

**Note** You must use the URL or Protocol options to import files of larger size (say, greater than 200 MB), as importing through the File option is not recommended.

- Step 4** To view the status of the job, click the job link in the pop-up message or choose Administration > Job Dashboard.
- Step 5** Verify that the image is listed on the Software Images page (Inventory > Device Management > Software Images).
- 

## Import Software Images to the Virtual Image Repository

You can use the Virtual Image Repository (VIR) to automatically retrieve and store device images from specified URLs or files. You can schedule these downloads to occur regularly.

Currently, the VIR supports FTP or HTTP downloads only.

To import software images to the VIR:

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- Step 1** Choose Inventory > Device Management > Virtual Image Repository. The page lists the number of images currently retained in the repository.
- Step 2** Click Import.
- Step 3** Specify the Source from which to import the software image. You can specify one of the following sources:
- URL—Specify the FTP or HTTP URL from which to import the software image. You can use an HTTP URL where user credentials are not required.
  - File—A local file on the client machine.
- Step 4** Click Collection Options and then enter the required information.
- Step 5** Click Schedule and specify the schedule on which to import image file. You can run the collection job immediately or schedule it to run at a later time. You can also schedule the job to recur automatically.
- Step 6** Click Submit.
- Step 7** Choose Administration > Dashboards > Job Dashboard > User Jobs > Software Image Import to view the status about the image collection job. The Duration field is updated after the job completes.
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### Related Topics

[Add \(Import\) Software Images to the Repository](#), on page 9

[Distribute a New Software Image to Devices](#), on page 13

## Change the Device Requirements for Upgrading a Software Image

Use this procedure to change the RAM, flash, and boot ROM requirements that a device must meet for a software image to be distributed to the device. These values are checked when you perform an upgrade analysis (see [Verify That Devices Meet Image Requirements \(Upgrade Analysis\)](#), on page 13).

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- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** In the Software Image Summary panel, locate and select the software image by clicking its associated hyperlink.
- Step 3** Click the software image name hyperlink to open its image information.
- Step 4** Adjust the device requirements:
- Minimum RAM (from 1 – 999999999999999)
  - Minimum FLASH (from 1 – 999999999999999)
  - Minimum Boot ROM Version
- Step 5** Click Save.
- Step 6** Click Restore Defaults, if you want to retain the previous requirements.
- 

## Verify That Devices Meet Image Requirements (Upgrade Analysis)

An upgrade analysis verifies that the device, the image is compatible with the device family, and the software version is compatible with the image version running on the device. After the analysis, displays a report that provides the results by device. The report data is gathered from:

- The software image repository, which contains information about minimum RAM, minimum Flash, and so on, in the image header.
- The inventory, which contains information about the active images on the device, as well as Flash memory, modules, and processor details.



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**Note** Upgrade analysis is supported on all Cisco IOS-XR devices (such as Cisco NCS 1000, Cisco NCS 4000, Cisco NCS 5000, Cisco NCS 5500, and Cisco NCS 6000), except on Cisco ASR 9000 devices.

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If you want to adjust the device requirements for an image, see [Change the Device Requirements for Upgrading a Software Image, on page 12](#).

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- Step 1** Choose Inventory > Device Management > Software Images.
- Step 2** Click under Useful Links. (Do not select an image from the Software Images page.)
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## Distribute a New Software Image to Devices

You can distribute a software image to a device or set of similar devices in a single deployment. Prime Infrastructure verifies that the device and software image are compatible.

Based on a device's capabilities, Prime Infrastructure can use different transport protocols (SCP, TFTP, FTP, SFTP) to distribute images to devices. For better reliability and security, we recommend you to use secure protocols only (SFTP, SCP) for distributing software images. If you choose SCP protocol for the image distribution, ensure that the device is managed in Prime Infrastructure with full user privilege (Privileged EXEC mode), otherwise the distribution will fail due to copy privilege error (SCP: protocol error: Privilege denied).

We do not recommend using TFTP or FTP. If you choose TFTP protocol for the image distribution and if the device and the server are in different subnet, the image should be copied within the specified session time limit (one hour) which is maintained by the application otherwise the distribution will fail due to timeout error.

For Software Image Distribution to work efficiently, the device and server from which the distribution is performed must be in the same geographical location or site. If you want to distribute software images into different geographical location of Prime Infrastructure and device, create location group and map this location into Software Image Management server. This external server will transfer images from Prime Infrastructure to Software Image Management server and then start distributing to mapped device location. The Software Distribution job would return error if the distribution takes more time due to network slowness or low speed.



**Note** To ensure that there are no SNMP views blocking access to the CISCO-FLASH-MIB, remove the following command from the configuration for all routers and switches (if present) on which you want to download a software image:

```
snmp-server view ViewName ciscoFlashMIB excluded
```

- 
- Step 1** Choose Inventory > Device Management > Software Images
- Step 2** Click Distribute in the Software Image Management Lifecycle widget.
- Step 3** In the Image Selection window, choose the software images that you want to distribute.
- Step 4** Click the Device Selection tab, to choose the devices that you want to distribute the image.
- You can click the Select devices by toggle button to choose devices from Group or Device option.
  - If you choose Group option, select the Device group and select the devices listed under Choose Devices pane. The selected devices are listed under the Selected Devices pane.
- By default, the devices for which the selected image is applicable are shown.
- Step 5** Click the Image Details Verification tab and click the image row to do the following:
- Choose the image name in the Distribute Image Name field to change your selection and pick a new image, then click Save.
  - Choose the value displayed in the Distribute Location field, select a new location in which to store the software image, then click Save.
  - Choose the value displayed in the Software Image Management Server field, then click Save. You can choose either a Local file server or one of the servers created under Administration > Servers > Software Image Management Servers.
- The Status and Status Message fields display the validity of the selections you made. For example, if the status is green, there is adequate space available to store the image on the specified location on the device.
- Step 6** Click the Image Deployment tab and set the image deployment options as required:

- Backup Current Image—Before distributing new images, import the running images from the device to software images repository page.
- Insert boot command—To set the boot variable in the device boot path list.
- Activate—To enable the Activate option, you must check the Insert Boot Command check box.
  - Activate OFF—New image will be distributed and boot variable is set in device boot path list. Device will not be rebooted in this mode and will continue to run with the running image.
  - Activate Sequential—Once the image distribution is completed for all the selected devices, the devices will reboot sequentially.
  - Activate Parallel— Once the image distribution is completed for all the selected devices, the devices will reboot simultaneously.
- Smart Flash Delete Before Distribution—Clears the flash memory before image distribution if there is no sufficient space in the device.
- Continue on Failure—If the image distribution fails for one image, the next device in queue will be picked up for activation.
- TFTP Fallback—It prompts the device to reload the current running image from the TFTP server location during image distribution failure.

**Step 7**

Prime infrastructure allows you to use a maximum of one Local file server and three Software Image Management Servers for software image distribution. Each server can distribute the image to five devices at one instance. When the image distribution is completed for one device, the next subsequent device will be taken up for the image distribution. Click the Schedule Distribution tab and specify the schedule options, then click Submit.

The details about the image distribution job is displayed in the Software Image Management dashboard. You can also view the image distribution job details from Administration > Dashboards > Job Dashboard > User Jobs > Software Image Distribution. The Duration field is updated after the job completes.

**Note** Submit button will be enabled only after you select Now or Date for each Activation jobs

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## Activate a New Software Image on Devices

When a new image is activated on a device, it becomes the running image on the disk. Deactivated images are not removed when a new image is activated; you must manually delete the image from the device.

If you want to distribute and activate an image in the same job, see .

To activate an image without distributing a new image to a device — for example, when the device has the image you want to activate—use the following procedure. The activation uses the distribution operation but does not distribute a new image.

**Step 1**

Choose Inventory > Device Management > Software Images.

**Step 2**

Click the Activate icon in the Software Image Management Lifecycle widget.

**Step 3**

In the Activation Source tab, choose Activate from Library or Activate from Completed Distribution Jobs.

**Step 4** In the Activate Job Options window, choose the required settings and go to Step 10:

- Activate Options: Off, Sequential or Parallel
- Continue on failure: Continue the activation even if it fails on a device.
- Commit: Commit the image on the device post distribution.

**Step 5** If you choose Activate from Library in the Activation Source tab, then click the Image Selection tab.

**Step 6** In the Image Selection tab, choose the software images that you want to distribute.

**Step 7** Click the Activate Job Options tab, and choose the required Activate Job options.

If you choose the ISSU option from the Activate drop-down list, the software image in the device will get upgraded without need for rebooting the device.

**Step 8** Click Submit to activate the software image in the selected devices.

## Deploy Software Images to Wireless/DC Devices

You can view the Device Upgrade Mode option only during image upgrade for Cisco 5760 Series Wireless Controller and Cisco Catalyst 3850 Ethernet Stackable Switch. The following table describes the possible device upgrade options and the corresponding image format for Cisco 5760 Series Wireless Controller and Cisco Catalyst 3850 Ethernet Stackable Switch.

**Table 2: Upgrade/ Downgrade Mode Options**

Device Upgrade Mode	Device Image Format Before Distribution	Device Image Format After Distribution
Change Install mode to Bundle mode	packages.conf	.bin
Change Install mode to Currently Existing mode	packages.conf	packages.conf
Change Bundle mode to Currently Existing mode	.bin	.bin
Change Bundle mode to Install mode	.bin	packages.conf

If the image distribution status is “Success”, you can check the new image version using any of the following options:

- ChooseInventory > Network Devices.
  - View the Software Version column in the Network Devices page.
  - Click the device name and click the Image tab.
- Use the show versioncommand in the device CLI.

### Related Topics

[Activate a New Software Image on Devices](#), on page 15



## Supported Image Format for Stack Devices

Prime Infrastructure supports only .tar images for upgrade and downgrade for stacked devices. Stack device do not support .bin format. The list of supported stack devices are:

- Stack of CBS3100 switch modules
- Cisco Catalyst Switch Module 3110X for IBM Blade Center
- Cisco Catalyst Blade Switch 3120X for HP
- Cisco Catalyst Blade Switch 3130X for Dell M1000E
- Cisco Catalyst 2975 Switch
- Cisco 3750 Stackable Switches
- Cisco Catalyst 29xx Stack-able Ethernet Switch
- Cisco ME 3600X-24FS-M Switch
- Cisco ME 3600X-24TS-M Switch
- Cisco ME 3800X-24FS-M Switch Router



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**Note** Cisco Catalyst 3650 and 3850 switches do not have .tar images on Cisco.com. For these switches, Prime Infrastructure supports .bin format.

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## Commit Cisco IOS XR Images Across Device Reloads



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**Note** For Cisco IOS XR devices, we recommend that you do not commit the package change until the device runs with its configuration for a period of time, until you are sure the change is appropriate.

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When you commit a Cisco IOS XR package to a device, it persists the package configuration across device reloads. The commit operation also creates a rollback point on the device which can be used for roll back operations.

If you want to distribute, activate, and commit an image in the same job, use the procedure described in .

To commit an activated image, use the following procedure.



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**Note** If you are only working on a single device, perform the commit operation from the Device Details page (click the Image tab, choose the image, and click Commit).

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- Step 1** Choose Inventory > Device Management > Software Images.
  - Step 2** Click the Commit icon in the Software Image Management Lifecycle widget.
  - Step 3** Select the devices with the image you want to commit and click Submit. (Images can only be committed if they have been activated.)
  - Step 4** Select the software image you want to activate, then click Submit.

- Step 5** In the Schedule Distribution area, schedule the commit job to run immediately, at a later time, or on a regular basis.
- Step 6** Click Submit.
- Step 7** Choose Administration > Job Dashboard to view details about the image activation job.

## Check the Network Audit for Software Image Operations

To get historical information about device software image changes, check the Network Audit.

- Step 1** Choose Inventory > Device Management > Network Audit. To filter the results to show only image management operations, enter software image in the Audit Component field.

🏠 / ... / Device Management / Network Audit ★

Show <input type="button" value="Quick Filter"/>				
Device Name	IP Address	Audit Time	Audit Component	Audit Description
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
▶ prime-asr903	209.165.200.224	2015-Jan-23 17:12:21 PST	IFM Software Image Management	Image Distribution
▶ prime-asr90	209.165.201.1	2015-Jan-23 17:11:29 PST	IFM Software Image Management	Image Distribution
▶ prime-asr	209.165.202.128	2015-Jan-23 17:11:29 PST	IFM Software Image Management	Image Distribution

- Step 2** Expand an event drawer to get details about a device change. For example, if you expand the drawer highlighted in the above figure, you can see that the image listed in the job was successfully distributed to the device.

Device/Module ID	544544
Distribution Option : ActivatePatches	Yes
Distribution Option : BackUpCurrentImageFetch	No
Distribution Option : CfgXferProtocolOrder	TELNET, SSH
Distribution Option : Commit	No
Distribution Option : DeviceUpgradeMode	currentlyExists
Distribution Option : HaltUponError	No
Distribution Option : ISSUUpgrade	No
Distribution Option : ImgXferProtocolOrder	SCP, SFTP, FTP, TFTP
Distribution Option : InsertBootCommand	No
Distribution Option : JobDirectory	/opt/CSColumos/conf/ifm/swim/jobs
Distribution Option : RebootImmediately	No
Distribution Option : RebootMode	Sequential
Distribution Option : SCPDirectory	/localdisk/sftp
Distribution Option : SkipDistribution	No
Distribution Option : TftpDirectory	/localdisk/sftp
Distribution Option : TftpFallback	No
Distribution Option : UpgradeMode	Sequential
Distribution Option : UseSSH	Yes
Operation	Starting distribution of image to device
Running Image File Name	asr903rsp1-universalk9_npe.03.13.00.S.154-3.S-ext.bin
Running Image File Name	asr903rsp1-universalk9_npe.03.13.00.S.154-3.S-ext.bin

## ASD Exceptions and Error Conditions

Cisco Prime Infrastructure uses the Cisco Automated Software Distribution (ASD) service to provide software information and download URLs to assist you in upgrading your device/application to the latest version.

The table describes the ASD exceptions and error conditions returned by ASD API in Prime Infrastructure while importing the software image from cisco.com.

**Table 3: ASD Exceptions and Error Conditions**

Error Code	Error Description
PID_INVALID	PID provided in the request is invalid. Please invoke the service with the valid PID.
IMG_NM_INVALID	Image_name provided is invalid. Please provide the valid image_name.
SWTID_INVALID	Software_type_id provided is invalid. Please provide a valid software_type_id.
INVALID_INPUT	Invalid input or No data found for the input provided.
INVALID_MTRANSID	Invalid metadata_trans_id.
INVALID_DWLDSID	Invalid download_session_id.
INVALID_DRETRYID	Invalid download_retry_id.
IMAGE_GUID_INVALID	The image_guid provided in the request is invalid. Please provide a valid image_guid.
PID_MISSING	PID is missing in the request. Please provide a valid PID in the request.

Error Code	Error Description
CUR_REL_MISSING	Current_release is missing in the request. Please provide a valid current_release in the request.
OUT_REL_MISSING	Output_release is missing in the request. Please provide a valid output_release in the request.
IMG_NM_MISSING	Image_names is missing in the request. Please provide at least one valid image_names.
MISSING_DW_RETRY_ID	Download_retry_id is missing in the request. Please provide a valid download_retry_id in the request.
MTRANSID_MISSING	Metadata_trans_id is missing in the request. Please provide a valid metadata_trans_id in the request.
IMAGE_LIMIT_EXCEEDED	The number of image names entered in the request has exceeded the limit.
DRETRYID_EXPIRED	You were previously granted a download_retry_id that has expired
DWLDSID_EXPIRED	You were previously granted a download_session_id that has expired. \nPlease initiate the download service without the download_session_id.
MTRANSID_EXPIRED	Metadata_trans_id had been previously granted that has expired due to time limit on its validity. Please invoke the metadata service and initiate the download.
NO_DATA_FOUND	No Data Found.
IMAGE_GUID_MISSING	Image_guid is missing in the request. Please provide a valid image_guid in the request.
TIMEOUT	10000
CART_EMPTY	There are no items in the cart.
DWLD_WARN	You are receiving this warning message because our records indicates that you may not be authorized to download for the following product(s)
DWLD_WARN1	If you feel this message is in error, please: Email technical support <mailto:ent-dl@cisco.com> for 24x7 assistance. To expedite your request, please include the following information: User ID (Cisco.com ID used to download software) \Contact Name \Company Name \Contract Number \Product ID \Desired Software Release or File Name Please include the above message in your email. \Contact your Cisco representative, Partner or Reseller to ensure product(s) listed above are covered on a service contract that is associated to your Cisco.com profile. The <a href="#">Partner Locator</a> link may assist in locating your nearest partner. You can add the service contracts for these products to your profile using the <a href="#">Cisco Profile Manager</a> , or have your service administrator do this for you.
DWLD_WARN2	Please follow one of the options below to ensure that you are fully covered for service in the future and that your Cisco.com profile is accurate and up-to-date: Contact your Cisco representative, partner or reseller to ensure the products listed above are covered on a service contract that is associated with your Cisco.com profile. The <a href="#">Partner Locator</a> link may assist in locating the nearest partner. You can add the service contracts for these products to your profile using the <a href="#">Cisco Profile Manager</a> , or have your service access administrator do this for you. Your prompt attention to take action per this notice is appreciated in order to avoid unnecessary interruptions or delays in the process of downloading software.
K9_FORM_AR	K9 form have not been accepted or rejected to continue download.
EULA_FORM_AR	Eula form have not been accepted or rejected to continue download.

Error Code	Error Description
K9_FORM_ACC	K9 form have not been accepted to continue download.
EULA_FORM_ACC	EULA form have not been accepted to continue download.
K9_EULA_FORM_AR	Both Eula and k9 form have not been accepted or rejected to continue download.
SER_UNEXPECT_FAIL	Service has encountered an unexpected failure. Please contact the support with the data requested.

## Upgrade Controller Software using Rolling AP Upgrade

You can upgrade APs and Controller software versions from Prime Infrastructure using Rolling AP Upgrade feature. You can add APs to an upgrade group and prevent all Access Points from rebooting simultaneously. AP Upgrade groups will reboot sequentially in the order of your preference.

To enable Rolling AP Upgrade, follow the below procedure:

### Before you begin

1. N+1 controller should be upgraded to new version.
2. Primary controller should be configured to boot from primary image.
3. Prime Infrastructure should be added as a trap receiver and AP register trap control should be enabled on both controllers.
4. N+1 controller should have the following configurations same as the primary controller:
  - WLANs
  - AP Groups
  - Mobility Groups
  - RF Groups
  - RF Profiles

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**Step 1** Click Configure and then click Network Devices under Network.

**Step 2** Select the APs that you want to add to a group by clicking the corresponding checkboxes.

**Step 3** Click Groups and Sites and then click Add to Group.

**Step 4** Select the group that you want to add you APs to and then click Add.

The recommendation is to not have more than 10 groups per controller and 1000 APs per group. Now that you have added APs to a group, you need to initialize the upgrade process.

**Step 5** Click Configuration and then click Rolling AP Upgrade under Wireless Technologies.

**Step 6** Select the Primary and the N+1 controllers.

**Note** The controllers can either be standalone or redundancy paired controllers.

- Step 7** If you want to move your APs back to the primary controller, check the corresponding checkbox. Otherwise, the APs, after reboot will get associated with the N+1 controller.
- Step 8** To set the order in which the AP groups reboot, select an AP group and move it Up or Down the list.
- Step 9** Select the transfer Protocol and enter the necessary details.
- Step 10** To view the status of the job, click Administration and then click Job Dashboard under Dashboards.
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