



Upgrade Center

SANtricity 11.6

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Upgrade Center

Concepts

How upgrades work

You can use SANtricity Unified Manager to upgrade the SANtricity OS software on multiple storage arrays of the same type to a newer version.

Upgrade workflow

The following steps provide a high-level workflow for performing software upgrades:

1. You download the latest SANtricity OS software file from the Support site (a link is available from Unified Manager in the **Support** page). Save the file on the management host system (the host where you access Unified Manager in a browser), and then unzip the file.
2. In Unified Manager, you load the SANtricity OS software file and the NVSRAM file into the repository (an area of the Web Services Proxy server where files are stored). You can add files either from **Upgrade Center > Upgrade SANtricity OS Software** or from **Upgrade Center > Manage Software Repository**.
3. After the files are loaded in the repository, you can then select the file to be used in the upgrade. From the Upgrade SANtricity OS software page (**Upgrade Center > Upgrade SANtricity OS software**), you select the SANtricity OS software file and the NVSRAM file. After you select a software file, a list of compatible storage arrays appear on this page. You then select the storage arrays that you want to upgrade with the new software. (You cannot select incompatible arrays.)
4. You can then begin an immediate software transfer and activation, or you can choose to stage the files for activation at a later time. During the upgrade process, Unified Manager performs the following tasks:
 - a. Performs a health check on the storage arrays to determine if any conditions exist that might prevent the upgrade from completing. If any arrays fail the health check, you can skip that particular array and continue the upgrade for the others, or you can stop the entire process and troubleshoot the arrays that did not pass.
 - b. Transfers the upgrade files to each controller.
 - c. Reboots the controllers and activates the new SANtricity OS software, one controller at a time. During activation, the existing SANtricity OS file is replaced with the new file.



You can also specify that the software is activated at a later time.

Immediate or staged upgrade

You can activate the upgrade immediately or stage it for a later time. You might choose to activate later for these reasons:

- **Time of day** — Activating the software can take a long time, so you might want to wait until I/O loads are lighter. Depending on the IO load and cache size, a controller upgrade can typically take between 15 to 25 minutes to complete. The controllers reboot and fail over during activation so performance might be lower than usual until the upgrade completes.
- **Type of package** — You might want to test the new software and firmware on one storage array before upgrading the files on other storage arrays.

To activate staged software, go to **Support > Upgrade Center** and click **Activate** in the area labeled SANtricity OS Controller Software upgrade.

Health check

A health check runs as part of the upgrade process, but you can also run a health check separately before you begin (go to **Upgrade Center > Pre-Upgrade Health Check**).

The health check assesses all storage system components to make sure that the upgrade can proceed. The following conditions might prevent the upgrade:

- Failed assigned drives
- Hot spares in use
- Incomplete volume groups
- Exclusive operations running
- Missing volumes
- Controller in Non-optimal status
- Excess number of event log events
- Configuration database validation failure
- Drives with old versions of DACstore

Upgrade considerations

Before you use SANtricity Unified Manager to upgrade multiple storage arrays, review the key considerations as part of your planning.

Current versions

You can view the current SANtricity OS software versions from the Manage page of Unified Manager for each discovered storage array. The version is shown in the SANtricity OS Software column. The controller firmware and NVSRAM information is available in a pop-up dialog box when you click on the SANtricity OS version in each row.

Other components requiring upgrade

As part of the upgrade process, you might also need to upgrade the host's multipath/failover driver or the HBA driver so that the host can interact with the controllers correctly.

For compatibility information, refer to the [NetApp Interoperability Matrix](#). Also, see the procedures in the Express Guides for your operating system. Express Guides are available from the [E-Series Documentation Center](#).

Dual controllers

If a storage array contains two controllers and you have a multipath driver installed, the storage array can continue to process I/O while the upgrade occurs. During the upgrade, the following process occurs:

1. Controller A fails over all its LUNs to controller B.
2. Upgrade occurs on controller A.

3. Controller A takes back its LUNs and all of controller B's LUNs.
4. Upgrade occurs on controller B.

After the upgrade completes, you might need to manually redistribute volumes between the controllers to ensure volumes return to the correct owning controller.

How tos

Perform pre-upgrade health check

A health check runs as part of the upgrade process, but you also can run a health check separately before you begin. The health check assesses components of the storage array to make sure that the upgrade can proceed.

Steps

1. From the main view, select **Manage**, and then select **Upgrade Center** > **Pre-Upgrade Health Check**.

The Pre-Upgrade Health Check dialog box opens and lists all the discovered storage systems.

2. If needed, filter or sort the storage systems in the list, so you can view all systems that are not currently in the Optimal state.
3. Select the check boxes for the storage systems that you want to run through the health check.
4. Click **Start**.

The progress is shown in the dialog box while the health check is performed.

5. When the health check completes, you can click on the ellipses (...) to the right of each row to view more information and perform other tasks.



If any arrays fail the health check, you can skip that particular array and continue the upgrade for the others, or you can stop the entire process and troubleshoot the arrays that did not pass.

Upgrade SANtricity OS

Upgrade one or more storage arrays with the latest software and NVSRAM to make sure that you have all the latest features and bug fixes. Controller NVSRAM is a controller file that specifies the default settings for the controllers.

Before you begin

- The latest SANtricity OS files are available on the host system where the SANtricity Web Services Proxy and Unified Manager are running.
- You know whether you want to activate your software upgrade now or later.

You might choose to activate later for these reasons:

- **Time of day** — Activating the software can take a long time, so you might want to wait until I/O loads are lighter. The controllers fail over during activation, so performance might be lower than usual until the upgrade completes.
- **Type of package** — You might want to test the new OS software on one storage array before you

upgrade the files on other storage arrays.



Risk of data loss or risk of damage to the storage array — Do not make changes to the storage array while the upgrade is occurring. Maintain power to the storage array.

Steps

1. If your storage array contains only one controller or you do not have a multipath driver installed, stop I/O activity to the storage array to prevent application errors. If your storage array has two controllers and you have a multipath driver installed, you do not need to stop I/O activity.
2. From the main view, select **Manage**, and then select one or more storage arrays that you want to upgrade.
3. Select **Upgrade Center > Upgrade SANtricity OS Software**.

The Upgrade SANtricity OS software page appears.

4. Download the latest SANtricity OS software package from the Support site to your local machine.
 - a. Click **Add new file to software repository**.
 - b. Click the link for finding the latest **SANtricity OS Downloads**.
 - c. Click the **Download Latest Release** link.
 - d. Follow the remaining instructions to download the SANtricity OS file and the NVSRAM file to your local machine.



Digitally signed firmware is required in version 8.42 and above. If you attempt to download unsigned firmware, an error is displayed and the download is aborted.

5. Select the OS software file and the NVSRAM file that you want to use to upgrade the controllers:
 - a. From the **Select a SANtricity OS software file** drop-down, select the OS file that you downloaded to your local machine.

If there are multiple files available, the files are sorted from newest date to oldest date.



The software repository lists all software files associated with the Web Services Proxy. If you do not see the file that you want to use, you can click the link, **Add new file to software repository**, to browse to the location where the OS file that you want to add resides.

- b. From the **Select an NVSRAM file** drop-down, select the controller file that you want to use.

If there are multiple files, the files are sorted from newest date to oldest date.

6. In the Compatible Storage Array table, review the storage arrays that are compatible with the OS software file that you selected, and then select the arrays you want to upgrade.
 - The storage arrays that you selected in the Manage view and that are compatible with the selected firmware file are selected by default in the Compatible Storage Array table.
 - The storage arrays that cannot be updated with the selected firmware file are not selectable in the Compatible Storage Array table as indicated by the status **Incompatible**.
7. **Optional:** To transfer the software file to the storage arrays without activating them, select the **Transfer the OS software to the storage arrays, mark it as staged, and activate at a later time** check box.
8. Click **Start**.

9. Depending on whether you chose to activate now or later, do one of the following:

- Type **TRANSFER** to confirm that you want to transfer the proposed OS software versions on the arrays you selected to upgrade, and then click **Transfer**.

To activate the transferred software, select **Upgrade Center > Activate Staged OS Software**.

- Type **UPGRADE** to confirm that you want to transfer and activate the proposed OS software versions on the arrays you selected to upgrade, and then click **Upgrade**.

The system transfers the software file to each storage array you selected to upgrade and then activates that file by initiating a reboot.

The following actions occur during the upgrade operation:

- A pre-upgrade health check runs as part of the upgrade process. The pre-upgrade health check assesses all storage array components to make sure that the upgrade can proceed.
- If any health check fails for a storage array, the upgrade stops. You can click the ellipsis (...) and select **Save Log** to review the errors. You can also choose to override the health check error and then click **Continue** to proceed with the upgrade.
- You can cancel the upgrade operation after the pre-upgrade health check.

10. **Optional:** Once the upgrade has completed, you can see a list of what was upgraded for a specific storage array by clicking the ellipsis (...) and then selecting **Save Log**.

The file is saved in the Downloads folder for your browser with the name `upgrade_log-<date>.json`.

Activate staged OS software

You can choose to activate the software file immediately or wait until a more convenient time. This procedure assumes you chose to activate the software file at a later time.

About this task

You can transfer the firmware files without activating them. You might choose to activate later for these reasons:

- **Time of day** — Activating the software can take a long time, so you might want to wait until I/O loads are lighter. The controllers reboot and fail over during activation so performance might be lower than usual until the upgrade completes.
- **Type of package** — You might want to test the new software and firmware on one storage array before upgrading the files on other storage arrays.



You cannot stop the activation process after it starts.

Steps

1. From the main view, select **Manage**. If necessary, click the Status column to sort, at the top of the page, all storage arrays with a status of "OS Upgrade (awaiting activation)."
2. Select one or more storage arrays that you want to activate software for, and then select **Upgrade Center > Activate Staged OS Software**.

The following actions occur during the upgrade operation:

- A pre-upgrade health check runs as part of the activate process. The pre-upgrade health check assesses all storage array components to make sure that the activation can proceed.
 - If any health check fails for a storage array, the activation stops. You can click the ellipsis (...) and select **Save Log** to review the errors. You can also choose to override the health check error and then click **Continue** to proceed with the activation.
 - You can cancel the activate operation after the pre-upgrade health check. On successful completion of the pre-upgrade health check, activation occurs. The time it takes to activate depends on your storage array configuration and the components that you are activating.
3. **Optional:** After the activation is complete, you can see a list of what was activated for a specific storage array by clicking the ellipsis (...) and then selecting **Save Log**.

The file is saved in the Downloads folder for your browser with the name `activate_log-<date>.json`.

Manage software repository

The software repository lists all software files associated with the Web Services Proxy. If you do not see the file that you want to use, you can use the Manage Software Repository option to import one or more SANtricity OS files to the host system where the Web Services Proxy and Unified Manager are running. You can also choose to delete one or more SANtricity OS files that are available in the software repository.

Before you begin

- If you are adding SANtricity OS files, make sure that the OS files are available on your local system.

Steps

1. From the main view, select **Manage**, and then select **Upgrade Center > Manage Software Repository**.

The **Manage Software Repository** dialog appears.

2. Do one of the following actions:

Option	Do this....
Import	<ol style="list-style-type: none"> a. Click Import. b. Click Browse, and then navigate to the location where the OS files you want to add reside. OS files have a filename similar to <code>N2800-830000-000.dlp</code>. c. Select one or more OS files that you want to add, and then click Import.
Delete	<ol style="list-style-type: none"> a. Select one or more OS files that you want to remove from the software repository. b. Click Delete.

If you selected import, the file(s) are uploaded and validated. If you selected delete, the files are removed

from the software repository.

Clear staged OS software

You can remove staged OS software to ensure that a pending version is not inadvertently activated at a later time. Removing the staged OS software does not affect the current version that is running on the storage arrays.

Steps

1. From the main view, select **Manage**, and then select **Upgrade Center > Clear Staged OS Software**.

The Clear Staged OS Software dialog box opens and lists all the discovered storage systems with pending software or NVSRAM.

2. If needed, filter or sort the storage systems in the list, so you can view all systems that have staged software.
3. Select the check boxes for the storage systems with pending software that you want cleared.
4. Click **Clear**.

The status of the operation is shown in the dialog box.

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