

Managing Your Fabric Software, Release 4.2.1

Table of Contents

New and Changed Information . . . 1
Understand Fabric Software for NX-OS and IOS-XE fabrics . . . 2
  Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics . . . 2
  Understand the information provided in the Fabric Software page for NX-OS and IOS-XE fabrics . . . 3
Terminology . . . 9
Required software versions . . . 10
Prerequisites . . . 11
Guidelines and limitations . . . 12
Upgrade or downgrade switches in a fabric under Overview tab . . . 13
  Prepare a fabric software update . . . 13
  Create a report . . . 14
  Change number of concurrent switches for staging/validating/updating . . . 15
  Install or update software on devices in a fabric . . . 16
  Update or downgrade switches . . . 18
    Guidelines and limitations: Disruptive update . . . 18
    Guidelines and limitations: Non-disruptive upgrade . . . 18
  Download an image from the Software Download website . . . 19
  Upload the image to Nexus Dashboard . . . 19
  Attach or detach update groups to the switches . . . 20
  Auto-generate update groups . . . 21
  Change mode for a switch . . . 22
Understand Fabric Software for ACI fabrics . . . 23
  Navigate to the Fabric Software page for ACI fabrics . . . 23
  Understand the information provided in the Fabric Software page for ACI fabrics . . . 23
Copyright . . . 24

New and Changed Information

The following table provides an overview of the significant changes up to this current release. The table does not provide an exhaustive list of all changes or of the new features up to this release.

Release Version	Feature	Description
Nexus Dashboard 4.2.1	Improved image management and switch software update workflow.	Beginning with Nexus Dashboard 4.2.1, the workflow to update switch software and manage fabric software images in Nexus Dashboard have been enhanced. For more information, see Upgrade or downgrade switches in a fabric under Overview tab.
Nexus Dashboard 4.2.1	Support for Cisco Catalyst 8000 switches	Beginning with Nexus Dashboard 4.2.1, Nexus Dashboard supports software update for Cisco Catalyst 8000 switches. For more information, see Understand the information provided in the Fabric Software page for NX-OS and IOS-XE fabrics.

Understand Fabric Software for NX-OS and IOS-XE fabrics

This section provides detailed information for the Fabric Software feature in Nexus Dashboard for NX-OS/IOS-XE fabrics.

Fabric Software deploys Cisco software images to switches which allows network stability and feature consistency. Fabric Software workflows provide these benefits:

- Image staging, validation, and in-service software upgrade (ISSU) operations which are independent, allowing mass updates and downgrades, and the ability to perform staging and validation in a single step
  - You can perform these operations before the maintenance window.
    - Stage image files

      This copies the image files to the switch bootflash.

    - Validate Network Operating System (NOS) and electronic programmable logic device (EPLD) compatibility where possible

      This checks if the image is complete, if the image is valid for the individual hardware, and if the update can be non-disruptive.

    - Run Update Analysis reports
- The ability to run reports and compare the results
- The **View Logs** column provides Live log status to monitor each operation
- Allows you to make use of maintenance mode to minimize the impact of disruptive updates, especially for multi-reload update situations
- Update groups allow bulk updates and downgrades. Update groups have checks to avoid unnecessary downtime in redundant fabrics in these cases:
  - Switches belonging to different fabrics are not allowed to form an update group.
  - By default, Virtual Port Channel (vPC) peers are placed in different groups as listed:
    - Switches that have even numbers or VPC role of primary
    - Switches that have odd numbers or VPC role of secondary
- Provides visibility into previous and current update details as well as high-level summarization
- Visibility into current NOS, EPLD and patch consistency at a switch, fabric, and group level

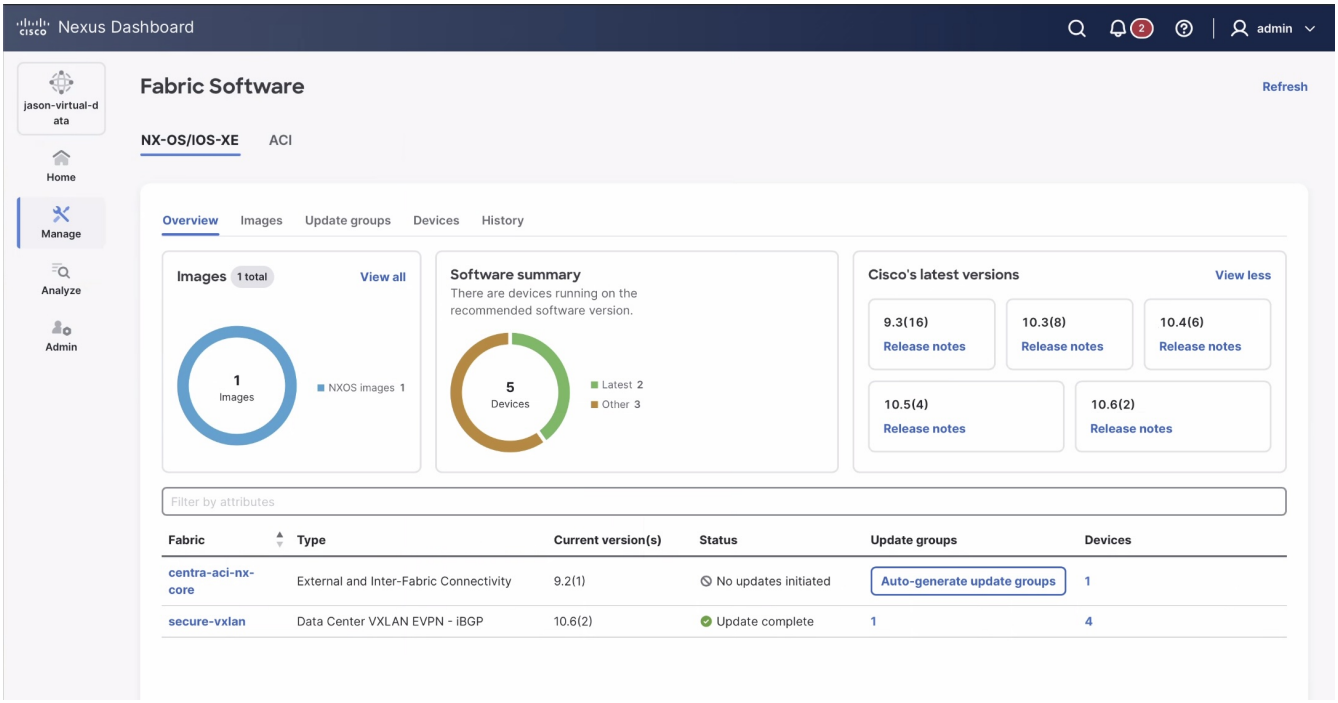
Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics

To navigate to the Fabric Software page, click **Manage > Fabric Software**.
The **NX-OS/IOS-XE** tab is the default view.

Understand the information provided in the Fabric Software page for NX-OS and IOS-XE fabrics

The **Overview** tab provides fabric-level update and downgrade options whereas the **Devices** tab provides these options at the individual device or switch level.

The **Overview** tab displays the images, platforms, release versions, and fabric information.



The **Fabric Software** page has the following functional areas:

- **Overview**: This displays the images, platforms, release versions, and fabric information.
  - The **Images** card displays the number of images and the type of packages or patches. Click **View all** to see a table with a detailed listing of all the images.
  - The **Cisco's latest versions** card displays the latest versions of the switch software that are available, the versions of the switch software that Cisco recommends, and the corresponding release notes.
  - The fabric area displays information about the configured fabrics.

Field	Description
Fabric	The name of the fabric.
Type	The type of fabric.
Current version(s)	The current versions of software running on the switches in the fabric.

Status	The status of the fabric-level software update. The available options are: • **Preparing update**: Indicates either the auto-assignment of the update groups is not complete or that the Prepare stage is in progress. • **Update pending**: Indicates either the Prepare stage is completed or that installation is in progress. • **Update complete**: Indicates either the installation is complete or that the None group is present along with other custom groups.
Update groups	A clickable link to the update groups page for a fabric or an option to **Auto-generate update groups**, if the update group is not available.
Devices	A clickable link to the devices page with a detailed listing of the number of switches in a fabric.

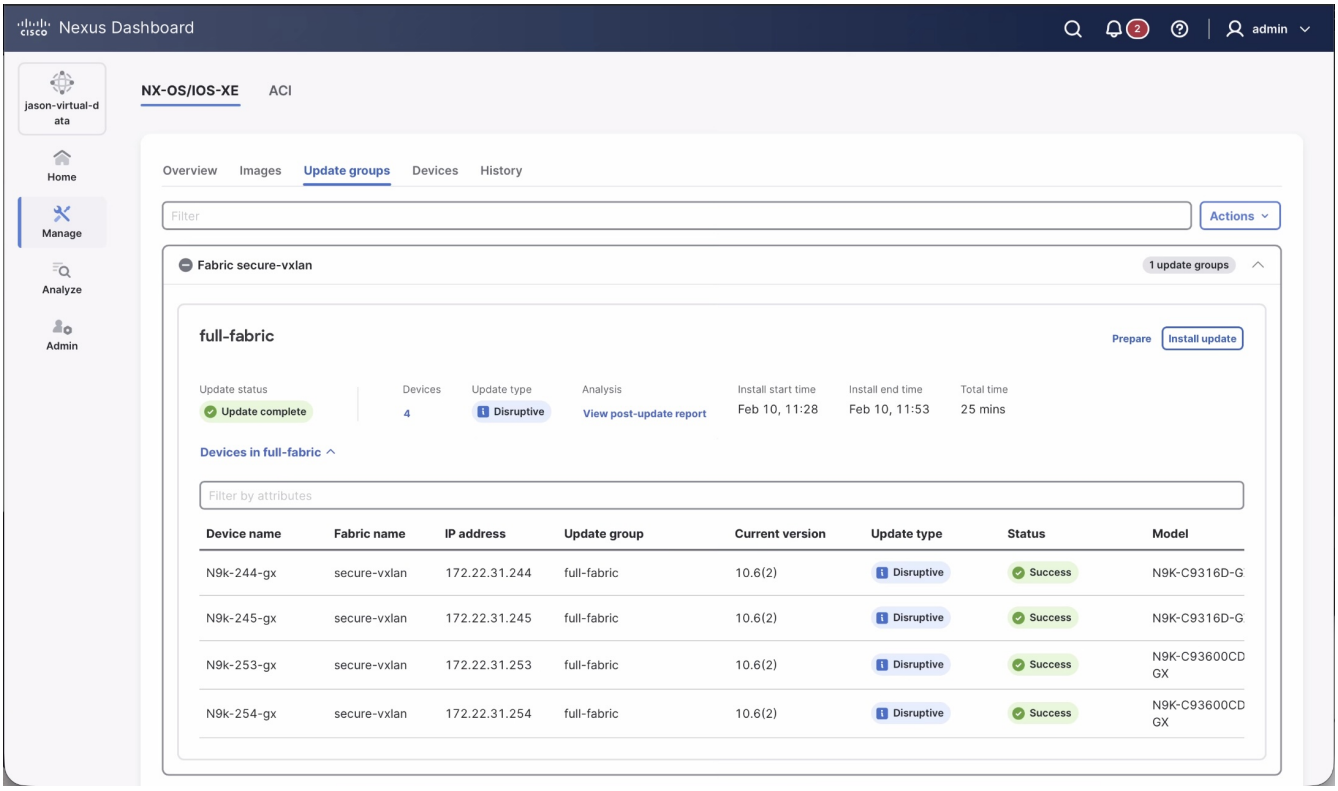
- **Images**: This displays the details of the uploaded images on Nexus Dashboard. You can upload or delete images.

Field	Description
Platform	Specifies the name of the platform. Images, RPMs, or SMUs are categorized as follows: • n9k/n3k • n6k • n7k • n77k • n5k • Other • Third Party • MDS • cat9k • CAT8k The images are the same for n9k and n3k platforms. The platform is **Other** if the uploaded images are not mapped to any of the existing platforms. The platform is **n9k/n3k** for RPMs.
Bits	Specifies the bits of the image
Image name	Specifies the filename of the image, RPM, or SMU that you uploaded.
Image type	Specifies the file type. The available options are image, EPLD, RPM, and SMU.

Image sub type	Specifies the file type of the image, EPLD, RPM, or SMU as listed here: • EPLD: **epld** • Images: **nxos**, **system** or **kickstart** • RPMs: **feature** • SMUs: **patch**.
NOS version	Specifies the NX-OS or IOS-XE image version for Cisco switches only.
Size (Bytes)	Specifies the size of the image, RPM, or SMU files in bytes.
Image present	Determines if the uploaded image is present after a successful Nexus Dashboard restore or update process. Switch firmware images that were uploaded to Nexus Dashboard in release 3.2.x are not carried over when you update to Nexus Dashboard 4.x. These instances are listed as **Absent** in the **Image Present** column. After updating to Nexus Dashboard 4.x, re-upload the switch firmware images. However, images uploaded to Nexus Dashboard in release 4.1.1 are carried over when you update to Nexus Dashboard 4.2.1. For more information, see Upload the image to Nexus Dashboard.
Checksum	Specifies the checksum of the image. The checksum checks if there's any corruption in the file of the image, RPM, or SMU. You can validate the authenticity by verifying if the checksum value is same for the file you downloaded from the Cisco website and the file you upload in the **Image Upload**.

- **Update groups**: This displays switch updates by groups. You can **Prepare**, **Install update**, and check **Update status**. This allows you to easily stage groups in advance and return to the update workflow at any point. You can also:
  - create auto-update groups
  - view pre or post-update reports
  - view update logs, or
  - access switch bootflash or hardware to check or delete images from the switch bootflash.

  Devices that are not associated with any update group are listed under **None**. For information about assigning an update group to a device, see Attach or detach update groups to the switches.



- Review the information provided in the **Update groups** area.
  - **Fabric**: The name of the fabric
  - **Count of update groups**: Next to the fabric name, the number of update groups created for a specific fabric
  - **Update group name**: The name of the update group where you can install or update the software on the devices in that fabric
  - **About <time> minutes**: Next to the *Update group name*, the approximate time needed for the update is listed. This appears only after **Prepare**.
  - **Prepare**: To prepare a software update that can be used at the update group level
  - **Install update**: To initiate software update installation
  - **Update status**: The status of the update. This can be **No status**, **Update complete**, or **Update failed**.
  - **Devices**: Shows the number of devices in this update group.
  - **Update Type**: Shows the nature of the update. This can be either **Disruptive** or **Non-disruptive**.
  - **Analysis**: Shows if any warnings are triggered prior to the update. Click **View pre-update report** or **View post-update report** for detailed information.
  - **Install start time**: Shows the time when the update installation starts.
  - **Install end time**: Shows the time when the update installation ends.
  - **Total time**: Shows the total time taken for the update installation.
- **Devices**: This displays the devices in a fabric-level update group. You can **Prepare update group**, **Install update group**, **Modify groups**, or **Resync** the software on the selected device(s). Use the gear icon to customize the columns displayed in the table.

Field	Description
Device name	Specifies the name of the device.
Fabric name	Specifies the fabric that the device resides in.
Recommended version	Specifies the Cisco recommended version of NX-OS images for the specific Cisco switch.
Latest version in train	Specifies the most recent NX-OS image version for the specific Cisco switches on the corresponding release train.
Current version	Specifies the NX-OS or IOS-XE image version currently running on the corresponding Cisco switch.
Latest version	Specifies the highest numbered NX-OS image version for the specific Cisco switch on the corresponding release train.
Version status	Specifies the software status on the device. The available options listed in descending order of priority are: · **Recommended version** · **Latest version** · **Latest version in train** · **Other**  The version status column displays **None** for the non-n9k devices.
IP address	Specifies the IP address of the device.
Update Type	Shows the nature of update. This can be either **Disruptive** or **Non-disruptive**.
Status	Specifies the configuration status. These include: · **Success** · **Failed** · **Stage success** · **Stage failed** · **In progress** · **Validate success** · **Validate failed**
System mode	Specifies the mode of the switch at a given instant. These include: · Normal · Maintenance · Inconsistent (either intended normal but discovered maintenance or intended maintenance but discovered normal). Inconsistent states can appear transiently during transition or as a result of a failure.
Role	Specifies the role for the switch.

Analysis	Provides an analysis of the update if the pre or post-update report are generated.
Model	Specifies the switch model.
Update group	Specifies the name of the upgrade group.
Logs	Provides a link to **View logs**.
VPC Role	Specifies the VPC role, if applicable (Primary or Secondary).
VPC Peer	Specifies which switch is the VPC peer with this switch, if applicable.

- **History**: This displays the history of all the operations performed on the switches.

Field	Description
ID	Specifies the ID number.
Device Name	Specifies the device name.
Version	Specifies the version of the image on the device.
Status	Displays if the operation was a success or failure.
Operation Type	Specifies the type of operation performed.
Fabric Name	Specifies the name of the Fabric.
Created By	Specifies the user name who performed the operation.
Timestamp	Specifies the time when the operation was performed.

Terminology

This describes the terms that you must be familiar with:

Term	Acronym	Description
Electronic Programmable Logic Device	EPLD	The EPLD image upgrades to enhance hardware functionality or to resolve known issues.
In-Service Software Upgrade	ISSU	ISSU allows you to upgrade the software version of the release on a chassis device with no network downtime.
Local Area Network	LAN	LAN consists of a series of computers linked together to form a network in a circumscribed location.
Network Operating System	NOS	A specialized operating system designed for a network device such as a router, switch or firewall. Some examples include NX-OS for Nexus switches, IOS XE for Cisco Catalyst switches and so on.
Rendezvous Points	RP	RP is a router that acts as the place where sources and receivers of multicast data can find each other.
Route Reflector	RR	Route Reflector is a router that acts as a routing information exchange server for all other iBGP routers.
Storage Area Network	SAN	SAN refers to the Storage Area Network management and analytics capabilities provided by the SAN Controller persona in Nexus Dashboard. This includes comprehensive management, monitoring, and visualization of SAN fabrics, typically composed of Cisco MDS switches supporting Fibre Channel SAN traffic.
Secure Copy	SCP	SCP is used by fabric software to transfer files between devices.
Secure File Transfer Protocol	SFTP	SFTP is a network protocol that allows you to securely access, transfer, and manage large files and sensitive data.

Required software versions

For Cisco Nexus Dashboard services compatibility information, see the Cisco Data Center Networking Applications Compatibility Matrix.

Prerequisites

This section describes the prerequisites. This document assumes that the reader has a fundamental knowledge of Nexus Dashboard.

- For remote image upload, you can import an image from an SCP or SFTP server.
- To upload images from a remote location, specify the storage location or path in the **System Settings** page to configure remote storage settings.
- Ensure that your user role is super-admin or fabric-admin.
- Ensure that there is a fabric, its **Deployment Enabled** flag is set, and the switches are managed by the Nexus Dashboard in this fabric.
- Ensure you have per-user device credentials set.

Guidelines and limitations

This section describes the guidelines and limitations.

- Update group name character limit: The Nexus Dashboard UI limits update group names to 128 characters. Although the attachGroup API allows names to exceed this limit to maintain backward compatibility for existing groups, you must shorten names to 128 characters or fewer to edit them in the UI.
- Nexus Dashboard has these limitations for image management images stored under **Manage > Fabric Software > Images**, as described in Upload the image to Nexus Dashboard:
  - 12 GB limitation for virtual Nexus Dashboards (vNDs), and physical Nexus Dashboards (pNDs) other than the ND-NODE-G5L (UCS-C225-M8)
  - 36 GB limitation for the ND-NODE-G5L (UCS-C225-M8)

If you reach the space limit for images in Nexus Dashboard, navigate to **Manage > Fabric Software > Images**, choose the images that are no longer needed and click **Actions > Delete**.

- Nexus Dashboard supports software updates on Cisco Catalyst devices in install mode only not in bundle mode.
- There is a known issue where Nexus Dashboard is not able to stage or copy an IOS-XE image to Catalyst 9000 switches running IOS-XE 17.12.2 or later, where the image upgrade fails at the SCP image copy point of the process with this error:

  ```
  Error opening scp://<ND-IP-address>/scp_data/<bin> (Undefined error)
  ```

  This issue occurs because IOS-XE 17.10.x and later enables ETM (Encrypt-then-MAC) SSH algorithms only by default, whereas the Nexus Dashboard SCP client will attempt the upgrade using non-ETM MAC algorithms, leading to a no matching mac found failure.

  The workaround for this issue is to push the following configuration to the switch using the freeform configuration in Nexus Dashboard:

  ```
  ip ssh client algorithm mac hmac-sha2-256 hmac-sha2-256-etm@openssh.com hmac-sha2-512 hmac-sha2-512-etm@openssh.com
  ```

  For more information on freeform configurations, see "Deploy freeform CLIs on a specific switch" in Configuring Switches for LAN and IPFM Fabrics

Upgrade or downgrade switches in a fabric under Overview tab

You can perform switch upgrades or downgrades at the fabric level.

This feature applies only to LAN and IPFM fabrics.

Prepare a fabric software update

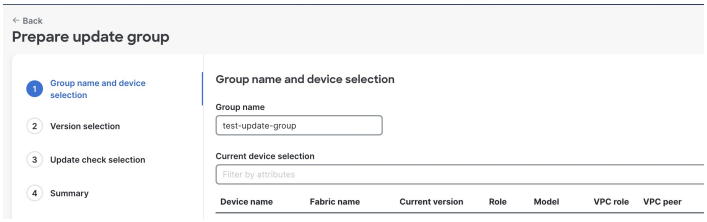
This section describes how to prepare a software update that can be used at the fabric level.

1. Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics.
2. In the **Fabric Software** page, click the **Update groups** tab.

   See Understand Fabric Software for NX-OS and IOS-XE fabrics for more information on the **Overview** tab and the other tabs in the **Fabric Software** page.

3. In the list of fabric-level update groups shown here, locate the update group for which you want to prepare a software update.
4. Click **Prepare** for the selected update group.

   The **Prepare update group** wizard appears.



5. In the **Group name and device selection** area, make the appropriate configurations for this update group and click **Next**.

   a. Review the types of devices listed in the devices area.

      The list consists of device types that are detected in this fabric. Use this list to verify that the software update that you select in the next step aligns with the type of devices that you have in this fabric.

      VPC peers are allowed in the same group. However, if both the VPC peers are part of an update, then a Warning message is displayed. This is applicable to both prepare & install flows.

   For example, if you see CAT8K,N9K listed in the **Devices** area, when you select the version in the next step, verify that the image you select aligns with either Catalyst 8000 or Nexus 9000 series switches.

6. In the **Version selection** area, choose between **Non-disruptive** or **Disruptive** and **Select from uploaded images**.

You can also choose to upload an image at this stage instead of using a previously uploaded image.

If the device is N9k, then **Advanced options** such as **Select an EPLD** and **Select RPM(s)** are enabled. **Advanced options** are not available for Cat8k devices.

If you choose the **Non-disruptive** update type, then **Advanced options > Select an EPLD** is disabled.

7. In the **Update check selection** area, choose the **Type of report** from **No report**, **Basic** or **Custom report**. However, if the device is Cat8k, **No report** is listed. NOTE: If **No report** is selected, then the **Use existing pre report** option is disabled during the Install flow. All other report options continue to be available for selection during the install flow. .

8. Review the configured details in the **Summary** area and click **Stage and validate**.

   The **Preparing update group** message is displayed with a progress bar.

   If you do not navigate away from this page, you can proceed to **Install update** once software preparation is completed. Also, the **View pre-update report** link is displayed during software preparation.

   Alternatively, you can click **Close** to exit this wizard since software preparation for the update group continues to run in the background.

Create a report

As you go through the procedures in Prepare a fabric software update or [Install or upgrade software on devices in a fabric], you can create a basic or custom report with required checks.

The basic report contains fundamental checks to ensure switches meet the minimum requirements for a software update.

The basic checks are listed below:

- **Diag_module**: Executes the show diagnostic result module <module-number> command for each installed module. It then parses the detailed test results for each diagnostic test and confirms that all tests show a **Pass** status, which is indicated by a P in the output.
- **All filesystem free space**: Executes show system internal flash command to retrieve detailed information about all storage partitions, analyzes every active filesystem (such as bootflash, logflash, etc.), calculates the usage percentage for each filesystem, and verifies that no filesystem exceeds the 85% usage threshold. This value is configurable. It excludes the read-only filesystems (ending with _ro).
- **General log messages**: Executes the show logging logfile start-time <date> command to retrieve log entries from the past 30 days. It filters log messages with severity levels 1, 2, and 3. are found.
- **Management console**: Executes the show line console command and examines the *Register Bits* section in the output to verify if these three critical control signals are active:
  - Request To send (RTS): Indicates the device is ready to send data.
  - Data terminal ready (DTR): Indicates the terminal is connected and ready.

    - Data set ready(DSR): Indicates the serial device is powered on and ready.
- **vPC state**
- **BGP state**
- **Module status**
- **Modules health and backup power**
- **Interface status**
- **vPC sticky bit**
- **NVRAM log messages**
- **vPC secondary role**
- **OSPF state**

The custom report allows you to turn checks on or off or even add your own command-line checks to build a report tailored to your needs.

In addition to the basic checks listed above, other checks available for a custom report include: * BGP stability * HSRP mgo state active * Modules health and backup power * OSPF stability * HSRP mgo state standby

Data is available for telemetry-enabled fabrics.

For the pre-report, this includes: * Forecasted cleared anomalies and advisories * Potentially affected endpoints

For the post-report, this includes: * Cleared anomalies and advisories * 13 delta tables that include endpoints, protocol, interface, and hardware-related details similar to telemetry reports in Nexus Dashboard 4.1.1.

Change number of concurrent switches for staging/validating/updating

As you go through the procedures in [Install or upgrade software on devices in a fabric], there are points during the staging/validating or updating processes where you might be taking actions on a group of switches concurrently. Following are the default values for the number of switches that are grouped together when you are taking an action on a group of switches concurrently:

- Staging/validating: Default number of switches is 10
- Updating: Default number of switches is 20

Follow these procedures if you want to change these default values.

1. Navigate to **Admin > System Settings > Fabric management**.
2. In the **Advanced Settings** area, click the **Admin** tab.
3. Modify the values in the following fields, if necessary:
    - **Image update thread pool size**: The number of switches that can be updated concurrently.

      Default value is 20. Valid range is 10-200.

- **Image stage/validate thread pool size**: The number of switches that can be staged and validated concurrently.

  Default value is 10. Valid range is 5-200.

4. Click **Save** when you have completed any configuration changes on this page.

Install or update software on devices in a fabric

This section describes how to install or update software on the devices in a fabric through update groups.

1. Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics.
2. In **Fabric Software**, click the **Update groups** tab.

   You can also select **Prepare** from the **Devices** tab.

3. In the list of fabric-level update groups shown here, locate the update group for which you want to install a software update.
4. In the update group area corresponding to the desired fabric, click **Install update**.

   The **Install update group** wizard is displayed.

5. In the **Group name and device selection** area, verify the devices for this update group and click **Next**.
   a. Review the types of devices listed in the devices area.

      The list consists of device types that are detected in this fabric. Use this list to verify that the software update that you select in the next step aligns with the type of devices that you have in this fabric.

      VPC peers are allowed in the same group. However, if both the VPC peers are part of an update, then a Warning message is displayed. This is applicable to both prepare & install flows.

6. In the **Update options** area, verify the configurations and click **Next**.
   a. Select the type of update by choosing between **Non-disruptive** or **Disruptive**.

      For Catalyst devices, only **Disruptive** update is supported.

   b. Choose between **Disruptive** or **Non-Disruptive**.

      If you choose **Non-Disruptive**, then the **Use Maintenance Mode** checkbox will be cleared. Refer to [Understanding In-Service Software Upgrades] for more information about this option.

   c. If the device is N9k, you can choose between **Yes** or **No** to isolate the switches prior to update using maintenance mode. For Cat8k devices, this option is set to No.

      Maintenance mode along with normal mode is part of Graceful Insertion and Removal (GIR).

When the **Maintenance Mode** option is enabled, Nexus Dashboard places the switches in the update group. This occurs during the update process in the maintenance mode, where all configured Layer 3 control-plane protocols are isolated from the network. The switches return to normal mode after the update process is completed. Refer to [Configuring Graceful Insertion and Removal] for more information on GIR.

d. Choose between **Serial** or **Parallel** for the **Execution Paradigm**.

In the **Execution Paradigm** field, choose between **Serial** or **Parallel** execution:

- **Serial**: Switches are updated one at a time, serially, where the update process must fully complete on one switch before it begins on the next switch in the update group.
- **Parallel**: Switches are updated all at one time, depending on the number of switches that can be updated concurrently. For example, if you have 40 switches in the update group but 20 switches are updated at a time concurrently, then a **Parallel** setting results in the first set of 20 switches going through the update process, simultaneously, and then the second set of 20 switches going through the same concurrent update process after the update process has completed for the first set.

e. Verify the devices listed under Current device selection.

f. For **Error handling**, choose between **Pause** or **Continue** from the **On failure** drop-down menu.

In the **Error handling/On failure** field, determine if the installation needs to **Continue** or **Pause** if a failure occurs during the update.

A failure might occur for various reasons, such as a switch failing to come back online or a failure to successfully establish an *ssh session* between Nexus Dashboard and the switch.

The actions taken with this setting may also be affected by settings in other areas.

For example, if the **Error handling/On failure** field is set to **Pause** and the **Execution Paradigm** field is set to **Serial**. If a set of 20 switches in an update group are undergoing a serial update but an issue arises with the sixth switch in the set. Then, the update pauses at the update process for the sixth switch. This pauses proceed the update process for the remaining 14 switches in the set until the update process is manually initiated.

However, if the **Execution Paradigm** field is set to **Parallel** and there is an issue with the sixth switch in a set in the update group. Then, the update process continues for the other 14 switches in the set that are being updated concurrently. In this scenario, the update process pauses before moving to the update process for the next set of switches in the update group.

7. In the Update check selection area, choose the Type of report from **No report**, **Basic** or **Custom report**. However, if the device is Cat8k, **No report** is the only option available.



If the **No report** option is selected during the **Prepare Update** flow, then you can select all other report options except the **Use existing pre report** option which gets disabled.

8. Review the configured details in the **Summary** area and click **Install update**.

The **Installing update group** message is displayed with a progress bar. The software preparation

for the update group continues to run in the background. Click **Close** to exit this wizard.

Also, the **View the post-update** report link is displayed during software preparation.

Update or downgrade switches

This section describes both the disruptive and non-disruptive method of upgrading or downgrading a group of switches.

During disruptive update, the switches go down temporarily. This results in a disruption in your fabric traffic.

During non-disruptive update, the switches run without disruption in your fabric traffic.

Guidelines and limitations: Disruptive update

- If you are downgrading a group of switches, the process is identical to the process for updating a group of switches, except that the target image that you choose will be earlier than the currently installed image. The text for dialogs, fields, buttons, and other controls in the UI specify “upgrade” even though you are downgrading the software.

  EPLD downgrades are not supported and EPLD upgrades are always disruptive.

- For switches running on NX-OS 9.3(11), there is an issue when upgrading the EPLD along with NX-OS using the install all option. This is not an issue with switches running on a release after NX-OS 9.3(11).

  To resolve this issue, follow these steps for an upgrade in this situation:

  1. Install the NX-OS image from 9.3(11) to the destination version.
  2. After the NX-OS upgrade, install the EPLD image.

Guidelines and limitations: Non-disruptive upgrade

- **Non-Disruptive** update is not supported on Catalyst devices.
- An EPLD upgrade using the install all command when upgrading switches using the non-disruptive option is not supported on these switch platforms on the NX-OS 10.5.3 version for the bundled image:
  - N9K-C93180YC-FX
  - N9K-C93108TC-FX
  - N9K-C9348GC-FXP
  - N9K-C93240YC-FX2
  - N9K-C9336C-FX2
  - N9K-C9364C
  - N9K-C9332C
  - N9K-C9232C

- N9K-SUP-A+
- N9K-SUP-B+
- N3K-C36180YC-R
- N3K-C3636C-R
- N9K-SUP-A
- N9K-SUP-B

In these cases, use the install epld command separately to update the EPLD.

Download an image from the Software Download website

This section describes how to download an image from the software download website.

1. Go to the Software Download Website.
2. Log in with your credentials.

   You need to be logged in to download the software.

3. Navigate to **Switches**, choose a series and a switch.
4. Choose a software type:
   - For Nexus switches:
     - NX-OS EPLD Updates
     - NX-OS Firmware
     - NX-OS Patch Release
     - NX-OS Software Maintenance Upgrades (SMU)
     - NX-OS System Software
   - For Cisco Catalyst switches: IOS XE Software

     For Cisco Catalyst switches, Nexus Dashboard provides support for software upgrade using CAT9K and CAT9K_LITE image types.
5. Choose the software file you want to download and click the download icon.

Upload the image to Nexus Dashboard

This section describes how to upload the image.

- In some cases, you can download an SMU image from the Software Download website wherein multiple RPMs are bundled together as a .tar file, and Nexus Dashboard allows you to upload this type of bundled .tar file to Nexus Dashboard. However, Nexus Dashboard normally does not allow you to upload any other type of bundled .tar file, so if you try to upload a bundled .tar file and you see an error message, use a .zip format instead for the bundle.
- If you are about to upload a compacted NX-OS image to the Nexus Dashboard

image repository and another NX-OS image with the same name is currently in the repository, you might overwrite the existing (older) NX-OS image with the newer NX-OS image that you are about to upload. You can avoid overwriting the existing image using the following method:

1. Upgrade the switches that can use normal NX-OS image first.
2. Delete the normal NX-OS image from the Nexus Dashboard repository using the Image Upload screen.
3. Upload the compact image and upgrade the other set of switches.

- Nexus Dashboard has these limitations for image management images stored under **Images**:
  - 12 GB limitation for virtual Nexus Dashboards (vNDs), and physical Nexus Dashboards (pNDs) other than the ND-NODE-G5L (UCS-C225-M8)
  - 36 GB limitation for the ND-NODE-G5L (UCS-C225-M8)
- You can upload up to three images simultaneously.

1. Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics.
2. In the **Fabric Software** page, choose **Images**.
3. From the **Actions** drop-down list, select **Upload**.
4. In the **Upload Image** dialog box, either upload the file from a local device or import it from SCP or SFTP.



   - For **Import from SCP/SFTP**, choose pre-defined remote servers from the **Remote server name** drop-down list.
   - Uploading an image to SCP or SFTP server from a non-Unix based device is not supported.

5. Click **Verify**.

   Now, the uploaded image is validated, downloaded and copied, and then verified.

Attach or detach update groups to the switches

This section describes how to attach or detach switches to or from an update group. Grouping allows you to track upgrades for a set of switches. You can create several groups and select a switch regardless of the group, role, or type of switch.

We recommend that you create update groups based on the roles of the switches. For example, if a fabric has multiple switches with different roles, such as Leaf, Spine, Border, and more, creating groups based on different roles is recommended. This clearly separates roles and responsibilities during switch image management operations. Switches with different roles perform critical functionality and respond differently based on the control plane, data plane, and system-level convergence.

A user with admin role can create multiple groups as listed:

- Group-Leaf-Even for Leaf switches that have even numbers or VPC role of primary

- Group-Leaf-Odd for Leaf switches that have odd numbers or VPC role of secondary

You can automatically assign groups based on these criteria:

- Role-based: All switches of a given role for a fabric in the same group
- Even-odd: Switches that are grouped in odd or even groups:
  - Switches that have even numbers or vPC role of primary
  - Switches that have odd numbers or vPC role of secondary

Update groups have checks to avoid unnecessary downtime in redundant fabrics in these cases:

- Switches belonging to different fabrics are not allowed to form an update group.
- Virtual Port Channel (vPC) peers are placed in different groups by defaul

Typically, Spine and Border devices are limited to fabric, while the role of the Leaf is the most common one. Therefore, users with the admin role can upgrade individual Spines followed by Individual Borders, or create different groups for Spines and Borders. Users with the admin role can still leverage groups to divide the Leaf role switches and perform bulk actions.

1. Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics.
2. In the **Fabric Software** page, choose **Devices**.
3. In the **Devices** page, place a checkmark in the checkbox for the devices you want to group.
4. From the **Actions** drop-down list, select **Modify groups**.
5. In the **Modify groups** dialog box, click the radio button to either **Attach Group** or **Detach Group**.
   - Select **Attach Group** and choose **Create Group** to create a new group or select an existing group from the **Group** drop-down list.
     - To create a group, enter a group name in the **Modify groups** dialog box.
     - Click **Save**.
   - Select **Detach Group** and click **Detach** to detach the devices from a group. This deletes the **Update group**, if it is not assigned to any switches.



Update group name character limit: Limit update group names to 128 characters. Although the API allows longer names for backward compatibility, the Nexus Dashboard UI prevents you from saving names that exceed this limit.

Auto-generate update groups

This section describes how to auto-generate update groups from the **Update groups** tab. Devices that are not associated with any update group are listed under **None**.

For a given fabric, you can create update groups either based on role or odd-even grouping. Creating update groups based on the roles, such as Leaf, Spine, Border, and more, clearly separates roles and responsibilities during switch image management operations. Switches with different roles perform critical functionality and respond differently based on the control plane, data plane, and system-level convergence.

For the odd-even auto-grouping mechanism, devices within each role are assigned to the odd or

even group alternately. This ensures that route reflectors and rendezvous are not placed in the same group thereby enabling redundancy.



All vPC primary devices are placed in even groups while all vPC secondary are placed in odd groups.

1. Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics.
2. In the **Fabric Software** page, choose **Update Groups**.
3. From the **Actions** drop-down list, select **Auto-generate groups**.
4. In the **Auto-generate update groups** dialog box, choose the **Fabric** and **Type**.
   - For **Type**, choose between **Role-based** or **Even odd**.
5. Click **Save**.

Change mode for a switch

This section describes how to change mode for a switch.

1. Navigate to the Fabric Software page for NX-OS and IOS-XE fabrics.
2. In the **Fabric Software** page, choose **Devices**.
3. In the **Devices** page, place a checkmark in the checkbox for the device you want.
4. From the **Actions** drop-down list, select **Change Mode**.
5. In the **Change Mode** dialog box, choose either **Normal** or **Maintenance** mode.
6. Click **Deploy Now** or **Deploy Later**.

Understand Fabric Software for ACI fabrics

This section provides detailed information for the Fabric Software feature in Nexus Dashboard for ACI fabrics.

Navigate to the Fabric Software page for ACI fabrics

To navigate to the Fabric Software page:

1. Click **Manage > Fabric Software**.
2. Click the **ACI** tab.
    - Cisco's recommended versions: The software versions that Cisco recommends. These are the latest versions available for upgrade or for running an analysis.
    - Current version: This is the software version that the fabric is currently running.
    - Recommended: Displays the recommended software version to upgrade to. This version is determined based on the current version the fabric is running on.

      For example, if the fabric is currently on version 6.0(3d), then the **Recommended version** indicates 6.0(3d). However, if the **Current version** is newer than the recommended versions, then this field will be blank.

NOTE:

- **Delta analysis** is no longer a part of the post-upgrade assist workflow. In **Delta analysis**, you can only run an analysis per fabric unlike **Upgrade assist**, where you can choose a subset of devices to analyse.
- When you initially run an analysis, you can **Rerun the report** from the **Pre-update analysis** drawer to collect fresh data. Once your devices are upgraded, you can run a post-upgrade analysis. However, this disables the **Rerun the report** button in the pre-update analysis drawer.

Understand the information provided in the Fabric Software page for ACI fabrics

1. Connect to Intersight if you are not connected already.

   Hover over the link icon in the Sofware Versions area to see if you are connected to Intersight. Intersight connectivity is required for Nexus Dashboard to automatically check for recommended software versions for the ACI fabrics. See Working with Intersight for more information.

2. Review the information in the **Software Versions** area.

   The **Software Versions** area provides information on recommended software releases for your ACI fabrics and links to the Release Notes for those software releases.

Copyright

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

The documentation set for this product strives to use bias-free language. For the purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: https://www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

© 2017-2026 Cisco Systems, Inc. All rights reserved.

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706

USA
https://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883