Automated upgrades

ONTAP 9

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Automated upgrades

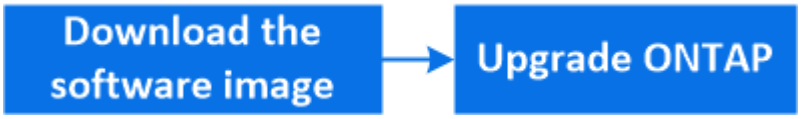
Automated nondisruptive ONTAP upgrade using System Manager

You can nondisruptively upgrade the version of ONTAP on your cluster using System Manager.

The upgrade process checks your hardware platform and configuration to verify that your system is supported by the ONTAP version to which you are upgrading. ONTAP automatically shifts workloads during an upgrade between clusters so you can continue serving data.

This procedure upgrades your system to the specified version of ONTAP. It is assumed that your hardware platform and configuration is supported for the target release.

Beginning with ONTAP 9.10.1, if you have a cluster with 8 or more nodes you can select to have them upgraded one HA pair at a time. This allows you, if needed, to correct upgrade issues on the first HA pair before moving to subsequent pairs.



If issues are encountered during your automated upgrade, you can view EMS messages and details in System Manager: Click **Events & Jobs** > **Events**.

Steps

1. If you want to download the software image to an HTTP or FTP server on your network, copy the software image from the NetApp support site to the directory on the HTTP or FTP server from which the image will be served.

   If you want to download the software image to a local folder, then click the software image on the NetApp support site, select **Save As**, and then choose the local folder to place the image.

2. Depending on the ONTAP version that you are running, perform one of the following steps:

ONTAP version	Steps
ONTAP 9.8 or later	Click **Cluster > Overview**.
ONTAP 9.5, 9.6, and 9.7	Click **Configuration** > **Cluster** > **Update**.
ONTAP 9.4 or earlier	Click **Configuration** > **Cluster Update**.

3. In the right corner of the Overview pane, click ⋮.
4. Click **ONTAP Update**.
5. In the Cluster Update tab, add a new image or select an available image.

If you want to…	Then…
Add a new software image from the local client **Note:** You should have already downloaded the image to the local client. Download the ONTAP software images	a. Under Available Software Images, click **Add from Local**. b. Browse to the location you saved the software image, select the image, and then click **Open**. The software image uploads after you click **Open**.
Add a new software image from the NetApp Support Site	a. Click **Add from Server**. b. In the Add a New Software Image dialog box, enter the URL of the HTTP server or FTP server on which you have saved the image that was downloaded from the NetApp Support Site. For anonymous FTP, you must specify the URL in the ftp://anonymous@ftpserver format. c. Click **Add**.
Select an available image	Choose one of the listed images.

6. Click **Validate** to run the pre-upgrade validation checks to verify whether the cluster is ready for an upgrade.

   The validation operation checks the cluster components to validate that the upgrade can be completed nondisruptively, and then displays any errors or warnings. It also displays any required remedial action that you must perform before updating the software.

   > You must perform all of the required remedial actions for the errors before proceeding with the upgrade. Although you can ignore the remedial actions for the warnings, the best practice is to perform all of the remedial actions before proceeding with the upgrade.

7. Click **Next**.
8. Click **Update**.

   Validation is performed again.

   - When the validation is complete, a table displays any errors and warnings, along with any required remedial actions to be taken before proceeding.
   - If the validation is completed with warnings, you can choose to select **Update with warnings**.

   > If you prefer to have your nodes upgraded one HA pair at a time instead of a batch upgrade of all the HA pairs in your cluster, select **Update one HA pair at a time**. This option is only available in ONTAP 9.10.1 or later for clusters of eight or more nodes.

When the validation is complete and the upgrade is in progress, the upgrade might be paused because of errors. You can click the error message to view the details, and then perform the remedial actions before

resuming the upgrade.

For any MetroCluster configuration, except a 2-node MetroCluster system, the ONTAP upgrade process starts simultaneously on the HA pairs at both sites (the local site and the disaster recovery site) after the user initiates and provides confirmation on the command line. For a 2-node MetroCluster system, the upgrade is started first on the disaster recovery site, that is, the site where the upgrade is not initiated. After the upgrade is fully completed on the disaster recovery site, the upgrade begins on the local site.

After the upgrade is completed successfully, the node reboots, and you are redirected to the System Manager login page. If the node takes a long time to reboot, you must refresh your browser.

Resuming an upgrade (using System Manager) after an error in the automated upgrade process

If an automated upgrade pauses because of an error, you can resolve the error and resume the automated upgrade, or you can cancel the automated upgrade and complete the process manually. If you choose to continue the automated upgrade, do not perform any of the upgrade steps manually.

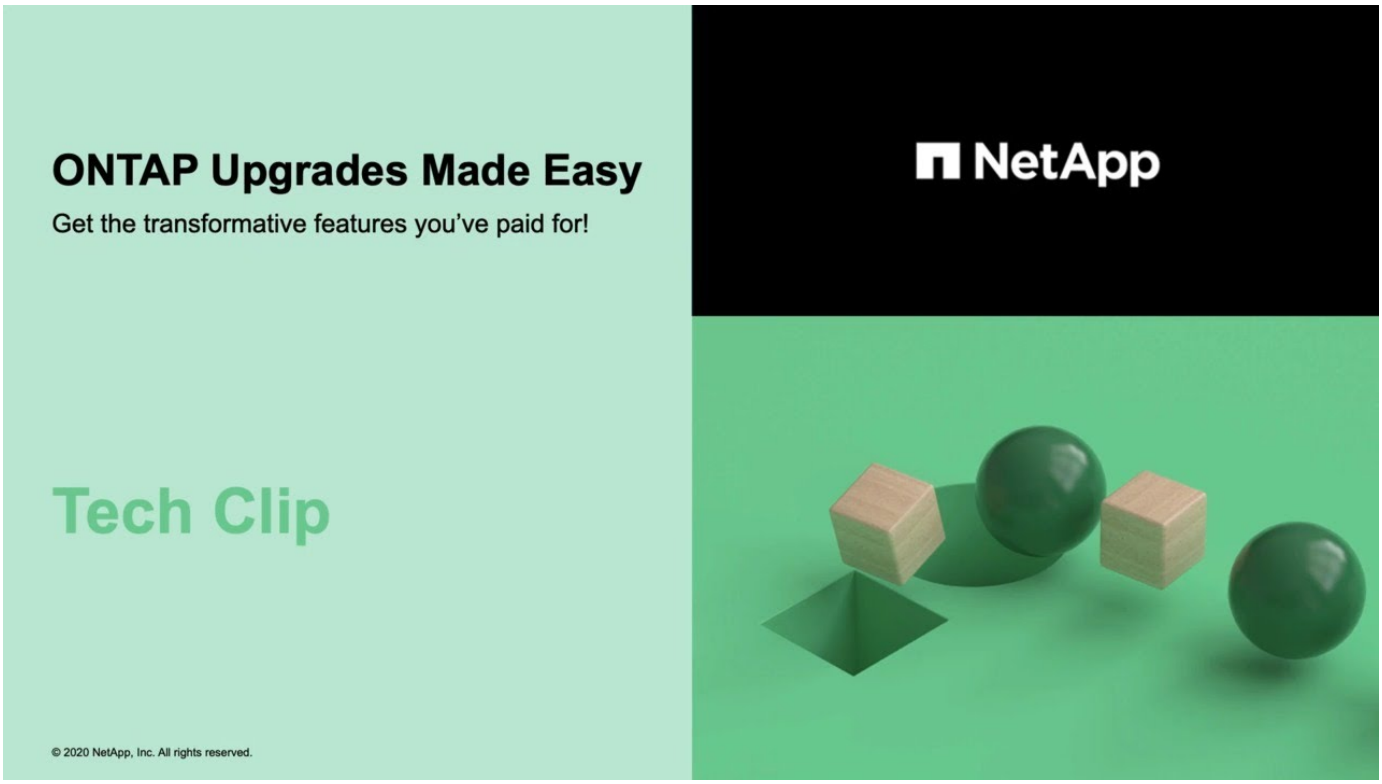
1. Depending on the ONTAP version that you are running, perform one of the following steps:
   - ONTAP 9.8 or later: Click **Cluster** > **Overview**
   - ONTAP 9.5, 9.6, or 9.7: Click **Configuration** > **Cluster** > **Update**.
   - ONTAP 9.4 or earlier: Click **Configuration** > **Cluster Update**.

     Then in the right corner of the Overview pane, click the three blue vertical dots, and **ONTAP Update**.
2. Continue the automated upgrade or cancel it and continue manually.

If you want to…	**Then…**
Resume the automated upgrade	Click **Resume**.
Cancel the automated upgrade and continue manually	Click **Cancel**.

Video: Upgrades made easy

Take a look at the simplified ONTAP upgrade capabilities of System Manager in ONTAP 9.8.



Automated nondisruptive ONTAP upgrade using the CLI

You can use the command line interface (CLI) to verify that the cluster can be upgraded nondisruptively, install the target ONTAP image on each node, and then execute an upgrade in the background.

If you do not plan to monitor the progress of the upgrade process, it is a good practice to request EMS notifications of errors that might require manual intervention.

Before you begin

- You should launch Active IQ Digital Advisor.

  The Upgrade Advisor component of Active IQ Digital Advisor helps you plan for a successful upgrade.

  Data-driven insights and recommendations from Active IQ Digital Advisor are provided to all NetApp customers with an active **SupportEdge** contract (features vary by product and support tier).

- You must have met the upgrade preparation requirements.
- For each HA pair, each node should have one or more ports on the same broadcast domain.

  If you have 8 or more nodes, the batch upgrade method is used in the automatic nondisruptive upgrade. In ONTAP 9.7 and earlier, if the batch method is used, LIFs are migrated to the HA partner of the node being upgraded. If the partners do not have any ports in the same broadcast domain, then the LIF migration fails.

  In ONTAP 9.8 and later, if the batch method is used, LIFs are migrated to the other batch group.

- If you are performing a direct multi-hop upgrade, you must have obtained both of the correct ONTAP images required for your specific upgrade path.

- If you are upgrading ONTAP in a MetroCluster FC configuration, the cluster should be enabled for automatic unplanned switchover.

About this task

The `cluster image validate` command checks the cluster components to validate that the upgrade can be completed nondisruptively, and then it provides the status of each check and any required action you must take before performing the software upgrade.

> Modifying the setting of the `storage failover modify-auto-giveback` command option before the start of an automatic nondisruptive upgrade (ANDU) has no impact on the upgrade process. The ANDU process ignores any preset value to this option during the takeover/giveback required for the update. For example, setting `-autogiveback` to false prior to beginning ANDU does not interrupt the automatic upgrade before giveback.

1. Delete the previous ONTAP software package:

```
cluster image package delete -version previous_ONTAP_Version
```

2. Download the target ONTAP software package:

```
cluster image package get -url location
```

```
cluster1::> cluster image package get -url
http://www.example.com/software/9.13.1/image.tgz

Package download completed.
Package processing completed.
```

If you are performing a direct multi-hop upgrade, you also need to download the software package for the intermediate version of ONTAP needed for your upgrade. For example, if you are upgrading from 9.8 to 9.13.1, you need to download the software package for ONTAP 9.12.1, and then use the same command to download the software package for 9.13.1.

3. Verify that the software package is available in the cluster package repository:

```
cluster image package show-repository
```

```
cluster1::> cluster image package show-repository
Package Version  Package Build Time
---------------- ------------------
9.13.1              MM/DD/YYYY 10:32:15
```

4. Verify that the cluster is ready to be upgraded nondisruptively:

```
cluster image validate -version package_version_number
```

- If you are performing a direct multi-hop upgrade,use the target ONTAP package for verification. You do not need to validate the intermediate upgrade image separately. For example, if you are upgrading from 9.8 to 9.13.1, you should use the 9.13.1 package for verification. You do not need to validate the 9.12.1 package separately.
- If you are upgrading a two-node or four-node MetroCluster configuration, you must run this command on both clusters before proceeding.

```
cluster1::> cluster image validate -version 9.13.1

WARNING: There are additional manual upgrade validation checks that
must be performed after these automated validation checks have
completed...
```

5. Monitor the progress of the validation:

```
cluster image show-update-progress
```

6. Complete all required actions identified by the validation.
7. Generate a software upgrade estimate:

```
cluster image update -version package_version_number -estimate-only
```

The software upgrade estimate displays details about each component to be updated, and the estimated duration of the upgrade.

8. Perform the software upgrade:

```
cluster image update -version package_version_number
```

- If you are performing a direct multi-hop upgrade, use the target ONTAP version for the package_version_number. For example, if you are upgrading from ONTAP 9.8 to 9.13.1, use 9.13.1 as the package_version_number.
- If the cluster consists of 2 to 6 nodes, a rolling upgrade is performed. If the cluster consists of 8 or more nodes, a batch upgrade is performed by default. If desired, you can use the `-force-rolling` parameter to specify a rolling upgrade instead.
- After completing each takeover and giveback, the upgrade waits for 8 minutes to enable client applications to recover from the pause in I/O that occurs during the takeover and giveback. If your environment requires more or less time for client stabilization, you can use the `-stabilize-minutes` parameter to specify a different amount of stabilization time.
- For any MetroCluster configuration, except a 2-node MetroCluster system, the ONTAP upgrade process starts simultaneously on the HA pairs at both sites (the local site and the disaster recovery

site) after the user initiates and provides confirmation on the command line. For a 2-node MetroCluster system, the update is started first on the disaster recovery site, that is, the site where the upgrade is not initiated. After the update is fully completed on the disaster recovery site, the upgrade begins on the local site.

```
cluster1::> cluster image update -version 9.13.1

Starting validation for this update. Please wait..

It can take several minutes to complete validation...

WARNING: There are additional manual upgrade validation checks...

Pre-update Check      Status     Error-Action
--------------------- ----------
-------------------------------------------
...
20 entries were displayed

Would you like to proceed with update ? {y|n}: y
Starting update...

cluster-1::>
```

9. Display the cluster update progress:

```
cluster image show-update-progress
```

If you are upgrading a 4-node or 8-node MetroCluster configuration, the `cluster image show-update-progress` command only displays the progress for the node on which you run the command. You must run the command on each node to see individual node progress.

10. Verify that the upgrade was completed successfully on each node.

```
cluster image show-update-progress
```

```
cluster1::> cluster image show-update-progress

                                          Estimated          Elapsed
Update Phase         Status                Duration         Duration
-------------------- ---------------- --------------- ---------------
Pre-update checks    completed              00:10:00         00:02:07
Data ONTAP updates   completed              01:31:00         01:39:00
Post-update checks   completed              00:10:00         00:02:00
3 entries were displayed.

Updated nodes: node0, node1.
```

11. Trigger an AutoSupport notification:

```
autosupport invoke -node * -type all -message "Finishing_NDU"
```

If your cluster is not configured to send AutoSupport messages, a copy of the notification is saved locally.

12. Verify that the cluster is enabled for automatic unplanned switchover:

> This step is performed only for MetroCluster FC configurations. If you are using a MetroCluster IP configuration, you do not need to perform this step.

a. Check whether automatic unplanned switchover is enabled:

```
metrocluster show
```

If automatic unplanned switchover is enabled, the following statement appears in the command output:

```
AUSO Failure Domain    auso-on-cluster-disaster
```

b. If the statement does not appear in the output, enable automatic unplanned switchover:

```
metrocluster modify -auto-switchover-failure-domain auso-on-cluster-
disaster -overide-vetoes true
```

> You cannot perform the switchback operation until the automated nondisruptive upgrade is completed.

c. Verify that automatic unplanned switchover has been enabled:

```
metrocluster show
```

Resuming an upgrade (using the CLI) after an error in the automated upgrade process

If an automated upgrade pauses because of an error, you can resolve the error and resume the automated upgrade, or you can cancel the automated upgrade and complete the process manually. If you choose to continue the automated upgrade, do not perform any of the upgrade steps manually.

About this task

If you want to manually complete the upgrade, use the `cluster image cancel-update` command to cancel the automated process and proceed manually. If you want to continue the automated upgrade, complete the following steps.

Steps

1. View the upgrade error:

```
cluster image show-update-progress
```

2. Resolve the error.
3. Resume the update:

```
cluster image resume-update
```

After you finish

Perform post-upgrade checks.

Related information

- Launch Active IQ
- Active IQ documentation

Automated disruptive ONTAP upgrade (single-node cluster only)

Beginning with ONTAP 9.2, you can use the ONTAP CLI to perform an automated update of a single-node cluster. Because single-node clusters lack redundancy, updates are always disruptive. Disruptive upgrades cannot be performed using System Manager.

- You must have satisfied upgrade preparation requirements.
  1. Delete the previous ONTAP software package: `cluster image package delete -version previous_package_version`
  2. Download the target ONTAP software package: `cluster image package get -url location`

```
cluster1::> cluster image package get -url
http://www.example.com/software/9.7/image.tgz

Package download completed.
Package processing completed.
```

3. Verify that the software package is available in the cluster package repository: `cluster image package show-repository`

```
cluster1::> cluster image package show-repository
Package Version  Package Build Time
---------------- ------------------
9.7              M/DD/YYYY 10:32:15
```

4. Verify that the cluster is ready to be upgraded: `cluster image validate -version package_version_number`

```
cluster1::> cluster image validate -version 9.7

WARNING: There are additional manual upgrade validation checks that
must be performed after these automated validation checks have
completed...
```

5. Monitor the progress of the validation: `cluster image show-update-progress`
6. Complete all required actions identified by the validation.
7. Optionally, generate a software upgrade estimate: `cluster image update -version package_version_number -estimate-only`

   The software upgrade estimate displays details about each component to be updated, and the estimated duration of the upgrade.

8. Perform the software upgrade: `cluster image update -version package_version_number`

   > If an issue is encountered, the update pauses and prompts you to take corrective action. You can use the cluster image show-update-progress command to view details about any issues and the progress of the update. After correcting the issue, you can resume the update by using the cluster image resume-update command.

9. Display the cluster update progress: `cluster image show-update-progress`

   The node is rebooted as part of the update and cannot be accessed while rebooting.

10. Trigger a notification: `autosupport invoke -node * -type all -message "Finishing_Upgrade"`

If your cluster is not configured to send messages, a copy of the notification is saved locally.

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