



# Software Maintenance Upgrade Patches

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## About Software Maintenance Upgrade Patches

Beginning with the Cisco Application Policy Infrastructure Controller (APIC) release 5.2(1), you can install software maintenance upgrade (SMU) patches that contain fixes for specific defects. Because SMU patches can be released much more quickly than a more traditional patch release, you can resolve specific issues in a more timely manner. SMU patches are available for download from Cisco.com and generally include the ID number of the resolved defect in the filename to enable you to identify easily which issue the patch will resolve. SMU patches do not include new features.

SMU patches are available for the Cisco APIC and Cisco ACI-mode switches. When patching a Cisco APIC, the patch gets installed on all Cisco APICs in the cluster, and the Cisco APICs are automatically rebooted to complete the patch installation. When patching a switch, the switch must also be rebooted to complete the installation, but you can delay the reboot until after you have initiated the installation of multiple SMU patches.

If necessary, you can uninstall an SMU patch. As with patch installation, the Cisco APIC or switch must be rebooted to complete the uninstallation.

## Guidelines and Limitations for Software Maintenance Upgrade Patches

The following guidelines and limitations apply for software maintenance upgrade (SMU) patches:

- The **Graceful Upgrade** feature is not supported for SMU patch installation and uninstallation.

- The **Auto Firmware Update on Switch Discovery** feature is not performed for switches that belong to an update group for SMU patch installation or uninstallation.
- In releases earlier than 5.2(8) and in the 6.0(1) and 6.0(2) releases, an SMU patch cannot modify the Cisco Application Policy Infrastructure Controller (APIC) GUI. Beginning with the 5.2(8) and 6.0(3) releases, an SMU patch can modify the Cisco APIC GUI.
- Upgrading or downgrading the software on a switch removes any SMU patches that you previously installed on that switch.

## Installing a Cisco APIC Software Maintenance Upgrade Patch Using the GUI

In the Cisco Application Policy Infrastructure Controller (APIC) 5.2(1) release or later, you can use the following procedure to install a software maintenance upgrade (SMU) patch on a Cisco Application Policy Infrastructure Controller (APIC).

### Procedure

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- Step 1** Add the firmware image that corresponds to the SMU patch to the Cisco APIC. The patch will be listed along with any other firmware images (SMU patches and otherwise).
- For the procedure, see [Upgrading or Downgrading with APIC Release 5.1 or Later Using the GUI](#).
- Step 2** Set up a controller firmware update. On the **Version Selection** screen, for the **Update Type**, choose **Software Maintenance Upgrade (Install)**, then choose the SMU patch in the **Select Firmware** section.
- For the procedure, see [Upgrading or Downgrading with APIC Release 5.1 or Later Using the GUI](#).
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## Installing a Switch Software Maintenance Upgrade Patch Using the GUI

In the Cisco Application Policy Infrastructure Controller (APIC) 5.2(1) release or later, you can use the following procedure to install a software maintenance upgrade (SMU) patch on a Cisco Application Centric Infrastructure (ACI)-mode switch.

SMU patch installation or uninstallation uses the same update group as a regular firmware upgrade. Because one node can belong to only one update group, when you apply a SMU patch to a specific node, remove that node from the existing group and create a new group that is dedicated for the node so that other nodes are not impacted. In the future when you must perform a regular firmware upgrade for the entire fabric, you can delete the dedicated update group that is used for the SMU patch installation and add the node back to one of the original groups. If all the nodes in the existing group need the SMU patch, you can simply reuse the same update group without creating a new update group.

## Procedure

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**Step 1** Add the firmware image that corresponds to the SMU patch to the Cisco Application Policy Infrastructure Controller (APIC). The Cisco APIC lists the patch along with any other firmware images (SMU patches and otherwise).

In the Cisco APIC release 6.0(2) and later, download both the 32-bit and 64-bit SMU images to the Cisco APIC. Downloading only one of the images may result in errors during the upgrade process.

For the procedure, see [Upgrading or Downgrading with APIC Release 5.1 or Later Using the GUI](#).

**Step 2** Set up a node firmware update. On the **Version Selection** screen, for the **Update Type**, choose **Software Maintenance Upgrade (Install)**, then choose the SMU patch in the **Select Firmware** section.

For the procedure, see [Upgrading or Downgrading with APIC Release 5.1 or Later Using the GUI](#).

After you click **Begin Download** in the **Confirmation** screen, the patch gets downloaded to the selected switches. The **Firmware Updates** tab in the Work pane displays.

**Step 3** In the Work pane, click the upgrade group that you created.

The **Node Firmware Update** dialog displays with information for the upgrade group.

**Step 4** When the status for the switches is `Ready to Install`, click **Actions**.

Before the 6.0(2) release, or if the **Switch Restart Type** property is set to **Reload** in the 6.0(2) release and later, choose one of the following actions:

- **Install and Reload:** The switches reboot after the SMU patch gets installed. Choose this action if you want to install only one SMU patch, or if you are installing the final patch of multiple patches.
- **Install and Skip Reload:** The switches do not reboot after the SMU patch gets installed. Choose this action if you want to install multiple SMU patches and this patch is not the final patch. In this case, repeat this entire procedure for each additional patch and continue to choose **Install and Skip Reload** until you install the final patch. For the final patch, choose **Install and Reload**. Optionally, you can choose **Install and Skip Reload** and manually reboot the switch after the patch gets installed.

In the 6.0(2) release and later and if the **Switch Restart Type** property is set to **Restart**, choose **Install**. For SMUs that you can apply to a switch without rebooting the switch, after choosing **Install**, the SMU will be installed while the switch remains operational. Whether or not the SMU installation impacts the traffic going through the switch depends on the fixes that the SMU applies.

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# Uninstalling a Cisco APIC Software Maintenance Upgrade Patch Using the GUI

In the Cisco Application Policy Infrastructure Controller (APIC) 5.2(1) release or later, you can use the following procedure to uninstall a software maintenance upgrade (SMU) patch from a Cisco APIC.

## Procedure

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Set up a controller firmware update. On the **Version Selection** screen, for the **Update Type**, choose **Software Maintenance Upgrade (Uninstall)**, then choose the SMU patch to uninstall in the **Select Firmware** section.

For the procedure, see [Upgrading or Downgrading with APIC Release 5.1 or Later Using the GUI](#). Even though the procedure is intended for upgrading, uninstalling the patch uses the same steps, except as specified here.

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# Uninstalling a Switch Software Maintenance Upgrade Patch Using the GUI

In the Cisco Application Policy Infrastructure Controller (APIC) 5.2(1) release or later, you can use the following procedure to uninstall a software maintenance upgrade (SMU) patch from a Cisco Application Centric Infrastructure (ACI)-mode switch. The process for uninstalling includes creating an upgrade group and using that group to uninstall the SMU patch.

SMU patch installation or uninstallation uses the same update group as a regular firmware upgrade. Because one node can belong to only one update group, when you apply a SMU patch to a specific node, remove that node from the existing group and create a new group dedicated for the node so that other nodes are not impacted. In the future when you need to perform a regular firmware upgrade for the entire fabric, you can delete the dedicated update group used for the SMU patch installation and add the node back to one of the original groups. If all the nodes in the existing group need the SMU patch, you can simply reuse the same update group without creating a new update group.

## Procedure

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- Step 1** Set up a node firmware update. On the **Version Selection** screen, for the **Update Type**, choose **Software Maintenance Upgrade (Uninstall)**, then choose the SMU patch to uninstall in the **Select Firmware** section.
- For the procedure, see [Upgrading or Downgrading with APIC Release 5.1 or Later Using the GUI](#). Even though you are uninstalling the patch, the procedure is almost the same as the upgrade procedure.
- When you get to the **Confirmation** screen, continue with the next step.
- Step 2** If the information that displays is correct, then click **Uninstall and Skip Reload** or **Begin Uninstall**. Otherwise, return to any of the previous screens and change the configuration as appropriate.
- **Uninstall and Skip Reload:** The switches are not rebooted after the SMU patch gets uninstalled. Choose this action if you want to uninstall multiple SMU patches and this patch is not the final patch. In this case, repeat this entire procedure for each additional patch and continue to choose **Uninstall and Skip Reload** until you are uninstalling the final patch. For the final patch, choose **Begin Uninstall**. Optionally, you can choose this action and manually reboot the switch after the final patch gets uninstalled.

- **Begin Uninstall:** The switches are rebooted after the SMU patch gets uninstalled. Choose this action if you want to uninstall only one SMU patch, or if you are uninstalling the final patch of multiple patches.

## Installing or Uninstalling a Cisco APIC Software Maintenance Upgrade Patch Using the REST API

The following example REST API XML installs a software maintenance upgrade (SMU) patch on a Cisco Application Policy Infrastructure Controller (APIC) and reboots the Cisco APIC after the installation completes:

```
<polUni>
  <ctrlrInst>
    <firmwareCtrlrFwP
      version="apicpatch-CSCab12345-9.0.0-5.2.0.155d.x86_64">
    </firmwareCtrlrFwP>
    <maintCtrlrMaintP
      adminState="up" smuOperation="smuInstall" adminSt="triggered" >
    </maintCtrlrMaintP>
  </ctrlrInst>
</polUni>
```

The following table explains the elements and parameters that are specific to SMU patches:

Element	Parameter	Description
firmwareCtrlrFwP	version	Specifies the filename of the SMU patch.
maintCtrlrMaintP	smuOperation	Specifies whether to install or uninstall the patch. The possible values are: <ul style="list-style-type: none"> <li>• smuInstall: Install the patch.</li> <li>• smuUninstall: Uninstall the patch.</li> </ul>

## Installing or Uninstalling a Switch Software Maintenance Upgrade Patch Using the REST API

The following example REST API XML installs a software maintenance upgrade (SMU) patch on a switch and reboots the switch after the installation completes:

```
<polUni>
  <fabricInst>
    <maintMaintP
      version="n9000-patch-CSCsysinfo12-15.2.0.151-S1.1.1.x86_64"
      smuOperation="smuInstall"
      smuOperationFlags="smuReloadImmediate"
      name="Leaf202"
```

```

    adminSt="triggered">
  </maintMaintP>

  <maintMaintGrp name="Leaf202">
    <fabricNodeBlk name="blk202" from_"202" to_"202">
      </fabricNodeBlk>
      <maintRsMgrpp tnMaintMaintPName="Leaf202">
        </maintRsMgrpp>
      </maintMaintGrp>
    </fabricInst>
  </polUni>

```

The following table explains the elements and parameters that are specific to SMU patches:

Element	Parameter	Descripton
maintMaintP	version	Specifies the filename of the SMU patch.
maintMaintP	smuOperation	Specifies whether to install or uninstall the patch. The possible values are: <ul style="list-style-type: none"> <li>• smuInstall: Install the patch.</li> <li>• smuUninstall: Uninstall the patch.</li> </ul>

Element	Parameter	Description
maintMaintP	smuOperationFlags	<p>Specifies whether to reboot the switch after the patch is installed. The possible values are:</p> <ul style="list-style-type: none"> <li>• <code>smuReloadImmediate</code>: The switches are rebooted after the SMU patch gets installed. Specify this value if you want to install only one SMU patch, or if you are installing the final patch of multiple patches.</li> <li>• <code>smuReloadSkip</code>: The switches are not rebooted after the SMU patch gets installed. Specify this value if you want to install multiple SMU patches and this patch is not the final patch. In this case, post the appropriate XML for each additional patch and continue to specify <code>smuReloadSkip</code> until you are installing the final patch. For the final patch, specify <code>smuReloadImmediate</code>. Optionally, you can specify <code>smuReloadSkip</code> and manually reboot the switch after the patch gets installed.</li> </ul>
maintMaintP	name	Specifies the name of the maintenance group.
fabricNodeBlk	from_ and to_	Specifies the range of switch node IDs on which to install or from which to uninstall the patch.
maintRsMgrpp	tnMaintMaintPName	Specifies the name of the maintenance group. The value must match the value of the <code>name</code> parameter of the <code>maintMaintP</code> element.

By changing some of the parameter values as specified in the table, you can specify whether to install or uninstall a patch, and you can specify not to reboot the switches after a patch is installed or uninstalled.

