



# Software Upgrade Process Using install Commands

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Cisco ASR 1000 Series Aggregation Services Routers support In-Service Software Upgrades (ISSU) procedure to upgrade software. The ISSU-using-install-cmds-for-ASR1k feature introduces a new method of software upgrade process by using the **install** command for Dual RP and Dual IOS routers on Cisco ASR 1000 Series Aggregation Services Routers.

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## Prerequisites for Software Upgrade Process Using install Commands

- Configure Stateful Switchover (SSO) and ensure that the standby supervisor is in the hot state.
- Enable autoboot when using the **install** command so that the device is automatically reloaded with the configuration registry using the **boot system** command.

## Restrictions for Software Upgrade Process Using install Commands

- Simultaneous upgrade of hardware and software is not supported. One upgrade operation can only be performed at a time.
- Minimum Disruptive Restart (MDR) and linecard-delay functionality are not supported on for consolidated platforms.

# Information About Software Upgrade Process Using install Commands

## Introduction to install Commands

Effective with Cisco IOS XE Fuji 16.7.1, a new method of software upgrade process is available for Cisco ASR 1000 Aggregation Services Routers. You can use the **install** command for Dual RP and Dual IOS routers on Cisco ASR 1000 Series Routers by enabling the `ISSU-using-install-cmds-for-ASR1k` feature. This feature upgrades the software without files names for Dual RP and Dual IOS routers thereby enhancing the system to intelligently handle packages for Dual RP and Dual IOS routers in the Cisco ASR 1000 Series family. This feature also enables each model in the Cisco ASR 1000 Series to handle packages depending on the slot type and uses APIs to provision and identify ELC, SIP, and ESP on the devices.

When performing software process upgrade for consolidated platforms (Cisco ASR 1001-X Router, Cisco ASR 1001-HX Router, Cisco ASR 1002-X Router, and Cisco ASR 1002-HX Router), you can defer the RP upgrade as the last step to a maintenance window to minimize disruption during normal operating hours.

## Software Upgrade Process Modes, Options, and Workflows using install Commands

The `ISSU-using-install-cmds-for-ASR1k` feature includes the following software upgrade modes:

- Super Package install—Applicable to Dual RP
- Sub-package install—Applicable to Dual RP
- Sub-package install—Applicable to 4RU or consolidated platforms on Dual IOSD

Depending on the choice of commands, there are different options to upgrade the software for each of the above mode on Cisco ASR 1000 Series. The ways to upgrade the software are as follows:

- Super Package Upgrade—Step-by-step
- Super Package Upgrade—One step
- Sub Package Upgrade—Step-by-step
- Sub Package Upgrade—One step
- Dual IOSD

The following table provides information about the number of workflows for Dual RP and Dual IOS devices on Cisco ASR 1000 Series Routers.

**Table 1: Cisco ASR 1000 Device Types and Workflows**

Cisco ASR 1000 Device Type	Image Mode	Workflows
Dual RP	Consolidated	<ul style="list-style-type: none"> <li>• One step</li> <li>• 3 steps</li> <li>• 5 steps</li> </ul>

Cisco ASR 1000 Device Type	Image Mode	Workflows
Dual RP	Subpackage	<ul style="list-style-type: none"> <li>• One step</li> <li>• 3 steps</li> <li>• 8 steps</li> </ul>
Dual IOS	Subpackage	<ul style="list-style-type: none"> <li>• 7 steps for Cisco ASR 1004 Router</li> <li>• 5 steps for consolidated platforms</li> </ul>

## Guidelines for Software Upgrade Process When Using install Commands

- Perform software upgrade process during a maintenance window.
- Do not enable new features during software upgrade process because new features might require change in configurations.

## Super Package Upgrade Process

Super package upgrade can be performed either in a single step or multiple steps. The sequence is as follows:

1. Copy image to standby RP.
2. Load a new software version on standby RP.
3. Wait for the standby RP to be active with the new software.
4. Run version on the active RP. This switches over the active RP, thereby running the new software on the new active RP while the new standby RP has the old software.
5. Perform upgrades during a maintenance window.
6. Restart the new standby to be up with new software.

The following table provides information about the commands used for super package upgrade process before and after Cisco IOS XE Fuji 16.7.1.

**Table 2: ISSU Process for Super Package Upgrade Before and After Cisco IOS XE Fuji 16.7.1**

ISSU Command Before Cisco IOS XE Fuji 16.7.1	ISSU Command After Cisco IOS XE Fuji 16.7.1
<code>copy tftp: URL-to-target-location</code>	<code>install add file tftp/ftp/flash/disk:*.bin</code>
<code>issu loadversion rp 1 file stby-harddisk: target image</code>	<code>install activate location standby</code>
<code>issu runversion</code>	<code>redundancy force-switchover</code>
<code>issu acceptversion</code>	<code>install abort-timer stop</code>
<code>issu commitversion</code>	Not required

ISSU Command Before Cisco IOS XE Fuji 16.7.1	ISSU Command After Cisco IOS XE Fuji 16.7.1
hw-module slot R0 reload	Not required
Not applicable	install activate location standby
Not applicable	install commit

Table 3. ISSU Process for Super Package Upgrade—One step Before and After Cisco IOS XE Fuji 16.7.1

ISSU Command Before Cisco IOS XE Fuji 16.7.1	ISSU Command After Cisco IOS XE Fuji 16.7.1
request platform software package install node file bootflash [interface-module-delay [mdr]]	install add file tftp/ftp/flash/disk:*.bin activate issu [linecard-delay seconds] commit

## Super Package Upgrade Use Cases

Work Flow #	Use Case
3-Step	This workflow involves three steps—add, activate, and commit. After activation, all cards are upgraded to new software version except that the software is not committed automatically but must be performed manually via the <b>install commit</b> command. The advantage of this approach is the system can be rolled back to a previous software version. The system automatically rolls back if the roll back timer is not stopped using the install abort-timer-stop command. If the roll back timer is stopped, the new software version could be run on the device for any duration and then roll back to the previous version. The upgrade time is faster because this workflow involves two reloads only.
5-Step	There are three reloads involved in this workflow. In this workflow, the upgraded software is available on the active RP for sometime allowing you to validate the software before committing the upgrade. In addition to this the rollback to previous version is much faster because there is already an earlier version of the software on the standby RP.
1-Step	This workflow helps in optimization and saving a reload. You cannot roll back as the upgrade is committed automatically.

## Subpackage Upgrade Process

The subpackage upgrade can be performed in either a single step or using multiple steps. This document discusses both methodologies. The sequence for a subpackage upgrade is as follows:

1. Copy an image to the standby RP.
2. Unzip the file and copy packages on both RPs.
3. Install packages on the standby RP.
4. Restart the standby RP.
5. Install SIP—sipspa and sipbase—packages on the active RP.
6. Install ELC—elcspa and elcbase—packages on the active RP.
7. Install ESP (fp) package on the active RP (standby ESP followed by active ESP).
8. In case of one step or one shot ISSU, do the following:

- a. Install RP packages on the active RP.
  - b. Restart the active RP and switchover the standby to new active RP. After the switchover, the new standby RP will be up with the new software. The new software version is already installed on the new active RP, hence ISSU is completed.
9. In case of multiple step ISSU, do the following:
- a. Initiate the switchover. The active RP is running with new software and standby RP will come back with old software.
  - b. Provision the standby RP with new software. The new standby RP reloads with new software version and reaches SSO state.
10. Restart the new standby to be up with new software.

The following table provides information about different commands used for super package upgrade before and after Cisco IOS XE Fuji 16.7.1.

**Table 4: ISSU Process for SubPackage Upgrade Before and After Cisco IOS XE Fuji 16.7.1**

ISSU Command Before Cisco IOS XE Fuji 16.7.1	ISSU Command After Cisco IOS XE Fuji 16.7.1
<b>show version</b> <b>show version active-rp installed</b> <b>dir filesystem:</b> <i>directory</i> <b>show platform</b> <b>show redundancy-states</b>	Similar
<b>copy running-configuration startup-configuration</b>	Similar
<b>mkdir</b> <i>URL-to-directory-name</i>	Not required
<b>copy tftp:</b> <i>URL-to-target-location</i>	Not required
<b>request platform software package expand file</b> <i>URL-to-consolidated-package</i>	<b>install add</b> <i>tftp/ftp/flash/disk.*.bin</i>
<b>dir</b> <i>URL-to-consolidated-package</i>	Not required
<b>copy tftp:</b> <i>URL-to-target-location</i>	<b>install add</b> <i>tftp/ftp/flash/disk.*.bin</i>
<b>issu loadversion rp</b> <i>standby-RP file URL-to-standby-file-system:</i> <b>asr1000rp*</b> <i>version *.pkg force</i>	<b>install activate location standby</b>
<b>hw-module slot</b> <i>standby-RP reload</i>	Not required. Optionally, use the <b>install activate location standby</b> command.
<b>issu loadversion rp</b> <i>active-RP file URL-to-active-file-system:</i> <b>asr1000rpx6-{sibase,sipsa}</b> * <i>version *.pkg slot SIP-slot-number force</i>	<b>install activate locationslot</b>
<b>issu loadversion rp</b> <i>active-RP file</i> <i>URL-to-active-file-system:asr1000rpx86-{elcbase,elcspa}</i> * <i>version *.pkg</i> <i>slot ELC-slot-number force</i>	<b>install activate locationslot</b>

ISSU Command Before Cisco IOS XE Fuji 16.7.1	ISSU Command After Cisco IOS XE Fuji 16.7.1
<b>issu commitversion</b>	Not required. Optionally, use the <b>install auto abort-time stop</b> command.
<b>issu loadversion rp</b> <i>active-RP file URL-to-active-file-system : asr1000rp2-esp* version *.pkg slot active-ESP-slot</i>	<b>install activate location esp standby</b>
<b>issu commitversion</b>	Not required. Optionally, use the <b>install auto abort-time stop</b> command.
<b>issu loadversion rp</b> <i>active-RP file URL-to-active-file-system : asr1000rp2-esp* version *.pkg slot active-ESP-slot</i>	<b>install activate location esp active</b>
<b>issu commitversion</b>	Not required. Optionally, use the <b>install auto abort-time stop</b> command.
Not applicable.	<b>redundancy force-switchover</b>
<b>issu loadversion rp</b> <i>active-RP file URL-to-active-file-system:asr1000rp2* version *.pkg force</i>	<b>install activate location standby</b> (triggers action per redundancy force-switchover command)
<b>issu commitversion</b>	<b>install commit</b>
<b>show version</b> <i>active-RP</i> <b>provisioned</b> <b>show version</b> <i>active-RP</i> <b>installed</b>	Similar
<b>redundancy force-switchover</b>	Not required because it has been executed earlier.
<b>request platform software package clean</b>	Not required. Included in the <b>install commit</b> command.

## Subpackage Upgrade Use Cases

Work Flow #	Use Case
3-Step	This workflow involves three steps—add, activate, and commit. After activation, all cards are upgraded to new software version except that the software is not committed automatically but must be performed manually through the <b>install commit</b> command. The advantage of this approach is the system can be rolled back to a previous software version. The system automatically rolls back if the roll back timer is not stopped using the <b>install abort-timer-stop</b> command. If the roll back timer is stopped, the new software version could be run on the device for any duration and then roll back to the previous version. The upgrade time is faster because this workflow involves two reloads only.
8-Step	There are three reloads involved in this workflow. In this workflow, the upgraded software is available on the active RP for sometime allowing you to validate the software before committing the upgrade. In addition to this the rollback to previous version is much faster as we have already previous version of the software running as standby RP.
1-Step	This workflow helps in optimization and saving a reload. You cannot roll back as the upgrade is committed automatically.

## Crash Handling and Rollback

If a device crashes during an ISSU upgrade, the device will return to the initial state before the start of an ISSU operation. During an ISSU upgrade, a single fault scenario is handled and system is restored to the original state. The double faults may or may not restore the system back to the original state.

The system can be rolled back before a commit. A device can be rolled back to the initial stage by using the **install abort issu** command or after the expiry of the rollback timer before the **install commit** command is used. If the install commit command is used, no rollback is allowed. Rollback involves the following steps:

- Provision and reset the standby RP
- Provision and reset the active RP

If the roll back timer is not stopped by using the **install abort stop-timer** command, the device rolls back to an older software version on expiry of the rollback timer. The default value of the rollback timer is 120 minutes.

The rollback timer value can be set via the **install activate location standby auto-abort-timer seconds** command.

## Auto Upgrade on ASR 1000 Series Routers

The Install: Auto Upgrade for ASR1k feature detects mismatched software versions on the standby route processor (RP) and synchronizes the software version on the standby route processor with active route processor. The synchronization occurs by copying the software version from the active RP to the standby RP and upgrading the software version on the standby RP.

This feature is enabled by default. If disabled, you can enable this feature through **software auto-upgrade enable** or **install autoupgrade** commands in the global configuration mode and privileged EXEC mode, respectively.

Auto upgrade works in subpackage mode only. If the device is in bundle mode, neither does auto upgrade work, nor can you execute the install autoupgrade command. If a route processor with bundle boot image is added to a modular device, the route processor is converted to install mode to synchronize with the active RP.



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**Note** When a standby RP has a software version different than the active RP, the standby RP is synchronized with the software on active RP even if the software version on standby RP is newer than the software on active RP.

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By enabling the **install autoupgrade** command in privileged EXEC mode the older image is selected and deleted without any intervention. The Install: Auto Upgrade for ASR1k feature is independent of ISSU and is disabled during ISSU process because there would be a temporary state of version mismatch between the active and standby RPs when ISSU process is in progress. Similarly, when auto upgrade is performed on the standby RP, ISSU process cannot triggered. The two processes are mutually exclusive.

After ISSU process is complete, auto upgrade is reenabled as configured before the ISSU process. In other words, this feature disables itself during ISSU process and reactivates itself after ISSU process.

# How to Upgrade Software Using install Commands

## Upgrading Software Using 3-Step Super Package Workflow on Consolidated Platforms

### Before you begin

The device must be booted with the consolidated image.

### SUMMARY STEPS

1. `enable`
2. `install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:}`
3. `install activate issu [linecard-delay seconds]`
4. `install commit`

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<p><code>enable</code></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<p><code>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:}</code></p> <p><b>Example:</b></p> <pre>Router# install add tftp bootflash:</pre>	<p>Downloads the image into the bootflash. The image is copied to the boot directory (boot_dir), the location where Route Processors (RPs) are booted.</p>
<b>Step 3</b>	<p><code>install activate issu [linecard-delay seconds]</code></p> <p><b>Example:</b></p> <pre>Router# install activate issu</pre>	<p>Provisions the standby RP with the new software and reloads with the new software version.</p> <ul style="list-style-type: none"> <li>• <b>linecard-delay seconds</b>—Waits for a specified duration before upgrading the next slot</li> <li>• The rollback timer will be restarted.</li> </ul>
<b>Step 4</b>	<p><code>install commit</code></p> <p><b>Example:</b></p> <pre>Router# install commit</pre>	<p>Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer.</p> <ul style="list-style-type: none"> <li>• Any reboot after the commit will boot with new software.</li> </ul> <p><b>Note</b> There is no rollback when this command is used.</p>



# Upgrading Software Using 5-Step Super Package Workflow on Consolidated Platforms

Perform this task to upgrade the software on consolidated platforms, such as, Cisco ASR 1001-X Router, Cisco ASR 1001-HX Router, Cisco ASR 1002-X Router, and Cisco ASR 1002-HX Router.

## Before you begin

The device must be booted with the consolidated image.

## SUMMARY STEPS

1. **enable**
2. **install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:}**
3. **install activate location standby**
4. **redundancy force-switchover**
5. **install activate location standby**
6. **install commit**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Router> <b>enable</b>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:}</b> <b>Example:</b> Router# <b>install add tftp bootflash:</b>	Downloads the image into the bootflash. The image is copied to the boot directory (boot_dir), the location where Route Processors (RPs) are booted.
Step 3	<b>install activate location standby</b> <b>Example:</b> Router# <b>install activate location standby</b>	Installs the software on the standby RP and reloads the device. <ul style="list-style-type: none"> <li>• The rollback timer will be restarted.</li> </ul>
Step 4	<b>redundancy force-switchover</b> <b>Example:</b> Router# <b>redundancy force-switchover</b>	Enables the standby RP to assume the role of the active RP.
Step 5	<b>install activate location standby</b> <b>Example:</b> Router# <b>install activate location standby</b>	Installs the software on the standby RP and reloads the device. <ul style="list-style-type: none"> <li>• The rollback timer will be restarted.</li> </ul>

	Command or Action	Purpose
<b>Step 6</b>	<b>install commit</b> <b>Example:</b> <pre>Router# install commit</pre>	Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer. <ul style="list-style-type: none"> <li>Any reboot after the commit will boot with new software.</li> </ul> <b>Note</b> There is no rollback when this command is used.

## Upgrading Software Using 1-Step Super Package Workflow on Consolidated Platforms

Perform this task to upgrade the software on consolidated platforms, such as, Cisco ASR 1001-X Router, Cisco ASR 1001-HX Router, Cisco ASR 1002-X Router, and Cisco ASR 1002-HX Router.

### Before you begin

The device must be booted with the consolidated image.

### SUMMARY STEPS

- enable
- install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:} activate issu [linecard-delay *seconds*] commit

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> <pre>Router&gt; enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:} activate issu [linecard-delay <i>seconds</i>] commit</b> <b>Example:</b> <pre>Router# install add tftp bootflash: activate issu commit</pre>	Enables the standby RP with new software and triggers the standby RP to become active RP with new software version. <ul style="list-style-type: none"> <li><b>linecard-delay <i>seconds</i></b>—Waits for the specified duration before upgrading the next slot</li> <li><b>commit</b>—Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer. Any reboot after the commit will boot with new software. There is no rollback when this keyword is used.</li> </ul>

## Upgrading Software Using 3-Step Subpackage Workflow on Dual RP Devices

Perform this task to upgrade the software on Dual RP devices.

### Before you begin

The device must be booted with the consolidated image.

### SUMMARY STEPS

1. `enable`
2. `install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:}`
3. `install activate issu [linecard-delay seconds]`
4. `install commit`

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><code>enable</code></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<p><code>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:}</code></p> <p><b>Example:</b></p> <pre>Router# install add tftp bootflash:</pre>	<p>Downloads the image into the bootflash. The image is copied to the boot directory (boot_dir), the location where Route Processors (RPs) are booted.</p>
Step 3	<p><code>install activate issu [linecard-delay seconds]</code></p> <p><b>Example:</b></p> <pre>Router# install activate issu</pre>	<p>Provisions the standby RP with the new software and reloads with the new software version.</p> <ul style="list-style-type: none"> <li>• <b>linecard-delay seconds</b>—Waits for a specified duration before upgrading the next slot</li> <li>• The rollback timer will be restarted.</li> </ul>
Step 4	<p><code>install commit</code></p> <p><b>Example:</b></p> <pre>Router# install commit</pre>	<p>Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer.</p> <ul style="list-style-type: none"> <li>• Any reboot after the commit will boot with new software.</li> </ul> <p><b>Note</b> There is no rollback when this command is used.</p>

## Upgrading Software Using 8-Step Subpackage Workflow on Dual RP Devices

Perform this task to upgrade the software on Dual RP devices.

**Before you begin**

The device must be booted with the packages mode.

**SUMMARY STEPS**

1. enable
2. install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:}
3. install activate location standby
4. install activate location linecard [*linecard-delay seconds*]
5. install activate location esp standby
6. install activate location esp active
7. redundancy force-switchover
8. install activate location standby
9. install commit

**DETAILED STEPS**

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Router> <b>enable</b>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:}</b> <b>Example:</b> Router# install add tftp bootflash:	Downloads the image into the bootflash. The image is copied to the boot directory (boot_dir), the location where Route Processors (RPs) are booted.
<b>Step 3</b>	<b>install activate location standby</b> <b>Example:</b> Router# install activate location standby	Installs the software on the standby RP and reloads the device. <ul style="list-style-type: none"> <li>• The rollback timer will be restarted.</li> </ul>
<b>Step 4</b>	<b>install activate location linecard [<i>linecard-delay seconds</i>]</b> <b>Example:</b> Router# install activate location linecard 1 linecard-delay 60	Installs the software on the standby RP and makes the new software as permanent. Any reboot after the commit will boot with new software. <ul style="list-style-type: none"> <li>• <b>linecard linecard-delay seconds</b>—Waits for a specified duration before upgrading the next slot</li> <li>• The rollback timer will be restarted.</li> </ul>
<b>Step 5</b>	<b>install activate location esp standby</b> <b>Example:</b> Router# install activate location esp standby	Loads the standby embedded services processors (ESP) cards with the packages. <ul style="list-style-type: none"> <li>• The rollback timer will be restarted.</li> </ul>
<b>Step 6</b>	<b>install activate location esp active</b> <b>Example:</b>	Loads the active embedded services processors (ESP) cards with the packages.

	Command or Action	Purpose
	Router# <code>install activate location esp active</code>	<ul style="list-style-type: none"> <li>The rollback timer will be restarted.</li> </ul>
<b>Step 7</b>	<b>redundancy force-switchover</b> <b>Example:</b> Router# <code>redundancy force-switchover</code>	Enables the standby RP to assume the role of the active RP.
<b>Step 8</b>	<b>install activate location standby</b> <b>Example:</b> Router# <code>install activate location standby</code>	Installs the software on the standby RP and reloads the device. <ul style="list-style-type: none"> <li>The rollback timer will be restarted.</li> </ul>
<b>Step 9</b>	<b>install commit</b> <b>Example:</b> Router# <code>install commit</code>	Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer. <ul style="list-style-type: none"> <li>Any reboot after the commit will boot with new software.</li> </ul> <p><b>Note</b> There is no rollback when this command is used.</p>

## Upgrading Software Using 1-Step Subpackage Workflow on Dual RP Devices

Perform this task to upgrade the software on Dual RP devices.

### Before you begin

The device must be booted with the consolidated image.

### SUMMARY STEPS

- `enable`
- `install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:} activate issu [linecard-delay seconds] commit`

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Router> <code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:} activate issu [linecard-delay seconds] commit</b> <b>Example:</b> Router# <code>install add tftp bootflash: activate issu commit</code>	Enables the standby RP with new software and triggers the standby RP to become active RP with new software version. <ul style="list-style-type: none"> <li><b>linecard-delay seconds</b>—Waits for a specified duration before upgrading the next slot</li> <li><b>commit</b>—Saves the configuration, performs the necessary clean up, enables the new software as</li> </ul>

	Command or Action	Purpose
		permanent (removing the older version of the software) and stops the rollback timer. Any reboot after the commit will boot with new software. There is no rollback when this keyword is used.

## Upgrading Software on Cisco ASR 1001-X Router, Cisco ASR 1001-HX Router, Cisco ASR 1002-X Router, and Cisco ASR 1002-HX Router

Perform this task to upgrade the software on Cisco ASR 1001-X Router, Cisco ASR 1001-HX Router, Cisco ASR 1002-X Router, and Cisco ASR 1002-HX Router.



**Note** Perform this task during maintenance window to minimize the traffic loss. Cisco ASR 1001-X Router and Cisco ASR 1002-X Router has sipspa and sipbase, while Cisco ASR 1001-HX Router and Cisco 1002-HX Router has elcbase elcspa.

### Before you begin

Cisco ASR 1001-HX Router and Cisco ASR 1002-HX Router must be booted with the consolidated image.

### SUMMARY STEPS

1. enable
2. install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:}
3. install activate location standby
4. redundancy force-switchover
5. install activate location standby
6. install commit

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:}</b> <b>Example:</b> Router# install add tftp bootflash:	Downloads the image into the bootflash. The image is copied to the boot directory (boot_dir), the location where Route Processors (RPs) are booted.
<b>Step 3</b>	<b>install activate location standby</b> <b>Example:</b>	Installs the software on the standby RP and reloads the device.

	Command or Action	Purpose
	Router# install activate location standby	<ul style="list-style-type: none"> <li>The rollback timer will be restarted.</li> </ul> <p><b>Note</b> This step can be performed only when both bays are in stateful switchover (SSO) state.</p>
<b>Step 4</b>	<b>redundancy force-switchover</b> <b>Example:</b> Router# redundancy force-switchover	Enables the standby RP to assume the role of the active RP. <p><b>Note</b> During the switchover, connection to the router drops. Wait for a few seconds before reconnecting to the router and then continue.</p>
<b>Step 5</b>	<b>install activate location standby</b> <b>Example:</b> Router# install activate location standby	Installs the software on the standby RP and reloads the device. <ul style="list-style-type: none"> <li>The rollback timer will be restarted.</li> </ul> <p><b>Note</b> This step can be performed only when both bays are in stateful switchover (SSO) state.</p>
<b>Step 6</b>	<b>install commit</b> <b>Example:</b> Router# install commit	Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer. <ul style="list-style-type: none"> <li>Any reboot after the commit will boot with new software.</li> </ul> <p><b>Note</b> There is no rollback when this command is used. Perform this task during maintenance window to minimize the traffic loss because this step reloads the router.</p>

## Upgrading Software on Cisco ASR 1004 Router

Perform this task to upgrade the software on Cisco ASR 1004 Router.



**Note** Perform this task during maintenance window to minimize the traffic loss.

### Before you begin

The device must be booted with the consolidated image.

### SUMMARY STEPS

- enable
- install add file {bootflash: | flash: | ftp: | http: | https: | rcp: | scp: | tftp: | webui:}
- install activate location standby

4. **redundancy force-switchover**
5. **install activate location standby**
6. **install activate location [linecard slot]**
7. **install activate location esp active**
8. **install commit**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<p><b>enable</b></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<p><b>install add file {bootflash:   flash:   ftp:   http:   https:   rcp:   scp:   tftp:   webui:}</b></p> <p><b>Example:</b></p> <pre>Router# install add tftp bootflash:</pre>	<p>Downloads the image into the bootflash. The image is copied to the boot directory (boot_dir), the location where Route Processors (RPs) are booted.</p>
<b>Step 3</b>	<p><b>install activate location standby</b></p> <p><b>Example:</b></p> <pre>Router# install activate location standby</pre>	<p>Installs the software on the standby RP and reloads the device.</p> <ul style="list-style-type: none"> <li>• The rollback timer will be restarted.</li> </ul> <p><b>Note</b> This step can be performed only when both bays are in stateful switchover (SSO) state.</p>
<b>Step 4</b>	<p><b>redundancy force-switchover</b></p> <p><b>Example:</b></p> <pre>Router# redundancy force-switchover</pre>	<p>Enables the standby RP to assume the role of the active RP.</p> <p><b>Note</b> During the switchover, connection to the router drops. Wait for a few seconds before reconnecting to the router and then continue.</p>
<b>Step 5</b>	<p><b>install activate location standby</b></p> <p><b>Example:</b></p> <pre>Router# install activate location standby</pre>	<p>Installs the software on the standby RP and reloads the device.</p> <ul style="list-style-type: none"> <li>• The rollback timer will be restarted.</li> </ul> <p><b>Note</b> This step can be performed only when both bays are in stateful switchover (SSO) state.</p>
<b>Step 6</b>	<p><b>install activate location [linecard slot]</b></p> <p><b>Example:</b></p> <pre>Router# install activate location</pre>	<p>Upgrades SPA interface processor (SIP) and shared port adapter (SPA), Ethernet line card (ELC) and SPA subpackages for each SIP or ELC on the device.</p> <ul style="list-style-type: none"> <li>• Repeat this step for all SIP on the device, one at a time, before proceeding to the next step.</li> <li>• Perform this task during maintenance window to minimize the traffic loss.</li> <li>• The rollback timer will be restarted.</li> </ul>



	Command or Action	Purpose
		<p><b>Note</b> Use the show ip interface brief command to identify the slots for SIP and SPA. The SPA and ELC interface will go down during the upgrade.</p>
<b>Step 7</b>	<p><b>install activate location esp active</b></p> <p><b>Example:</b></p> <pre>Router# install activate location esp active</pre>	<p>Loads the active embedded services processors (ESP) cards with the packages. The following message appears:</p> <pre>Forwarding Interruption until upgrade is completed. Router is still accessible. No reboot required.</pre> <ul style="list-style-type: none"> <li>• Perform this task during maintenance window to minimize the traffic loss.</li> <li>• The rollback timer will be restarted.</li> </ul>
<b>Step 8</b>	<p><b>install commit</b></p> <p><b>Example:</b></p> <pre>Router# install commit</pre>	<p>Saves the configuration, performs the necessary clean up, enables the new software as permanent (removing the older version of the software) and stops the rollback timer.</p> <ul style="list-style-type: none"> <li>• Any reboot after the commit will boot with new software.</li> </ul> <p><b>Note</b> There is no rollback when this command is used. Perform this task during maintenance window to minimize the traffic loss because this step reloads the router.</p>

## Tracking Software Upgrade Process

The ISSU progress can be tracked via the **show issu state detail** command. This command also displays the remaining duration in rollback timer. The following is a sample output of the **show issu state detail** command.

```
Device# show issu state detail
--- Starting local lock acquisition on R1 ---
Finished local lock acquisition on R1

Operation type: One-shot ISSU
Install type : Image installation using ISSU
Current state : Activated state
Last operation: Commit

Completed operations:

Operation                               Start time
-----
Activate location standby R1             2017-09-28:11:37:29
Activate location active R0              2017-09-28:11:43:30
Switchover                               2017-09-28:11:45:09
Commit                                  2017-09-28:11:51:25

State transition: Added -> Standby activated -> Active switched-over -> Activated

Auto abort timer: inactive
Running image: flash:packages.conf
Operating mode: sso, terminal state reached
```

## Enable Auto Upgrade Using Install Command

### SUMMARY STEPS

1. enable
2. install autoupgrade

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>install autoupgrade</b> <b>Example:</b> Device# configure terminal	Initiates autoupgrades on all standby RPs.

## Enable Auto Upgrade (Global Configuration)

### SUMMARY STEPS

1. enable
2. configure terminal
3. software auto-upgrade
4. end

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>software auto-upgrade</b> <b>Example:</b> Device(config)# software auto-upgrade enable	Enables auto upgrade and specifies the location of the software to install during auto upgrade.
<b>Step 4</b>	<b>end</b> <b>Example:</b> Device(config)# end	Exits global configuration mode and returns to privileged EXEC mode.

## Additional References for Software Upgrade Process Using install Commands

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html">http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html</a>

### Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for Software Upgrade Process Using install Commands

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

Table 5: Feature Information for Software Upgrade Process Using install Commands

Feature Name	Releases	Feature Information
ISSU-using-install-cmds-for-ASR1k	Cisco IOS XE Fuji 16.7.1	<p>Cisco ASR 1000 Series Aggregation Services Routers supports In-Service Software Upgrades (ISSU) procedure to upgrade software. The ISSU-using-install-cmds-for-ASR1k feature introduces a new method of software upgrade process by using the <b>install</b> command for Dual RP and Dual IOS routers on Cisco ASR 1000 Series Aggregation Services Routers.</p> <p>The following commands were introduced or modified: <b>install activate issu, install activate location esp active, install activate location esp standby, install activate location linecard, install activate location standby, install add file, install commit, redundancy force-switchover, show issu comp-matrix, show issu rollback-timer, show issu state detail, show platform, show redundancy, show version</b> .</p>