



Software maintenance upgrade for Cisco IOS XE Catalyst SD-WAN Devices

- [Feature history of software maintenance upgrade, on page 1](#)
- [Information about software maintenance upgrade, on page 2](#)
- [Supported devices for software maintenance upgrade, on page 2](#)
- [Manage software maintenance upgrade images, on page 3](#)
- [Manage software maintenance upgrade images using the CLI, on page 4](#)
- [Verify the status of SMU images using CLI, on page 6](#)
- [Monitor the SMU status using Cisco SD-WAN Manager, on page 8](#)

Feature history of software maintenance upgrade

Feature history of software maintenance upgrade, release by release.

Table 1: Feature history

Feature Name	Release Information	Description
Support for Software Maintenance Upgrade Package	Cisco IOS XE Catalyst SD-WAN Release 17.9.1a Cisco vManage Release 20.9.1	This feature enables support for a Software Maintenance Upgrade (SMU) package that can be installed on Cisco IOS XE Catalyst SD-WAN devices. The SMU package provides a patch fix or a security resolution to a released Cisco IOS XE image. Developers can build this package that provides a fix for a reported issue without waiting for the fix to become available in the next release.
SMU Support for Cisco ISR1100 and ISR1100X Series Routers	Cisco IOS XE Catalyst SD-WAN Release 17.11.1a Cisco vManage Release 20.11.1	Added support for Cisco ISR 1100 and ISR 1100X Series Integrated Services Routers.

Information about software maintenance upgrade

A software maintenance upgrade (SMU) is a point fix to resolve a security issue in released software that attempts to minimize disruption to the router, if possible. An SMU is not designed to replace a maintenance release.

- SMUs are provided as package files for each release and component of Cisco Catalyst SD-WAN.
- Each SMU image filename includes a base image version and the defect ID related to the fix.
- The package contains metadata describing its content and the fix for a reported issue.
- Cisco can release a package that provides a fix for a reported issue without waiting for the fix to become available in the next release.

SMU types and benefits

SMU types determine how the installed package affects the device, and SMUs offer several operational benefits.

- Hot SMU (non-reload): Enables an SMU package to take effect after activation without rebooting the Cisco IOS XE Catalyst SD-WAN device .
- Cold SMU (reload): Enables an SMU package to take effect after rebooting the Cisco IOS XE Catalyst SD-WAN device.

SMUs provide operational advantages for network maintenance.

- Address network issues quickly while reducing testing time and scope. The Cisco IOS XE Catalyst SD-WAN device validates SMU image compatibility and prevents installation of non-compatible packages.
- Allow installation or activation of only one SMU package at a time to simplify implementation.
- Enable installation of SMU packages on multiple Cisco IOS XE Catalyst SD-WAN device s simultaneously using Cisco SD-WAN Manager. For CLI-based installation, repeat the process for each device.

Supported devices for software maintenance upgrade

This topic provides a reference table of Cisco router platforms and the minimum software releases that support software maintenance upgrade.

Table 2: Supported devices and minimum software releases for SMU

Release	Supported Devices
Cisco IOS XE Catalyst SD-WAN Release 17.9.5a and later releases of Cisco IOS XE Catalyst SD-WAN Release 17.9.x Cisco IOS XE Catalyst SD-WAN Release 17.12.3a and later releases of Cisco IOS XE Catalyst SD-WAN Release 17.12.x Cisco IOS XE Catalyst SD-WAN Release 17.15.1a and later	<ul style="list-style-type: none"> • Cisco ISR 1000 Series Integrated Services Routers • Cisco IR1101 Integrated Services Router Rugged • Cisco ISR 4000 series Integrated Services Routers • Cisco ASR 1000 Series Aggregation Services Routers • Cisco Catalyst 8500 Series Edge Platforms • Cisco Catalyst 8500L Series Edge Platforms • Cisco Catalyst 8000v Series Edge Platforms
Cisco IOS XE Catalyst SD-WAN Release 17.12.3a and later releases of Cisco IOS XE Catalyst SD-WAN Release 17.12.x	<ul style="list-style-type: none"> • Cisco Catalyst 8300 Series Edge Platforms • Cisco Catalyst 8200L Series Edge Platforms
Cisco IOS XE Catalyst SD-WAN Release 17.12.3a and later releases of Cisco IOS XE Catalyst SD-WAN Release 17.12.x	Cisco ISR 1100 and ISR 1100X Series Integrated Services Routers

Manage software maintenance upgrade images

Use Cisco SD-WAN Manager to add, upgrade and activate, or deactivate and remove an SMU image.



Note When you activate or deactivate an SMU image, the device may reboot, depending on the SMU image. A non-reload SMU type does not trigger a device reboot. A reload SMU type triggers a device reboot.

Procedure

- Step 1** Add an SMU image using the Cisco SD-WAN Manager software repository.
See the Cisco SD-WAN Manager *Add Software Images to Repository* procedure in the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*.
- Step 2** View SMU images using the Cisco SD-WAN Manager software repository.
See the Cisco SD-WAN Manager *View Software Images* procedure in the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*. Note the following points when viewing SMU images:

- The **Available SMU Versions** column displays the number of SMU images available for the current base image version (Cisco IOS XE image version).
- View the defects that are associated with an SMU image by clicking a desired entry in the **Available SMU Versions** column. In the **Available SMU Versions** dialog box, you can view the defect ID, the corresponding SMU version, and the SMU types, such as non-reload or reload.
- In the **Available SMU Versions** dialog box, delete an SMU version by clicking the delete icon next to an SMU version.

Step 3 Upgrade an SMU image using the Cisco SD-WAN Manager software upgrade window.

See the Cisco SD-WAN Manager *Upgrade the Software Image on a Device* procedure in the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*. Note the following points about the SMU image that you choose to upgrade:

- In the devices table, the **Available SMUs** column displays the number of SMU images that are available for the current base image version.
- View a list of all available SMU versions and the upgrade images for a device by clicking a desired entry under the **Available SMUs** column. In the **Available SMUs** dialog box, you can view the SMU versions, SMU types, and the state of an SMU version.

The SMU version is in the format *base_image_version . cdet_id*.

- In the **Upgrade** dialog box, optionally check **Activate and Reboot** to activate an SMU image and perform a reboot of the Cisco IOS XE Catalyst SD-WAN device automatically.

After you check the **Activate and Reboot** check box, Cisco SD-WAN Manager installs and activates the SMU image on a device and triggers a reload based on the SMU type. For more information about activating a software image, see the Cisco SD-WAN Manager *Activate a Software Image* procedure in the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*.

After a successful upgrade of an SMU image, the Cisco IOS XE Catalyst SD-WAN device sends a corresponding success message.

- Step 4** Deactivate an SMU image and remove the image from a device using the *Delete a Software Image* procedure in the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*.
- Step 5** Do not enable the Cisco IOS XE Catalyst SD-WAN device interface on the ISR1100 device.
- Step 6** Add the serial.viptela file to Cisco SD-WAN Manager to add the device.
- Step 7** From the Cisco SD-WAN Manager menu, choose **Configuration > Devices > Migrate Device** to migrate from viptela operating system to Cisco IOS XE operating system.
- Step 8** Enable the Cisco IOS XE Catalyst SD-WAN device interface to bring up the control connections.
- Step 9** Verify the device sync up in Cisco SD-WAN Manager.

Manage software maintenance upgrade images using the CLI

Use CLI commands to install, activate, deactivate, and remove SMU images on the device.

These sections describe the CLI procedures:

- [Install and activate an SMU image using the CLI, on page 5](#)

- [Deactivate and Remove an SMU Image Using the CLI](#)



Note When an SMU image is activated and deactivated, the device reboot may be triggered based on non-reload or reload SMU types. A non-reload SMU type does not trigger a device reboot, but a reload SMU type triggers a device reboot.

Install and activate an SMU image using the CLI

Procedure

- Step 1** Upload the SMU image from the file server to the bootflash of the device.
- Use the `copy` command to upload an SMU image. For information about the copy command, see Step 2 of the [Install the Cisco IOS XE Software](#) topic.
- Step 2** If not already configured, configure the time limit for confirming that a SMU image activation is successful.
- The time limit can be 1 through 60 minutes. We recommend that you configure the time limit to be at least 15 minutes.
- ```
Device# config-transaction
Device(config)# system
Device(config-system)# upgrade-confirm minutes
```
- Step 3** Install an SMU image from the bootflash of your device and perform a compatibility check for the device and SMU package version.
- ```
Device# request platform software sdwan smu install file-path
```
- Step 4** Activate the SMU image on a Cisco IOS XE Catalyst SD-WAN device .
- ```
Device# request platform software sdwan smu activate build-number.smu-defect-id
```
- Step 5** Confirm the upgrade of the SMU image within the configured confirmation time limit.
- ```
Device# request platform software sdwan smu upgrade-confirm
```

Note

If you don't issue this command on the device within the time limit that is specified in the `upgrade-confirm minutes` command, the device automatically reverts to the state that it was in before the SMU image activation.

Deactivate and remove an SMU image using the CLI

Procedure

- Step 1** If not already configured, configure the time limit for confirming that a SMU image deactivation is successful.

The time limit can be 1 through 60 minutes. We recommend that you configure the time limit to at least 15 minutes.

```
Device# config-transaction
Device(config)# system
Device(config-system)# upgrade-confirm minutes
```

Step 2 Deactivate an SMU image on a Cisco IOS XE Catalyst SD-WAN device.

```
Device# request platform software sdwan smu deactivate build-number.smu-defect-id
Device# request platform software sdwan smu upgrade-confirm
```

Note

If you do not issue this command on the device within the time limit specified in the **upgrade-confirm minutes** command, the image deactivation fails and the device automatically reverts to the state that it was in before the SMU image deactivation.

Step 3 Remove an SMU image from a Cisco IOS XE Catalyst SD-WAN device .

```
Device# request platform software sdwan smu remove build-number.smu-defect-id
```

These examples show commands that you can use to manage the SMU image operations.

- Check the upgrade and confirm the configuration:

```
show sdwan running system
```

- Add and upgrade the confirm timer:

```
Device# config-transaction
Device(config)# system
Device(config-system)# upgrade-confirm 15
Device(config-system)# commit
```

- Execution commands:

```
• request platform software sdwan smu install
  bootflash:c8000v-universalk9.2022-08-17_23.44_mcpre.24042.CSCvq24042.SSA.smu.bin

• request platform software sdwan smu activate 17.09.01a.0.247.CSCvq24042

• request platform software sdwan smu upgrade-confirm

• request platform software sdwan smu deactivate 17.09.01a.0.247.CSCvq24042

• request platform software sdwan smu upgrade-confirm

• request platform software sdwan smu remove 17.09.01a.0.247.CSCvq24042
```

Verify the status of SMU images using CLI

Use CLI commands to check the installation, activation, deactivation, and removal status of SMU images. Review command outputs to determine the current state and rollback timer for SMU images on the device.

SMU image status verification and output interpretation

The **show install summary** command displays the installed packages and their states, including SMU images. The state codes indicate whether an image is inactive, activated and uncommitted, activated and committed, or deactivated and uncommitted. The `Auto abort timer` value shows the time left before rollback.



Note State (St): I - Inactive, U - Activated & Uncommitted, C - Activated & Committed, D - Deactivated & Uncommitted

```
Device# show install summary
[ R0 ] Installed Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St   Filename/Version
-----
IMG   C    17.09.01a.0.247
SMU   I    bootflash:c8000v-universalk9.2022-08-17_23.44_mcpres.24042.CSCvq24042.SSA.smu.bin
-----
Auto abort timer: inactive
-----
```

SMU image deactivation and removal

The **request platform software sdwan smu deactivate** command deactivates an SMU image. The output confirms the deactivation process and result. After deactivation, the **show install summary** command reflects the new state and the auto abort timer status.

```
Device# request platform software sdwan smu deactivate 17.09.01a.0.247.CSCvq24042
smu_deactivate: START Mon Mar 5 21:54:06 PST 2021
smu_deactivate: Deactivating SMU
Executing pre scripts....
Executing pre scripts done.
--- Starting SMU Deactivate operation ---
Performing SMU_DEACTIVATE on all members
[1] SMU_DEACTIVATE package(s) on switch 1
[1] Finished SMU_DEACTIVATE on switch 1
Checking status of SMU_DEACTIVATE on [1]
SMU_DEACTIVATE: Passed on [1]
Finished SMU Deactivate operation
SUCCESS: smu_deactivate 17.09.01a.0.247.CSCvq24042

Device# show install summary
[ R0 ] Installed Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St   Filename/Version
-----
IMG   C    17.09.01a.0.247
SMU   D    bootflash: c8000v-universalk9.2022-08-17_23.44_mcpres.24042.CSCvq24042.SSA.smu.bin
-----
Auto abort timer: active , time before rollback - 00:04:57
-----

Device# request platform software sdwan smu deactivate 17.09.01a.0.247.CSCvq24042
install_deactivate: START Thu Aug 25 17:47:10 UTC 2022
install_deactivate: Deactivating SMU
Executing pre scripts....
Executing pre scripts done.
```

```

--- Starting SMU Deactivate operation ---
Performing SMU_DEACTIVATE on Active/Standby
[1] SMU_DEACTIVATE package(s) on R0
[1] Finished SMU_DEACTIVATE on R0
Checking status of SMU_DEACTIVATE on [R0]
SMU_DEACTIVATE: Passed on [R0]
Finished SMU Deactivate operation
CSCvq24042:SUCCESS
SUCCESS: install_deactivate /bootflash/c8kv_hot.bin Thu Aug 25 17:47:33 UTC 2022

Device# show install summary
[ R0 ] Installed Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St  Filename/Version
-----
IMG   C    17.09.01a.0.247
-----
Auto abort timer: inactive
-----

```

SMU image metadata inspection

The **show install package** command provides metadata for an SMU image, including name, version, platform, package type, defect ID, package state, SMU ID, SMU type, compatibility, and impact.

```

Device# show install package
bootflash:c8000v-universalk9.2022-08-17_23.44_mcpre.24042.CSCvq24042.SSA.smu.bin
Name: c8000v-universalk9.2022-08-17_23.44_mcpre.24042.CSCvq24042.SSA.smu.bin
Version: 17.09.01a.0.247.1660805065
Platform: C8000V
Package Type: SMU
Defect ID: CSCvq24042
Package State: Inactive
Supersedes List: {}
SMU Fixes List: {}
SMU ID: 24042
SMU Type: non-reload
SMU Compatible with Version: 17.09.01a.0.247
SMUImpact:

```

Monitor the SMU status using Cisco SD-WAN Manager

Procedure

-
- Step 1** From the Cisco SD-WAN Manager menu, choose **Maintenance > Software Upgrade** .
- Step 2** For the desired Cisco IOS XE Catalyst SD-WAN device , click an SMU image link (hyperlink) under **Available SMUs**. In the **Available SMUs** dialog box, you can view the state of an SMU image.
-

If no SMU images are available for the current base image version (Cisco IOS XE image version), the SMU image link is not available under **Available SMUs** and Cisco SD-WAN Manager displays 0.