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Firmware Upgrade for SD-Routing devices using Cisco SD-WAN Manager, Release 17.18.x

What's new and changed

This table lists the features available with the current release :

Table 1: What's new and changed in this release

Cisco IOS XE release	Feature name	Description	Supported platforms
Cisco IOS XE 17.18.1a	Upgrade firmware for SD-Routing devices	This feature introduces support to use Cisco Catalyst SD-WAN Manager to upgrade the firmware for SD-Routing devices.	<ul style="list-style-type: none"> • Cisco Catalyst Cellular Gateways (CG522-E, CG418-E) • Cisco Catalyst 8200 Series Edge platforms • Cisco Catalyst 8300 Series Edge platforms • Cisco 1000 Series Integrated Services Routers • Cisco IR1101 Series Platforms (including P-LTE-450 PIM) • Cisco IR1800 Series Platforms (including P-LTE-450 PIM) • Cisco IR8340-K9 Series Platforms • Cisco IR8140H-K9 Series Platforms • Cisco ESR 6300 Embedded Series Router

Firmware upgrade for SD-Routing devices

Firmware is the software that is embedded in the device and it manages core functions and communication. This software acts as a bridge between the device and the network it creates, enabling devices to connect and exchange data. Firmware upgrade is supported for devices that have cellular module and also for devices that support a Wi-Fi module or P-LTE-450 module. Firmware upgrades are crucial for maintaining device security, performance, and functionality. They address vulnerabilities, introduce new features, and improve overall stability, ensuring devices operate efficiently and securely.

The firmware upgrade process involves a sequence of actions between the Cisco Catalyst SD-WAN Manager, remote server, and devices. Cisco Catalyst SD-WAN Manager sends the necessary instructions to each device, which then performs pre-checks, downloads, validates, and installs the firmware. Throughout the process, Cisco Catalyst SD-WAN Manager provides real-time status updates, allowing you to monitor and confirm the completion of the upgrade across all selected devices.

Benefits of firmware upgrade

This section outlines the various benefits associated with upgrading the firmware image for cellular module, P-LTE-450 module, or Wi-Fi module of supported devices using Cisco Catalyst SD-WAN Manager.

- Cisco Catalyst SD-WAN Manager provides an easy-to-use workflow for upgrading firmware for devices, making it unnecessary to execute firmware upgrade using CLI commands on each device individually. If a firmware image file is available for a selected device, the router determines the correct files and upgrades the firmware.
- Using the firmware upgrade workflow, you can schedule the firmware upgrade process to align with the maintenance window of the network.

Limitations of firmware upgrade

This section outlines the various limitations associated with upgrading the firmware image for cellular module, P-LTE-450 module, or Wi-Fi module of supported devices using Cisco Catalyst SD-WAN Manager.

- Cisco Catalyst SD-WAN Manager only supports upgrading the currently active firmware type. A device may support different firmware types, such as generic and firmware for specific carriers. For example: A device with DOCOMO firmware type cannot be upgraded as DOCOMO is not an active firmware type on the device.
- Downgrading firmware is not currently supported.

Workflow to upgrade firmware for devices

This sections covers the details regarding the different stages in upgrading the firmware for SD-Routing devices:

Summary

The firmware upgrade process involves a sequence of actions between the Cisco Catalyst SD-WAN Manager, remote server, and devices.

Cisco Catalyst SD-WAN Manager sends the necessary instructions to each device, which then performs pre-checks, downloads, validates, and installs the firmware. Throughout the process, Cisco Catalyst SD-WAN Manager provides real-time status updates, allowing you to monitor and confirm the completion of the upgrade across all selected devices.

Workflow

1. Identify the device that requires a firmware upgrade.
2. Check the current version of firmware on the device.
3. Download the firmware image.
4. Configure a remote server to host the downloaded firmware image.
5. Understand the order of upgrading firmware.
6. Upgrade the firmware.
7. Verify that the firmware upgrade is successful.

Step	To know more...
Identify device or module	Firmware upgrade can be performed for a cellular module, Wi-Fi module, or P-LTE-450 module in a device. See, Identify the device that requires firmware upgrade , on page 3 .
Check the current version of firmware on the device	Before you start the firmware upgrade process it is important to identify the current version of firmware installed on the devices. See, Check the current version of firmware on the device, on page 3 .
Download the firmware image from Cisco Software Central	Firmware upgrade is supported for cellular, P-LTE-450, or Wi-Fi module. See, Download the firmware files, on page 4 .
Configure a remote server to host the downloaded firmware image	Copy the downloaded firmware image to a remote server. See, Configure a remote server to host the firmware image, on page 4 .
Understand the order of upgrading firmware	The firmware upgrade process follows a specific order of precedence based on the firmware files present on the remote server. See, Understand the order of upgrading firmware , on page 5 .
Upgrade the firmware	Use the firmware upgrade workflow in Cisco Catalyst SD-WAN Manager. See, Upgrade the firmware image, on page 5
Verify the firmware upgrade	After the upgrade, verify that the devices have successfully updated to the new firmware version. See, Verify firmware upgrade for devices, on page 6

Identify the device that requires firmware upgrade

A Cisco site typically comprises of multiple devices. Some of these devices have either a Wi-Fi module or a cellular module or a combination of both.

Before you proceed with upgrading the firmware for the Wi-Fi module or cellular module, make a note of which devices to upgrade. This is an important step because it is important to perform firmware upgrade in a specific order.

Check the current version of firmware on the device

Before you start the firmware upgrade process it is important to identify the current version of firmware installed on the devices. This is important because if you plan to upgrade the firmware of a Wi-Fi module, the software version of the device must be a minimum of Cisco IOS XE Catalyst SD-WAN Release 17.16.1a.

If the device is on a software version lower than Cisco IOS XE Release 17.16.1a, it is not possible to upgrade the firmware of the Wi-Fi module.

To verify the current firmware version of a Wi-Fi module, use the **show wireless module version** command.

Download the firmware files

Upgrading the firmware software is supported for cellular module, P-LTE-450 module, or Wi-Fi module. The files for these modules are hosted in separate locations.

- Firmware image for cellular or Wi-Fi module:

The firmware image for the cellular module is hosted on [Cisco Software Central](#). The file types of the downloaded files may differ, according to the different modem hardware used in your Cisco products.

Example file types include .bin, .cwe, .nvu, and .spk. If the firmware upgrade for your device requires two files for two upgrade steps (a modem firmware upgrade file, and a separate OEM PRI file) save the two files to separate directories.

- Firmware image for the P-LTE-450 module: The firmware image for the P-LTE-450 modules are not available on Cisco download page. Therefore, download the firmware files for the P-LTE-450 MHz module from the Intelliport product website. For any assistance, contact the Intelliport representatives.



Note

After downloading the firmware image, do not change the filename. During the firmware upgrade process, Cisco Catalyst SD-WAN Manager uses the filename to determine which firmware upgrade files are relevant to it and in what order the upgrade should be performed.

Configure a remote server to host the firmware image

This task provides details on how to set up a remote server where the firmware image can be hosted. This firmware image is later used to upgrade modules.

Before you begin

- Make sure that you download the relevant firmware image from [Cisco Software Central](#).
- Ensure that the remote server used to store the firmware upgrade files is accessible by the devices in the network.

Step 1 On the Cisco Catalyst SD-WAN Manager, select **Maintenance** > **Software Repository** and click **Remote Server**.

Step 2 Specify these details:

Field	Description
Server Name	Enter a name for the file server with the firmware upgrade files.
Server IP or DNS Name	IP address or DNS name of the file server.
Protocol	Choose the SCP protocol. Only SCP is currently supported for firmware upgrade.
Port	Enter the port that you have configured for the remote server. Default (for SCP): 22
User ID, Password	Enter the login credentials for the file server.
Image Location Prefix	Enter the path to the directory storing the firmware upgrade files, or enter / by itself, which enables you to specify the path while executing the Firmware Upgrade workflow.

Field	Description
VPN	Enter the VPN that you have configured for reaching the remote server interface.

What to do next

The firmware upgrade process follows a specific order of upgrading the firmware based on the firmware files present on the remote server.

See, [Understand the order of upgrading firmware , on page 5](#).

Understand the order of upgrading firmware

The firmware upgrade process follows a specific order of upgrading the firmware based on the firmware files present on the remote server. Modules are upgraded in this order:

- Wi-Fi module
- P-LTE-450 module
- LTE module

To ensure the correct module is upgraded, save only the relevant firmware files on the remote server.

For example: If you want to upgrade the LTE module firmware, make sure that no Wi-Fi firmware files and P-LTE-450 firmware files are stored on the server. If firmware files for other modules are present, firmware upgrade is done only for the Wi-Fi module and not the other modules. This is because firmware upgrade is possible for only one module at a time.

Upgrade the firmware image

This task describes how to upgrade the firmware for SD-Routing devices using Cisco Catalyst SD-WAN Manager.

Before you begin

- Ensure that the software version of the device is Cisco IOS XE 17.18.1a.
- After downloading a firmware upgrade file as part of [Download firmware files](#) from Cisco.com, do not change the filename. The device uses the filename to determine which firmware upgrade files are relevant to it.

Step 1 On the Cisco Catalyst SD-WAN Manager, select **Workflows > Firmware Upgrade**

Step 2 Select the device you want to upgrade. Specify these details:

Field	Description
Server Name	Enter a name for the file server with the firmware upgrade files.
Server IP or DNS Name	IP address or DNS name of the file server.
Protocol	Choose the SCP protocol.
Port	Enter the port that you have configured for the remote server. Default (for SCP): 22
User ID, Password	Enter the login credentials for the file server.

Field	Description
Image Location Prefix	Enter the path to the directory storing the firmware upgrade files.
VPN	Enter the VPN that you have configured for reaching the remote server interface.

The Cisco Catalyst SD-WAN Manager does not verify whether the relevant firmware upgrade files are present on the remote server. Instead it only provides the remote server and path details to the router. The router identifies the available files and performs the upgrade. If no files are found on the remote server, the upgrade fails.

Step 3 Optionally, schedule the upgrade for a specific time, for example to coincide with a maintenance window.

Step 4 On the **Summary** page, review the details and click **Next** to begin the upgrade task. Click **Check my upgrade** task to show the status of the upgrade or upgrades for each device.

Verify firmware upgrade for devices

On the Cisco Catalyst SD-WAN Manager, select **Workflows > Firmware Upgrade**.

A list of device with associated modules are displayed. If the upgrade was successful, the column shows the upgraded version of the modules