



Remote Server Support for ZTP Software Upgrade

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Feature history for remote server support for ZTP software upgrade

Table 1: Feature History

Feature Name	Release Information	Description
Remote Server Support for ZTP Software Upgrade	Cisco IOS XE Catalyst SD-WAN Release 17.10.1a Cisco Catalyst SD-WAN Control Components Release 20.10.1	This feature introduces remote server support for upgrading the software of Cisco IOS XE Catalyst SD-WAN devices at scale using Zero Touch Provisioning (ZTP). Upload the software upgrade images to Cisco SD-WAN Manager using a preferred remote server and then upgrade the respective devices.

Information About Remote Server Support for ZTP Upgrade

You can onboard and upgrade numerous Cisco IOS XE Catalyst SD-WAN devices together, using the software images hosted on a remote server. The physical WAN edge onboard and upgrade options include the following:

- Manual
- Bootstrap
- Automated deployment

In Cisco IOS XE Catalyst SD-WAN Release 17.9.1a and earlier, the software upgrade images are hosted only on Cisco SD-WAN Manager. During the software upgrade process, the devices fetch the upgrade information from Cisco SD-WAN Manager to upgrade the devices with the latest software.

From Cisco IOS XE Catalyst SD-WAN Release 17.10.1a, remote server support for ZTP upgrades enables you to upgrade Cisco IOS XE Catalyst SD-WAN devices using the software images stored in a remote server. The remote server support for ZTP upgrade feature enables you to register a remote server with Cisco SD-WAN Manager and add locations of the software images that are present in the remote server to the Cisco SD-WAN Manager software repository. When you upgrade a device, the device downloads the new software image from the remote server, without overwhelming the Cisco SD-WAN Manager server.

When using the Cisco Catalyst SD-WAN hosted service, it is possible to enforce a version of the Cisco SD-WAN software to run on a router as it joins the fabric for the first time. When you enable ZTP, you can see the platform version and status details of the devices running on a router. For example, ISR1101 Disabled, C8000AES Disabled, ISR4400 Disabled, C8000AEP Disabled, ASR1001-X Disabled and so on.

Benefits of Remote Server Support for ZTP Upgrade

- Enables you to upgrade Cisco IOS XE Catalyst SD-WAN devices using software images stored on a remote server, thus removing the dependency on the Cisco SD-WAN Manager software repository.
- Many software upgrade image file formats are supported.
- Cisco SD-WAN Manager provides the devices that are being upgraded with the information they require to download the necessary software images from the servers hosting the images. The devices retrieve the images directly from the servers. This minimizes performance demands on Cisco SD-WAN Manager, as compared to storing images in the Cisco SD-WAN Manager software repository.

Supported Devices for Remote Server Support for ZTP Upgrade

Release	Supported Devices
Cisco IOS XE Catalyst SD-WAN Release 17.10.1a	<ul style="list-style-type: none"> • ASR 1000 • ISR 1000 • ISR 4000 series router models (with exception of ISR1100-4G/6G) • IR 1001 • IR 8340 • IR 8100 • Cisco 8000 series router models • Cisco Catalyst Wireless Gateway CG113 Series • ASR 1001-X • Cisco 1100 • Cisco ESR6300

Prerequisites for Remote Server Support for ZTP Upgrade

- Ensure that a remote server is registered to the Cisco SD-WAN Manager Software Repository. For more information see, the section [Register Remote Server](#).
- Ensure that you add a new software image using the **Remote Server (preferred)** option. For more information see, the section [Add Software Images to the Repository](#).



Note Ensure that the **Image Filename** matches the **Image Filename** in the **Remote Server Name** field.

- Make sure the device can reach the Cisco SD-WAN Validator, Cisco SD-WAN Manager, and Cisco SD-WAN Controllers.
- To be upgraded, a device must be in the **Valid** or the **Staging Certificate** state.

Restrictions for Remote Server Support for ZTP Upgrade

- You cannot upgrade Cisco SD-WAN Manager along with devices that are present in a group upgrade operation. You must upgrade and reboot the only the Cisco SD-WAN Manager server.

- The ZTP upgrade flow doesn't restart automatically when the devices are interrupted by an unforeseen manual device reload or a power failure.
- The **Enforce Software Version (ZTP)** option is available only for Cisco IOS XE Catalyst SD-WAN devices.
- We recommend that you perform all software upgrades from Cisco SD-WAN Manager rather than from the CLI.
- Remote server support for ZTP upgrades is available only through VPN-0.



Note For software compatibility information, see [Cisco SD-WAN Controller Compatibility Matrix and Server Recommendations](#).

Enable Enforce Software Version (ZTP)

1. From the Cisco SD-WAN Manager menu, choose **Administration > Settings**.
2. In **Enforce Software Version (ZTP)**, choose **Enabled**.
From Cisco Catalyst SD-WAN Manager Release 20.13.1, click the toggle button to enable cloud services.
3. Enable the software version for the corresponding device.
4. In the **Image Location** window, click the **Remote Server** radio button.
5. From the **Remote Server Name** drop-down list, choose a remote server.
6. From the **Image Filename** drop-down list, choose an image.
7. Click **Save**.

Upload Device List

You can upload a list of devices that you want to upgrade, to Cisco SD-WAN Manager.

1. From the Cisco SD-WAN Manager menu, choose **Configuration > Devices**.
2. Click **Upload WAN Edge List**.
3. Upload the .CSV file that you have created from the [Sample CSV](#).
4. Check the **Validate the uploaded vEdge List and send to controllers** checkbox.
5. Click **Upload**.



Note You can upload device lists to Cisco SD-WAN Manager using your Cisco Smart Account as well. For more information about enabling PnP Connect Sync see, [Enable PnP Connect Sync](#).

Use Cisco Catalyst SD-WAN Manager to Configure and Upgrade a Device

Devices in the overlay network that are managed by Cisco SD-WAN Manager must be configured using Cisco SD-WAN Manager in order to be upgraded.

Use the following steps to configure and upgrade a device, using Cisco SD-WAN Manager:

1. Create feature templates:
 - a. From the Cisco SD-WAN Manager menu, choose **Configuration > Templates**.
 - b. Click **Feature Templates**, and choose **Add Templates**.
2. Create device templates.
 - a. From the Cisco SD-WAN Manager menu, choose **Configuration > Templates**.
 - b. Click **Device Templates**, and choose **Create Templates**.
3. Attach device templates to individual devices.
 - a. From the Cisco SD-WAN Manager menu, choose **Configuration > Templates**.
 - b. Click **Device Templates**, and choose a template.
 - c. Click **...**, and choose **Attach Devices**.
 - d. You can see the added device in the list of **Available Devices** list. Send the particular device to the **Selected Devices** window using the **Right arrow** button.
 - e. Click **Attach**.
4. In the **Device Template** window, click **...** to update the device template by entering the following parameters:

Field	Description
Status	Displays the current status of the device template.
Chassis Number	Displays the chassis number of the device.
System IP	Displays the system IP address, if applicable.
Host Name	Displays the host name, if applicable.
DNS Address (vpn_dns_primary)	Enter the DNS address.
Host Name	Enter the host name.
System IP	Enter the system IP address.
Site ID	Enter the site ID.

5. Click **Update**. and then click **Next**.

6. After the device template is added, select the device template and click **Configure Devices**.
7. The **Config Preview** is displayed.
8. Click **Configure Devices**.
9. You are routed to the **Task List** window, where you can see the status of the configuration.
10. The configuration is attached to the device once the device is online.
11. Cisco SD-WAN Manager creates a task for this software upgrade through the ZTP server, and you can monitor the status of the upgrade using the **Task List** window.

Monitor the ZTP Software Install

In Cisco SD-WAN Manager, click the task list icon at the top-right corner of the window.

The task list shows open software installation tasks, if any, and indicates the status of these tasks.



Note Cisco SD-WAN Manager pushes the device template to a device only after the software upgrade process is complete. You can monitor the status of the software upgrade using the **Tasks** window.
