Cellular Modem Firmware Upgrade

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Table 1: Feature History

Feature Name	Release Information	Feature Description
Cellular Modem Firmware Upgrade	Cisco IOS CG Release 17.12.1 Cisco Catalyst SD-WAN Control Components Release 20.12.1	Cisco SD-WAN Manager supports upgrading the cellular modem firmware of the following devices running Cisco IOS CG software: • Cisco Catalyst Wireless Gateways (CG113-4GW6) • Cisco Catalyst Cellular Gateways (CG522-E, CG418-E)
Cellular Modem Firmware Upgrade for Cisco IOS XE Platforms	Cisco IOS XE Catalyst SD-WAN Release 17.14.1a Cisco Catalyst SD-WAN Control Components Release 20.14.1	Extended support to the following platforms, when equipped with a cellular modem: • Cisco ISR1100 and ISR1100X Series Platforms • Cisco Catalyst 8200 Series Edge Platforms • Cisco Catalyst 8300 Series Edge Platforms

Information About Cellular Modem Firmware Upgrade

Using Cisco SD-WAN Manager, you can upgrade the cellular modem firmware of devices that include a cellular modem.

Notification of Available Firmware Upgrades

On the Cisco Software Download site, you can log in with your user account and set notifications to inform you of when a firmware upgrade is available for your devices.

Upgrade Process

After you download firmware upgrade files from the Cisco Software Download site, the overall process is as follows:

- Save the downloaded firmware upgrade files to a file server accessible by the devices in the network. For details, see **Before You Begin** in Upgrade the Cellular Modem Firmware of a Device, on page 4.
- Using the workflow described in Upgrade the Cellular Modem Firmware of a Device, on page 4, select the devices for which to upgrade the modem firmware using the downloaded files. In that workflow, you indicate the location of the file server and directory. If a firmware update file is available for a selected device, Cisco SD-WAN Manager automatically determines the correct file to use and upgrades the modem firmware on the device.

The workflow enables you to schedule the firmware upgrade for a specific time, such as to align with a maintenance window.

Example Illustrating Cellular Modem Firmware Upgrade

The following example scenario illustrates how the firmware upgrade affects only the active firmware on the device.

1. You begin with the following firmware versions on a cellular-enabled device:

```
Router#show cellular 0/2/0 firmware
 Idx Carrier              FwVersion        PriVersion   Status
 1   DOCOMO               02.24.05.06      001.007_000  Inactive
 2   GENERIC              02.24.05.06      002.026_000  Active
 3   KDDI                 02.24.05.06      001.005_000  Inactive

Firmware Activation mode  =  AUTO
```

   The command output indicates, for example, that the GENERIC firmware type has firmware version 02.24.05.06, and that the GENERIC firmware type is the active one.

2. You learn that there are two firmware upgrades available:
   - For GENERIC, you can download 02.24.05.07.
   - For DOCOMO, you can download 02.24.05.07.
3. You download both of the files and put them on the file server.
4. You run the firmware upgrade workflow, described in Upgrade the Cellular Modem Firmware of a Device, on page 4.

- The device finds the GENERIC 02.24.05.07 firmware upgrade file and uses it to upgrade the GENERIC firmware type, which is the active firmware type.
- The device does not upgrade the DOCOMO firmware type, even though there is a firmware upgrade file that could accomplish that. This is because DOCOMO is not an active firmware type on the device.

5. After the upgrade, check the firmware versions and note that the firmware upgrade occurred only for the GENERIC firmware type, which is the active one.

```
Router#show cellular 0/2/0 firmware
 Idx Carrier              FwVersion        PriVersion   Status
 1   DOCOMO               02.24.05.06      001.007_000  Inactive
 2   GENERIC              02.24.05.07      002.026_000  Active
 3   KDDI                 02.24.05.06      001.005_000  Inactive

Firmware Activation mode  =  AUTO
```

Benefits of Cellular Modem Firmware Upgrade

Cisco SD-WAN Manager provides an easy-to-use workflow for upgrading modem firmware on one or more devices, making it unnecessary to execute modem firmware upgrade using CLI commands on each device individually.

Supported Platforms for Cellular Modem Firmware Upgrade

- From Cisco Catalyst SD-WAN Control Components Release 20.12.1:
  - Cisco Catalyst Wireless Gateways (CG113-4GW6)
  - Cisco Catalyst Cellular Gateways (CG522-E, CG418-E)
- From Cisco Catalyst SD-WAN Control Components Release 20.14.1:
  - Cisco ISR1100 and ISR1100X Series Platforms
  - Cisco Catalyst 8200 Series Edge Platforms
  - Cisco Catalyst 8300 Series Edge Platforms

Prerequisites for Cellular Modem Firmware Upgrade

- Ensure that the file server storing the firmware upgrade files is accessible by the devices in the network.
- Download the required firmware updates from Cisco.com, for the cellular-modem-equipped devices you wish to upgrade.

Restrictions for Cellular Modem Firmware Upgrade

- After downloading a firmware upgrade file from Cisco.com, do not change the filename. A device uses the filename to determine which firmware upgrade files are relevant to it.
- Cisco SD-WAN Manager only supports upgrading the currently active firmware type. For example a device may have five different firmware types, such as generic and firmware for four specific carriers. Only one firmware type can be active at a given time and Cisco SD-WAN Manager upgrades only the the active one.
- Firmware downgrade is not supported by Cisco SD-WAN Manager.

Upgrade the Cellular Modem Firmware of a Device

Before You Begin

- See the prerequisites and restrictions sections of this documentation.
- Download firmware upgrade files from the Cisco Software Download site.
- Save the downloaded firmware upgrade files to a file server accessible by devices in the network. 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.

  You can download firmware upgrade files for different types of cellular-enabled devices and in most cases, save them to the same directory on the file server. 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.

Upgrade the Cellular Modem Firmware of a Device

1. From the Cisco SD-WAN Manager menu, choose **Workflows** > **Firmware Upgrade**.
2. In the workflow, follow the prompts to select the devices to upgrade, the server, and the firmware image path. When configuring a server for storing firmware upgrade images, enter the following fields:

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.
Image Location Prefix	Enter the path to the directory storing the firmware upgrade files.

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

Note For information about configuring a remote server for storing device software upgrade images, see Register Remote Server in the Manage Software Upgrade and Repository section of the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*.

If a relevant firmware upgrade file exists at the image path location, the device uses the file for the upgrade. If more than one relevant firmware upgrade file is available, the device uses the latest version. If no relevant file exists at the image path location, the **Summary** page of the workflow indicates that no file is available, and no firmware upgrade occurs.

Cisco SD-WAN Manager upgrades only the currently active firmware type.

Note The workflow prompts you to configure a remote server. Alternatively, you can configure a file server as described in Configure a Remote File Server for Firmware Upgrade Images, on page 6.

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

Note To cancel a scheduled upgrade before it occurs, do the following:

   a. From the Cisco SD-WAN Manager menu, choose **Maintenance** > **Software Upgrade**.

   b. Click **Firmware**.

   c. Click **Cancel Firmware Upgrade** to cancel a scheduled upgrade.

4. On the **Summary** page, review the details and click **Next** to begin the upgrade task.

   The upgrade takes several minutes.

5. (Optional) Click **Check my upgrade task** to show the status of the upgrade or upgrades for each device.

View the Status of a Cellular Modem Firmware Upgrade

1. From the Cisco SD-WAN Manager menu, choose **Maintenance** > **Software Upgrade**.
2. Click **Firmware**.

   The table shows devices in the process of firmware upgrade or awaiting a scheduled upgrade. See the **CurrentVersion** column to view the firmware version of a device.
3. (Optional) Click **Cancel Firmware Upgrade** to cancel a scheduled upgrade.

Configure a Remote File Server for Firmware Upgrade Images

Before You Begin

This procedure addresses configuring a remote server for firmware upgrade images, for the firmware upgrade use case. For information about configuring a remote server for storing device software upgrade images, see Register Remote Server in the Manage Software Upgrade and Repository section of the *Cisco Catalyst SD-WAN Monitor and Maintain Configuration Guide*.

Configure a Remote File Server for Firmware Upgrade Images

1. From the Cisco SD-WAN Manager menu, choose **Maintenance** > **Software Repository** and click **Remote Server**.
2. Click **Add Remote Server** and enter the following fields:

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

3. Click **Add**.