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Revert ONTAP

Revert ONTAP overview

To transition a cluster to an earlier ONTAP release, you must perform a reversion.

The information in this section will guide you through the steps you should take before and after you revert, including the resources you should read and the necessary pre- and post-revert checks you should perform.

If you need to transition a cluster from ONTAP 9.1 to ONTAP 9.0, you need to use the downgrade procedure documented here.

Do I need technical support to revert?

You can revert without assistance on new or test clusters. You should call technical support to revert production clusters. You should also call technical support if you experience any of the following:

• You are in a production environment and revert fails or you encounter any problems before or after the revert such as:
  ◦ The revert process fails and cannot finish.
  ◦ The revert process finishes, but the cluster is unusable in a production environment.
  ◦ The revert process finishes and the cluster goes into production, but you are not satisfied with its behavior.

• You created volumes in ONTAP 9.5 or later and you need to revert to an earlier version. Volumes using adaptive compression must be uncompressed before reverting.

Revert paths

The version of ONTAP that you can revert to varies based on the version of ONTAP currently running on your nodes. You can use the `system image show` command to determine the version of ONTAP running on each node.

These guidelines refer only to on-premises ONTAP releases. For information about reverting ONTAP in the cloud, see Reverting or downgrading Cloud Volumes ONTAP.

<table>
<thead>
<tr>
<th>You can revert from…</th>
<th>To…</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONTAP 9.13.1</td>
<td>ONTAP 9.12.1</td>
</tr>
<tr>
<td>ONTAP 9.12.1</td>
<td>ONTAP 9.11.1</td>
</tr>
<tr>
<td>ONTAP 9.11.1</td>
<td>ONTAP 9.10.1</td>
</tr>
<tr>
<td>You can revert from…</td>
<td>To…</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----</td>
</tr>
<tr>
<td>ONTAP 9.10.1</td>
<td>ONTAP 9.9.1</td>
</tr>
<tr>
<td>ONTAP 9.9.1</td>
<td>ONTAP 9.8</td>
</tr>
<tr>
<td>ONTAP 9.8</td>
<td>ONTAP 9.7</td>
</tr>
<tr>
<td>ONTAP 9.7</td>
<td>ONTAP 9.6</td>
</tr>
<tr>
<td>ONTAP 9.6</td>
<td>ONTAP 9.5</td>
</tr>
<tr>
<td>ONTAP 9.5</td>
<td>ONTAP 9.4</td>
</tr>
<tr>
<td>ONTAP 9.4</td>
<td>ONTAP 9.3</td>
</tr>
<tr>
<td>ONTAP 9.3</td>
<td>ONTAP 9.2</td>
</tr>
<tr>
<td>ONTAP 9.2</td>
<td>ONTAP 9.1</td>
</tr>
<tr>
<td>ONTAP 9.1 or ONTAP 9</td>
<td>Data ONTAP 8.3.x</td>
</tr>
</tbody>
</table>

If you need to change from ONTAP 9.1 to 9.0, you should follow the [downgrade process](#) documented here.

**What should I read before I revert?**

**Resources to review before you revert**

Before you revert ONTAP, you should confirm hardware support and review resources to understand issues you might encounter or need to resolve.

1. Review the [ONTAP 9 Release Notes](#) for the target release.
   
   The “Important cautions” section describes potential issues that you should be aware of before downgrading or reverting.

2. Confirm that your hardware platform is supported in the target release.
   
   [NetApp Hardware Universe](#)

3. Confirm that your cluster and management switches are supported in the target release.
   
   You must verify that the NX-OS (cluster network switches), IOS (management network switches), and reference configuration file (RCF) software versions are compatible with the version of ONTAP to which you are reverting.

   [NetApp Downloads: Cisco Ethernet Switch](#)
4. If your cluster is configured for SAN, confirm that the SAN configuration is fully supported.

All SAN components—including target ONTAP software version, host OS and patches, required Host Utilities software, and adapter drivers and firmware—should be supported.

**NetApp Interoperability Matrix Tool**

**Revert considerations**

You need to consider the revert issues and limitations before beginning an ONTAP reversion.

- **Reversion is disruptive.**

  No client access can occur during the reversion. If you are reverting a production cluster, be sure to include this disruption in your planning.

- **Reversion affects all nodes in the cluster.**

  The reversion affects all nodes in the cluster; however, the reversion must be performed and completed on each HA pair before other HA pairs are reverted.

- **The reversion is complete when all nodes are running the new target release.**

  When the cluster is in a mixed-version state, you should not enter any commands that alter the cluster operation or configuration except as necessary to satisfy reversion requirements; monitoring operations are permitted.

> If you have reverted some, but not all of the nodes, do not attempt to upgrade the cluster back to the source release.

- **When you revert a node, it clears the cached data in a Flash Cache module.**

  Because there is no cached data in the Flash Cache module, the node serves initial read requests from disk, which results in decreased read performance during this period. The node repopulates the cache as it serves read requests.

- **A LUN that is backed up to tape running on ONTAP 9.x can be restored only to 9.x and later releases and not to an earlier release.**

- **If your current version of ONTAP supports In-Band ACP (IBACP) functionality, and you revert to a version of ONTAP that does not support IBACP, the alternate path to your disk shelf is disabled.**

- **If LDAP is used by any of your storage virtual machines (SVMs), LDAP referral must be disabled before reversion.**

- **In MetroCluster IP systems using switches which are MetroCluster compliant but not MetroCluster validated, the reversion from ONTAP 9.7 to 9.6 is disruptive as there is no support for systems using ONTAP 9.6 and earlier.**

**Things to verify before you revert**

Before revert, you should verify your cluster health, storage health, and system time. You should also delete any cluster jobs that are running and gracefully terminate any SMB
sessions that are not continuously available.

Verify cluster health

Before you revert cluster, you should verify that the nodes are healthy and eligible to participate in the cluster, and that the cluster is in quorum.

1. Verify that the nodes in the cluster are online and are eligible to participate in the cluster: `cluster show`

```
cluster1::> cluster show
Node                  Health  Eligibility
--------------------- ------- ------------
node0                 true    true
node1                 true    true
```

If any node is unhealthy or ineligible, check EMS logs for errors and take corrective action.

2. Set the privilege level to advanced:
   set -privilege advanced
   Enter y to continue.

3. Verify the configuration details for each RDB process.
   - The relational database epoch and database epochs should match for each node.
   - The per-ring quorum master should be the same for all nodes.

   Note that each ring might have a different quorum master.

<table>
<thead>
<tr>
<th>To display this RDB process…</th>
<th>Enter this command…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management application</td>
<td><code>cluster ring show -unitname mgmt</code></td>
</tr>
<tr>
<td>Volume location database</td>
<td><code>cluster ring show -unitname vldb</code></td>
</tr>
<tr>
<td>Virtual-Interface manager</td>
<td><code>cluster ring show -unitname vifmgr</code></td>
</tr>
<tr>
<td>SAN management daemon</td>
<td><code>cluster ring show -unitname bcomd</code></td>
</tr>
</tbody>
</table>

This example shows the volume location database process:
cluster1::*> cluster ring show -unitname vldb

<table>
<thead>
<tr>
<th>Node</th>
<th>UnitName</th>
<th>Epoch</th>
<th>DB Epoch</th>
<th>DB Trnxs</th>
<th>Master</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>node0</td>
<td>vldb</td>
<td>154</td>
<td>154</td>
<td>14847</td>
<td>node0</td>
<td>master</td>
</tr>
<tr>
<td>node1</td>
<td>vldb</td>
<td>154</td>
<td>154</td>
<td>14847</td>
<td>node0</td>
<td>secondary</td>
</tr>
<tr>
<td>node2</td>
<td>vldb</td>
<td>154</td>
<td>154</td>
<td>14847</td>
<td>node0</td>
<td>secondary</td>
</tr>
<tr>
<td>node3</td>
<td>vldb</td>
<td>154</td>
<td>154</td>
<td>14847</td>
<td>node0</td>
<td>secondary</td>
</tr>
</tbody>
</table>

4 entries were displayed.

4. Return to the admin privilege level:
   
   set -privilege admin

5. If you are operating in a SAN environment, verify that each node is in a SAN quorum: event log show -severity informational -message-name scsiblade.*

   The most recent scsiblade event message for each node should indicate that the scsi-blade is in quorum.

   cluster1::*> event log show -severity informational -message-name scsiblade.*

<table>
<thead>
<tr>
<th>Time</th>
<th>Node</th>
<th>Severity</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM/DD/YYYY TIME</td>
<td>node0</td>
<td>INFORMATIONAL</td>
<td>scsiblade.in.quorum: The scsi-blade ...</td>
</tr>
<tr>
<td>MM/DD/YYYY TIME</td>
<td>node1</td>
<td>INFORMATIONAL</td>
<td>scsiblade.in.quorum: The scsi-blade ...</td>
</tr>
</tbody>
</table>

Related information

System administration

**Verify storage health**

Before you revert a cluster, you should verify the status of your disks, aggregates, and volumes.

1. Verify disk status:

<table>
<thead>
<tr>
<th>To check for...</th>
<th>Do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broken disks</td>
<td>a. Display any broken disks: storage disk show -state broken</td>
</tr>
<tr>
<td></td>
<td>b. Remove or replace any broken disks.</td>
</tr>
</tbody>
</table>
To check for... | Do this...
---|---
Disks undergoing maintenance or reconstruction | a. Display any disks in maintenance, pending, or reconstructing states: `storage disk show -state maintenance|pending|reconstructing`
b. Wait for the maintenance or reconstruction operation to finish before proceeding.

2. Verify that all aggregates are online by displaying the state of physical and logical storage, including storage aggregates: `storage aggregate show -state !online`

This command displays the aggregates that are *not* online. All aggregates must be online before and after performing a major upgrade or reversion.

```
cluster1::> storage aggregate show -state !online
There are no entries matching your query.
```

3. Verify that all volumes are online by displaying any volumes that are *not* online: `volume show -state !online`

All volumes must be online before and after performing a major upgrade or reversion.

```
cluster1::> volume show -state !online
There are no entries matching your query.
```

4. Verify that there are no inconsistent volumes: `volume show -is-inconsistent true`

See the Knowledge Base article Volume Showing WAFL Inconsistent on how to address the inconsistent volumes.

**Related information**

- Disk and aggregate management

**Verifying the system time**

Before you revert, you should verify that NTP is configured, and that the time is synchronized across the cluster.

1. Verify that the cluster is associated with an NTP server: `cluster time-service ntp server show`
2. Verify that each node has the same date and time: `cluster date show`
Verify that no jobs are running

Before you revert the ONTAP software, you must verify the status of cluster jobs. If any aggregate, volume, NDMP (dump or restore), or Snapshot jobs (such as create, delete, move, modify, replicate, and mount jobs) are running or queued, you must allow the jobs to finish successfully or stop the queued entries.

1. Review the list of any running or queued aggregate, volume, or Snapshot jobs: `job show`

```
cluster1::> job show

Owning Job ID Name                 Vserver    Node           State
-------- -------------------- ---------- -------------- ----------
     8629   Vol Reaper           cluster1   -              Queued
          Description: Vol Reaper Job
     8630   Certificate Expiry Check
          cluster1   -              Queued
          Description: Certificate Expiry Check

```

2. Delete any running or queued aggregate, volume, or Snapshot copy jobs: `job delete -id job_id`

```
cluster1::> job delete -id 8629

```

3. Verify that no aggregate, volume, or Snapshot jobs are running or queued: `job show`

```
In this example, all running and queued jobs have been deleted:
```

```
SMB sessions that should be terminated

Before you revert, you should identify and gracefully terminate any SMB sessions that are not continuously available.

Continuously available SMB shares, which are accessed by Hyper-V or Microsoft SQL Server clients using the SMB 3.0 protocol, do not need to be terminated before upgrading or downgrading.

1. Identify any established SMB sessions that are not continuously available:
   ```
   vserver cifs session show -continuously-available No -instance
   ```

   This command displays detailed information about any SMB sessions that have no continuous availability. You should terminate them before proceeding with the ONTAP downgrade.
cluster1::> vserver cifs session show -continuously-available No -instance

    Node: node1
    Vserver: vs1
    Session ID: 1
    Connection ID: 4160072788
Incoming Data LIF IP Address: 198.51.100.5
    Workstation IP address: 203.0.113.20
    Authentication Mechanism: NTLMv2
    Windows User: CIFSLAB\user1
    UNIX User: nobody
    Open Shares: 1
    Open Files: 2
    Open Other: 0
    Connected Time: 8m 39s
    Idle Time: 7m 45s
    Protocol Version: SMB2_1
    Continuously Available: No
1 entry was displayed.

2. If necessary, identify the files that are open for each SMB session that you identified: vserver cifs session file show -session-id session_ID

cluster1::> vserver cifs session file show -session-id 1

Node: node1
Vserver: vs1
Connection: 4160072788
Session: 1
File File Open Hosting
Continuously
ID Type Mode Volume Share Available
------- --------- ---- --------------- ---------------------
------------
1 Regular rw vol10 homedirshare No
Path: \TestDocument.docx
2 Regular rw vol10 homedirshare No
Path: \file1.txt
2 entries were displayed.
NVMe in-band authentication

If you are reverting from ONTAP 9.12.1 or later to ONTAP 9.12.0 or earlier, you must disable in-band authentication before you revert. If in-band authentication using DH-HMAC-CHAP is not disabled, revert will fail.

What else should I check before I revert?

Pre-revert checks

Depending on your environment, you need to consider certain factors before revert. Get started by reviewing the table below to see what special considerations you need to consider.

<table>
<thead>
<tr>
<th>Ask yourself…</th>
<th>If your answer is yes, then do this…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is my cluster running SnapMirror?</td>
<td>• Review considerations for reverting systems with SnapMirror Synchronous relationships</td>
</tr>
<tr>
<td></td>
<td>• Review reversion requirements for SnapMirror and SnapVault relationships</td>
</tr>
<tr>
<td>Is my cluster running SnapLock?</td>
<td>Set autocommit periods</td>
</tr>
<tr>
<td>Do I have Split FlexClone volumes?</td>
<td>Reverse physical block sharing</td>
</tr>
<tr>
<td>Do I have FlexGroup volumes?</td>
<td>Disable qtree functionality</td>
</tr>
<tr>
<td>Do I have CIFS servers in workgroup mode?</td>
<td>Move or delete CIFS servers in workgroup mode</td>
</tr>
<tr>
<td>Do I have deduplicated volumes?</td>
<td>Verify volume contains enough free space</td>
</tr>
<tr>
<td>Do I have Snapshot copies?</td>
<td>Prepare Snapshot copies</td>
</tr>
<tr>
<td>Am I reverting to ONTAP 8.3.x?</td>
<td>Identify user accounts that use SHA-2 hash function</td>
</tr>
<tr>
<td>Is anti-ransomware protection configured for ONTAP</td>
<td>Check anti-ransomware licensing</td>
</tr>
<tr>
<td>9.11.1 or later?</td>
<td></td>
</tr>
<tr>
<td>Is S3 multiprotocol access configured for ONTAP</td>
<td>Remove S3 NAS bucket configuration</td>
</tr>
<tr>
<td>9.12.1 or later?</td>
<td></td>
</tr>
<tr>
<td>Is NFSv4.1 session trunking configured for ONTAP</td>
<td>Remove NFSv4.1 session trunking configuration</td>
</tr>
<tr>
<td>9.14.1 or later?</td>
<td></td>
</tr>
</tbody>
</table>

MetroCluster pre-revert checks

Depending on your MetroCluster configuration, you need to consider certain factors before revert. Get started by reviewing the table below to see what special considerations you need to consider.

<table>
<thead>
<tr>
<th>Ask yourself…</th>
<th>If your answer is yes, then do this…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do I have a two- or four-node MetroCluster</td>
<td>Disable automatic unplanned switchover</td>
</tr>
<tr>
<td>configuration?</td>
<td></td>
</tr>
<tr>
<td>Ask yourself…</td>
<td>If your answer is yes, then do this…</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Do I have a four- or eight-node MetroCluster IP or fabric-attached configuration running ONTAP 9.12.1 or later?</td>
<td>Disable IPsec</td>
</tr>
</tbody>
</table>

**SnapMirror**

**Considerations for reverting systems with SnapMirror Synchronous relationships**

You must be aware of the considerations for SnapMirror Synchronous relationships before reverting from ONTAP 9.6 to ONTAP 9.5.

Before reverting, you must take the following steps if you have SnapMirror Synchronous relationships:

- You must delete any SnapMirror Synchronous relationship in which the source volume is serving data using NFSv4 or SMB.
  
  ONTAP 9.5 does not support NFSv4 and SMB.

- You must delete any SnapMirror Synchronous relationships in a mirror-mirror cascade deployment.
  
  A mirror-mirror cascade deployment is not supported for SnapMirror Synchronous relationships in ONTAP 9.5.

- If the common Snapshot copies in ONTAP 9.5 are not available during revert, you must initialize the SnapMirror Synchronous relationship after reverting.
  
  After two hours of upgrade to ONTAP 9.6, the common Snapshot copies from ONTAP 9.5 are automatically replaced by the common Snapshot copies in ONTAP 9.6. Therefore, you cannot resynchronize the SnapMirror Synchronous relationship after reverting if the common Snapshot copies from ONTAP 9.5 are not available.

**Reversion requirements for SnapMirror and SnapVault relationships**

The system node revert-to command notifies you of any SnapMirror and SnapVault relationships that need to be deleted or reconfigured for the reversion process to be completed. However, you should be aware of these requirements before you begin the reversion.

- All SnapVault and data protection mirror relationships must be quiesced and then broken.
  
  After the reversion is completed, you can resynchronize and resume these relationships if a common Snapshot copy exists.

- SnapVault relationships must not contain the following SnapMirror policy types:
  
  ◦ async-mirror

  You must delete any relationship that uses this policy type.

  ◦ MirrorAndVault
If any of these relationships exist, you should change the SnapMirror policy to mirror-vault.

- All load-sharing mirror relationships and destination volumes must be deleted.
- SnapMirror relationships with FlexClone destination volumes must be deleted.
- Network compression must be disabled for each SnapMirror policy.
- The all_source_snapshot rule must be removed from any async-mirror type SnapMirror policies.

The Single File Snapshot Restore (SFSR) and Partial File Snapshot Restore (PFSR) operations are deprecated on the root volume.

- Any currently running single file and Snapshot restore operations must be completed before the reversion can proceed.

You can either wait for the restore operation to finish, or you can abort it.

- Any incomplete single file and Snapshot restore operations must be removed by using the snapmirror restore command.

**Set autocommit periods for SnapLock volumes before reverting**

To revert from ONTAP 9, the value of the autocommit period for SnapLock volumes must be set in hours, not days. Before attempting to revert, you must check the autocommit value for your SnapLock volumes and modify it from days to hours, if necessary.

1. Verify that there are SnapLock volumes in the cluster that have unsupported autocommit periods:
   ```bash
   volume snaplock show -autocommit-period *days
   ```
2. Modify the unsupported autocommit periods to hours:
   ```bash
   volume snaplock modify -vserver vserver_name -volume volume_name -autocommit-period value hours
   ```

**Reverse physical block sharing in split FlexClone volumes**

If you have split a FlexClone volume from its parent volume, you must undo the sharing of any physical block between the clone and its parent volume before reverting from ONTAP 9.4 or later to an earlier version of ONTAP.

This task is applicable only for AFF systems when split has been run on any of the FlexClone volumes.

1. Log in to the advanced privilege level:
   ```bash
   set -privilege advanced
   ```
2. Identify the split FlexClone volumes with shared physical blocks:
   ```bash
   volume clone sharing-by-split show
   ```

```bash
cluster1::> volume clone sharing-by-split show
<table>
<thead>
<tr>
<th>Node</th>
<th>Vserver</th>
<th>Volume</th>
<th>Aggregate</th>
</tr>
</thead>
<tbody>
<tr>
<td>node1</td>
<td>vs1</td>
<td>vol_clone1</td>
<td>aggr1</td>
</tr>
<tr>
<td>node2</td>
<td>vs2</td>
<td>vol_clone2</td>
<td>aggr2</td>
</tr>
</tbody>
</table>
2 entries were displayed.
```
3. Undo the physical block sharing in all of the split FlexClone volumes across the cluster: `volume clone sharing-by-split undo start-all`

4. Verify that there are no split FlexClone volumes with shared physical blocks: `volume clone sharing-by-split show`

```
cluster1::> volume clone sharing-by-split show
This table is currently empty.
```

**Disable qtree functionality in FlexGroup volumes before reverting**

Qtrees for FlexGroup volumes are not supported prior to ONTAP 9.3. You must disable the qtree functionality on FlexGroup volumes before reverting from ONTAP 9.3 to an earlier version of ONTAP.

The qtree functionality is enabled either when you create a qtree or if you modify the security-style and oplock-mode attributes of the default qtree.

1. Identify and delete all of the non-default qtrees in each FlexGroup volume that are enabled with the qtree functionality:
   a. Log in to the advanced privilege level: `set -privilege advanced`
   b. Verify if any FlexGroup volume is enabled with the qtree functionality.

   For ONTAP 9.6 or later, use: `volume show -is-qtree-caching-enabled true`

   For ONTAP 9.5 or earlier, use: `volume show -is-flexgroup-qtree-enabled true`

```
cluster1::*> volume show -is-flexgroup-qtree-enabled true
Vserver  Volume  Aggregate  State  Type  Size
Available Used%
--------- ----------- ------------ ---- ---- ----------
---------- -----
vs0       fg        -           online  RW  320MB
220.4MB  31%
```

c. Delete all of the non-default qtrees in each FlexGroup volume that are enabled with the qtree functionality: `volume qtree delete -vserver svm_name -volume volume_name -qtree qtree_name`

If the qtree functionality is enabled because you modified the attributes of the default qtree and if you do not have any qtrees, you can skip this step.
2. Disable the `qtree` functionality on each `FlexGroup volume`: `volume flexgroup qtree-disable -vserver svm_name -volume volume_name`

```bash
cluster1::*> volume flexgroup qtree-disable -vserver vs0 -volume fg
```

3. Identify and delete any Snapshot copies that are enabled with the `qtree` functionality.

   a. Verify if any Snapshot copies are enabled with the `qtree` functionality: `volume snapshot show -vserver vserver_name -volume volume_name -fields is-flexgroup-qtree-enabled`

```bash
cluster1::*> volume snapshot show -vserver vs0 -volume fg -fields is-flexgroup-qtree-enabled
```

<table>
<thead>
<tr>
<th>vserver</th>
<th>volume</th>
<th>snapshot</th>
<th>is-flexgroup-qtree-enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>vs0</td>
<td>fg</td>
<td>fg_snap1</td>
<td>true</td>
</tr>
<tr>
<td>vs0</td>
<td>fg</td>
<td>daily.2017-09-27_0010</td>
<td>true</td>
</tr>
<tr>
<td>vs0</td>
<td>fg</td>
<td>daily.2017-09-28_0010</td>
<td>true</td>
</tr>
<tr>
<td>vs0</td>
<td>fg</td>
<td>snapmirror.0241f354-a865-11e7-a1c0-00a098a71764_2147867740.2017-10-04_124524</td>
<td>true</td>
</tr>
</tbody>
</table>

   b. Delete all of the Snapshot copies that are enabled with the `qtree` functionality: `volume snapshot delete -vserver svm_name -volume volume_name -snapshot snapshot_name -force true -ignore-owners true`

```bash
cluster1::> volume snapshot delete -vserver vs0 -volume fg -snapshot daily.2017-09-27_0010 -force true -ignore-owners true
```

The Snapshot copies that must be deleted include regular Snapshot copies and the Snapshot copies taken for SnapMirror relationships. If you have created any SnapMirror relationship for the FlexGroup volumes with a destination cluster that is running ONTAP 9.2 or earlier, you must delete all of the Snapshot copies that were taken when the source FlexGroup volume was enabled for the `qtree` functionality.

```
cluster1::> volume snapshot delete -vserver vs0 -volume fg -snapshot daily.2017-09-27_0010 -force true -ignore-owners true
```

**Related information**

*FlexGroup volumes management*
Identify and move SMB servers in workgroup mode

Before performing a revert, you must delete any SMB servers in workgroup mode or move them in to a domain. Workgroup mode is not supported on ONTAP versions prior to ONTAP 9.

1. Identify any SMB servers with a Authentication Style of workgroup:
   \texttt{vserver cifs show}

2. Move or delete the servers you identified:

<table>
<thead>
<tr>
<th>If you are going to...</th>
<th>Then use this command....</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move the SMB server from the workgroup to an Active Directory domain:</td>
<td>\texttt{vserver cifs modify -vserver vserver_name -domain domain_name}</td>
</tr>
<tr>
<td>Delete the SMB server</td>
<td>\texttt{vserver cifs delete -vserver vserver_name}</td>
</tr>
</tbody>
</table>

3. If you deleted the SMB server, enter the username of the domain, then enter the user password.

Related information
SMB management

Verify deduplicated volumes have enough free space before reverting

Before reverting from any version of ONTAP 9, you must ensure that the volumes contain sufficient free space for the revert operation.

The volume must have enough space to accommodate the savings that were achieved through the inline detection of blocks of zeros. See the Knowledge Base article \texttt{How to see space savings from deduplication, compression, and compaction in ONTAP 9}.

If you have enabled both deduplication and data compression on a volume that you want to revert, then you must revert data compression before reverting deduplication.

1. Use the volume efficiency show command with the -fields option to view the progress of the efficiency operations that are running on the volumes.

   \texttt{volume efficiency show -fields vserver,volume,progress}

2. Use the volume efficiency stop command with the -all option to stop all active and queued deduplication operations.

   \texttt{volume efficiency stop -vserver vs1 -volume VolA -all}

3. Use the set -privilege advanced command to log in at the advanced privilege level.

4. Use the volume efficiency revert-to command with the -version option to downgrade the efficiency metadata of a volume to a specific version of ONTAP.
The following command reverts the efficiency metadata on volume VolA to ONTAP 9.x:

```
volume efficiency revert-to -vserver vs1 -volume VolA -version 9.x
```

The volume efficiency revert-to command reverts volumes that are present on the node on which this command is executed. This command does not revert volumes across nodes.

5. Use the volume efficiency show command with the -op-status option to monitor the progress of the downgrade.

```
The following command monitors and displays the status of the downgrade: volume efficiency show
-vserver vs1 -op-status Downgrading
```

6. If the revert does not succeed, use the volume efficiency show command with the -instance option to see why the revert failed.

```
The following command displays detailed information about all fields: volume efficiency show
-vserver vs1 -volume vol1 -instance
```

7. After the revert operation is complete, return to the admin privilege level:

```
set -privilege admin
```

Logical storage management

**Prepare Snapshot copies before reverting**

Before reverting to an earlier ONTAP release, you must disable all Snapshot copy policies and delete any Snapshot copies that were created after upgrading to the current release.

If you are reverting in a SnapMirror environment, you must first have deleted the following mirror relationships:

- All load-sharing mirror relationships
- Any data protection mirror relationships that were created in ONTAP 8.3.x
- All data protection mirror relationships if the cluster was re-created in ONTAP 8.3.x

1. Disable Snapshot copy policies for all data SVMs:

```
volume snapshot policy modify -vserver * -enabled false
```

2. Disable Snapshot copy policies for each node’s aggregates:
   a. Identify the node’s aggregates by using the run-nodenodenameaggr status command.
   b. Disable the Snapshot copy policy for each aggregate:

```
run -node nodename aggr options
aggr_name nosnap on
```
   c. Repeat this step for each remaining node.

3. Disable Snapshot copy policies for each node’s root volume:
   a. Identify the node’s root volume by using the run-nodenodenamevol status command.
      You identify the root volume by the word root in the Options column of the vol status command output.
vs1::> run -node node1 vol status

<table>
<thead>
<tr>
<th>Volume State</th>
<th>Status</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>vol0</td>
<td>online</td>
<td>raid_dp, flex</td>
</tr>
<tr>
<td></td>
<td></td>
<td>root, nvfail=on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64-bit</td>
</tr>
</tbody>
</table>

b. Disable the Snapshot copy policy on the root volume: run -node nodename vol options root_volume_name nosnap on

c. Repeat this step for each remaining node.

4. Delete all Snapshot copies that were created after upgrading to the current release:

a. Set the privilege level to advanced: set -privilege advanced

b. Disable the snapshots: snapshot policy modify -vserver * -enabled false

c. Delete the node’s newer-version Snapshot copies: volume snapshot prepare-for-revert -node nodename

This command deletes the newer-version Snapshot copies on each data volume, root aggregate, and root volume.

If any Snapshot copies cannot be deleted, the command fails and notifies you of any required actions you must take before the Snapshot copies can be deleted. You must complete the required actions and then rerun the volume snapshot prepare-for-revert command before proceeding to the next step.

cluster1::*> volume snapshot prepare-for-revert -node node1

Warning: This command will delete all Snapshot copies that have the format used by the current version of ONTAP. It will fail if any Snapshot copy policies are enabled, or if any Snapshot copies have an owner. Continue? {y|n}: y

d. Verify that the Snapshot copies have been deleted: volume snapshot show -node nodename

If any newer-version Snapshot copies remain, force them to be deleted: volume snapshot delete {-fs-version 9.0 -node nodename -is-constituent true} -ignore -owners -force

e. Repeat this step c for each remaining node.

f. Return to the admin privilege level: set -privilege admin

You must perform these steps on both the clusters in MetroCluster configuration.

**Identify user accounts that use SHA-2 hash function**

If you are reverting from ONTAP 9.1 or ONTAP 9.0 to ONTAP 8.3.x, SHA-2 account users
can no longer be authenticated with their passwords. Before you revert, you should identify the user accounts that use the SHA-2 hash function, so that after reverting, you can have them reset their passwords to use the encryption type (MD5) that is supported by the release you revert to.

1. Change to the privilege setting to advanced: `set -privilege advanced`

2. Identify the user accounts that use the SHA-2 has function: `security login show -vserver * -username * -application * -authentication-method password -hash-function !md5`

3. Retain the command output for use after the revert.

During the revert, you will be prompted to run the advanced command `security login password-prepare-to-downgrade` to reset your own password to use the MD5 hash function. If your password is not encrypted with MD5, the command prompts you for a new password and encrypts it with MD5, enabling your credential to be authenticated after the revert.

**Check Autonomous Ransomware Protection licensing before reverting from ONTAP 9.11.1 or later**

If you have configured Autonomous Ransomware Protection (ARP) and you revert from ONTAP 9.11.1 or later to ONTAP 9.10.1 or earlier, you might experience warning messages and limited ARP functionality.

In ONTAP 9.11.1, the Anti-ransomware license replaced the Multi-Tenant Key Management (MTKM) license. If your system has the Anti_ransomware license but no MT_EK_MGMT license, you will see a warning during revert that ARP cannot be enabled on new volumes upon revert.

The volumes with existing protection will continue to work normally after revert, and ARP status can be displayed using the ONTAP CLI. System Manager cannot show ARP status without the MTKM license.

Therefore, if you want ARP to continue after reverting to ONTAP 9.10.1, be sure the MTKM license is installed before reverting. **Learn about ARP licensing.**

**Remove S3 NAS bucket configuration before reverting from ONTAP 9.12.1 or later**

If you have configured S3 client access for NAS data, before you revert from ONTAP 9.12.1 or later to ONTAP 9.11.1 or earlier, you should use the ONTAP command line interface (CLI) to remove the NAS bucket configuration and to remove any name mappings (S3 users to Windows or Unix users).

**About this task**

The following tasks are completed in the background during the revert process.

- Remove all partially completed singleton object creations (that is, all entries in hidden directories).
- Remove all hidden directories; there might be one on for each volume that is accessible from the root of the export mapped from the S3 NAS bucket.
- Remove the upload table.
- Delete any default-unix-user and default-windows-user values for all configured S3 servers.
Steps

1. Remove S3 NAS bucket configuration:

   vserver object-store-server bucket delete -vserver _svm_name_ -bucket _s3_nas_bucket_name_

2. Remove name mappings for UNIX:

   vserver name-mapping delete -vserver _svm_name_ -direction s3-unix

3. Remove name mappings for Windows:

   vserver name-mapping delete -vserver _svm_name_ -direction s3-win

4. Remove the S3 protocols from the SVM:

   vserver remove-protocols -vserver <svm_name> -protocols s3

Remove NFSv4.1 session trunking configuration before reverting from ONTAP 9.14.1 or later

If you have enabled trunking for client connections and you revert to a release earlier to ONTAP 9.14.1, you must disable trunking on any NFSv4.1 servers before reverting.

When you enter the revert-to command, you will see a warning message advising you to disable trunking before proceeding.

After reverting to an earlier ONTAP release, the clients using trunked connections fall back to using a single connection. Their data throughput will be affected, but there will be no disruption. The revert behavior is the same as modifying the NFSv4.1 trunking option for the SVM from enabled to disabled.

Steps

1. Disable trunking on the NFSv4.1 server:

   vserver nfs modify -vserver svm_name -v4.1-trunking disabled

2. Verify that NFS is configured as desired:

   vserver nfs show -vserver svm_name

Disable automatic unplanned switchover before reverting two-node and four-node MetroCluster configurations

Before reverting a two-node or four-node MetroCluster configuration, you must disable automatic unplanned switchover (AUSO).

1. On both the clusters in MetroCluster, disable automatic unplanned switchover:

   metrocluster modify
Related information

MetroCluster management and disaster recovery

Disable IPsec before reverting MetroCluster configurations

Before reverting a MetroCluster configuration, you must disable IPsec.

You cannot revert ONTAP in a MetroCluster configuration running ONTAP 9.12.1 with IPsec enabled. A check is performed before revert to ensure there are no IPsec configurations within the MetroCluster configuration. You must remove any IPsec configurations present and disable IPsec before continuing with the revert. Reverting ONTAP is blocked if IPsec is enabled, even when you have not configured any user policies.

Download and install the ONTAP software image

Related information

You must first download the ONTAP software from the NetApp Support site; then you can install it.

Download the software image

To downgrade or revert from ONTAP 9.4 and later, you can copy the ONTAP software image from the NetApp Support Site to a local folder. For a downgrade or revert to ONTAP 9.3 or earlier, you must copy the ONTAP software image to an HTTP server or FTP server on your network.

You should note the following important information:

- Software images are specific to platform models.

  You must obtain the correct image for your cluster. Software images, firmware version information, and the latest firmware for your platform model are available on the NetApp Support Site.

- Software images include the latest version of system firmware that was available when a given version of ONTAP was released.

- If you are downgrading a system with NetApp Volume Encryption from ONTAP 9.5 or later, you must download the ONTAP software image for non-restricted countries, which includes NetApp Volume Encryption.

If you use the ONTAP software image for restricted countries to downgrade or revert a system with NetApp Volume Encryption, the system panics and you lose access to your volumes.

1. Locate the target ONTAP software in the Software Downloads area of the NetApp Support Site.
2. Copy the software image.

  - For ONTAP 9.3 or earlier, copy the software image (for example, 93_q_image.tgz) from the NetApp Support Site to the directory on the HTTP server or FTP server from which the image will be served.
  
  - For ONTAP 9.4 or later, copy the software image (for example, 97_q_image.tgz) from the NetApp Support Site to the directory on the HTTP server or FTP server from which the image will be served or to a local folder.
Install the software image

You must install the target software image on the cluster’s nodes.

• If you are downgrading or reverting a system with NetApp Volume Encryption from ONTAP 9.5 or later, you must have downloaded the ONTAP software image for non-restricted countries, which includes NetApp Volume Encryption.

If you use the ONTAP software image for restricted countries to downgrade or revert a system with NetApp Volume Encryption, the system panics and you lose access to your volumes.

1. Set the privilege level to advanced, entering \texttt{y} when prompted to continue:
   \begin{verbatim}
   set -privilege advanced
   \end{verbatim}

   The advanced prompt (\texttt{->}) appears.

2. Install the software image on the nodes.

   This command downloads and installs the software image on all of the nodes simultaneously. To download and install the image on each node one at a time, do not specify the \texttt{-background} parameter.

   • If you are downgrading or reverting a non-MetroCluster configuration or a two-node MetroCluster configuration:
     \begin{verbatim}
     system node image update -node * -package location -replace-package true -setdefault true -background true
     \end{verbatim}

   This command uses an extended query to change the target software image, which is installed as the alternate image, to be the default image for the node.

   • If you are dowgrading or reverting a four or eight-node MetroCluster configuration, you must issue the following command on both clusters:
     \begin{verbatim}
     system node image update -node * -package location -replace-package true true -background true -setdefault false
     \end{verbatim}

   This command uses an extended query to change the target software image, which is installed as the alternate image on each node.

3. Enter \texttt{y} to continue when prompted.

4. Verify that the software image is downloaded and installed on each node:
   \begin{verbatim}
   system node image show-update-progress -node *
   \end{verbatim}

   This command displays the current status of the software image download and installation. You should continue to run this command until all nodes report a Run Status of Exited, and an Exit Status of Success.

   The system node image update command can fail and display error or warning messages. After resolving any errors or warnings, you can run the command again.

   This example shows a two-node cluster in which the software image is downloaded and installed successfully on both nodes:
cluster1:*> system node image show-update-progress -node *
There is no update/install in progress
Status of most recent operation:
  Run Status:  Exited
  Exit Status:  Success
  Phase:  Run Script
  Exit Message:  After a clean shutdown, image2 will be set as
the default boot image on node0.
There is no update/install in progress
Status of most recent operation:
  Run Status:  Exited
  Exit Status:  Success
  Phase:  Run Script
  Exit Message:  After a clean shutdown, image2 will be set as
the default boot image on node1.
2 entries were acted on.

Revert an ONTAP cluster

To take the cluster offline to revert to an earlier ONTAP release, you must disable storage failover and the data LIFs, address reversion preconditions, revert the cluster and file system configurations on a node, and then repeat the process for each additional node in the cluster.

You must have completed the revert verifications and pre-checks.

Reverting a cluster requires you to take the cluster offline for the duration of the reversion.

1. Set the privilege level to advanced: set -privilege advanced
   Enter y when prompted to continue.

2. Verify that the target ONTAP software is installed: system image show
   The following example shows that version 9.1 is installed as the alternate image on both nodes:
cluster1::*> system image show

<table>
<thead>
<tr>
<th>Node</th>
<th>Image</th>
<th>Default</th>
<th>Current</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>node0</td>
<td>image1</td>
<td>true</td>
<td>true</td>
<td>9.2</td>
<td>MM/DD/YYYY TIME</td>
</tr>
<tr>
<td></td>
<td>image2</td>
<td>false</td>
<td>false</td>
<td>9.1</td>
<td>MM/DD/YYYY TIME</td>
</tr>
<tr>
<td>node1</td>
<td>image1</td>
<td>true</td>
<td>true</td>
<td>9.2</td>
<td>MM/DD/YYYY TIME</td>
</tr>
<tr>
<td></td>
<td>image2</td>
<td>false</td>
<td>false</td>
<td>9.1</td>
<td>MM/DD/YYYY TIME</td>
</tr>
</tbody>
</table>

4 entries were displayed.

3. Disable all of the data LIFs in the cluster: `network interface modify {-role data} -status -admin down`

4. Determine if you have inter-cluster flexcache relationships: `flexcache origin show-caches -relationship-type inter-cluster`

5. If inter-cluster flexcaches are present, disable the data lifs on the cache cluster: `network interface modify -vserver vserver_name -lif lif_name -status-admin down`

6. If the cluster consists of only two nodes, disable cluster HA: `cluster ha modify -configured false`

7. Disable storage failover for the nodes in the HA pair from either node: `storage failover modify -node nodename -enabled false`

   You only need to disable storage failover once for the HA pair. When you disable storage failover for a node, storage failover is also disabled on the node’s partner.

8. Log in to the node that you want to revert.

   To revert a node, you must be logged in to the cluster through the node’s node management LIF.

9. Set the node’s target ONTAP software image to be the default image: `system image modify -node nodename -image target_image -isdefault true`

10. Verify that the target ONTAP software image is set as the default image for the node that you are reverting: `system image show`

    The following example shows that version 9.1 is set as the default image on node0:
11. If the cluster consists of only two nodes, verify that the node does not hold epsilon:
   a. Check whether the node currently holds epsilon: `cluster show -node nodename`

   The following example shows that the node holds epsilon:

   ```
   cluster1::*> cluster show -node node1
   Node: node1
   UUID: 026efc12-ac1a-11e0-80ed-0f7eba8fc313
   Epsilon: true
   Eligibility: true
   Health: true
   ```

   b. If the node holds epsilon, mark epsilon as false on the node so that epsilon can be transferred to the node's partner: `cluster modify -node nodenameA -epsilon false`

   c. Transfer epsilon to the node's partner by marking epsilon true on the partner node: `cluster modify -node nodenameB -epsilon true`

12. Verify that the node is ready for reversion: `system node revert-to -node nodename -check-only true -version 9.x`

   The check-only parameter identifies any preconditions that must be addressed before reverting, such as the following examples:
   - Disabling storage failover
   - Disabling the Snapshot policy
   - Deleting Snapshot copies that were created after upgrading to the later version of ONTAP

13. Verify that all of the preconditions have been addressed: `system node revert-to -node nodename -check-only true -version 9.x`

14. Revert the cluster configuration of the node: `system node revert-to -node nodename -version 9.x`

   The -version option refers to the target release. For example, if the software you installed and verified is
ONTAP 9.1, the correct value of the -version option is 9.1.

The cluster configuration is reverted, and then you are logged out of the clustershell.

15. Log back in to the clustershell, and then switch to the nodeshell: run –node nodename

After logging on the clustershell again, it might take a few minutes before it is ready to accept the nodeshell command. So, if the command fails, wait a few minutes and try it again.

16. Revert the file system configuration of the node: revert_to 9.x

This command verifies that the node’s file system configuration is ready to be reverted, and then reverts it. If any preconditions are identified, you must address them and then rerun the revert_to command.

Using a system console to monitor the revert process displays greater details than seen in nodeshell.

If AUTOBOOT is true, when the command finishes, the node will reboot to ONTAP.

If AUTOBOOT is false, when the command finishes the LOADER prompt is displayed. Enter yes to revert; then use boot_ontap to manually reboot the node.

17. After the node has rebooted, confirm that the new software is running: system node image show

In the following example, image1 is the new ONTAP version and is set as the current version on node0:

```
cluster1::*> system node image show

<table>
<thead>
<tr>
<th>Node</th>
<th>Image</th>
<th>Default</th>
<th>Current</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>node0</td>
<td>image1 true true X.X.X MM/DD/YYYY TIME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>image2 false false Y.Y.Y MM/DD/YYYY TIME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>node1</td>
<td>image1 true false X.X.X MM/DD/YYYY TIME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>image2 false true Y.Y.Y MM/DD/YYYY TIME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 entries were displayed.
```

18. Verify that the revert status is complete for each node: system node upgrade-revert show -node nodename

The status should be listed as "complete", "not needed", or "there are no table entries returned."


20. If the cluster consists of only two nodes, reenable cluster HA: cluster ha modify -configured true

21. Reenable storage failover on both nodes if it was previously disabled: storage failover modify -node nodename -enabled true
22. Repeat [step-5] through [step-19] for each additional HA pair and both the clusters in MetroCluster Configuration.

What should I do after reverting my cluster?

Verify cluster and storage health after downgrade or revert

After you downgrade or revert a cluster, you should verify that the nodes are healthy and eligible to participate in the cluster, and that the cluster is in quorum. You should also verify the status of your disks, aggregates, and volumes.

Verify cluster health

1. Verify that the nodes in the cluster are online and are eligible to participate in the cluster: `cluster show`

   ```
   cluster1::> cluster show
   Node    Health  Eligibility
   --------------- ------ -----
   node0    true   true
   node1    true   true
   ```

   If any node is unhealthy or ineligible, check EMS logs for errors and take corrective action.

2. Set the privilege level to advanced:
   ```
   set -privilege advanced
   ```

   Enter `y` to continue.

3. Verify the configuration details for each RDB process.
   - The relational database epoch and database epochs should match for each node.
   - The per-ring quorum master should be the same for all nodes.

   Note that each ring might have a different quorum master.

   To display this RDB process... | Enter this command...
   -------------------------------|--------------------------
   Management application          | `cluster ring show -unitname mgmt`
   Volume location database        | `cluster ring show -unitname vldb`
   Virtual-Interface manager       | `cluster ring show -unitname vifmgr`
   SAN management daemon           | `cluster ring show -unitname bcomd`

   This example shows the volume location database process:
4. Return to the admin privilege level: set -privilege admin

5. If you are operating in a SAN environment, verify that each node is in a SAN quorum: event log show -severity informational -message-name scsiblade.*

The most recent scsiblade event message for each node should indicate that the scsi-blade is in quorum.

Related information
System administration

Verify storage health

After you revert or downgrade a cluster, you should verify the status of your disks, aggregates, and volumes.

1. Verify disk status:

<table>
<thead>
<tr>
<th>To check for...</th>
<th>Do this...</th>
</tr>
</thead>
</table>
| Broken disks        | a. Display any broken disks: storage disk show -state broken  
|                     | b. Remove or replace any broken disks. |
### To check for... | Do this...
--- | ---
Disks undergoing maintenance or reconstruction | a. Display any disks in maintenance, pending, or reconstructing states:
   `storage disk show -state maintenance|pending|reconstructing`
b. Wait for the maintenance or reconstruction operation to finish before proceeding.

2. Verify that all aggregates are online by displaying the state of physical and logical storage, including storage aggregates:
   `storage aggregate show -state !online`

   This command displays the aggregates that are not online. All aggregates must be online before and after performing a major upgrade or reversion.

   ```
   cluster1::> storage aggregate show -state !online
   There are no entries matching your query.
   ```

3. Verify that all volumes are online by displaying any volumes that are not online:
   `volume show -state !online`

   All volumes must be online before and after performing a major upgrade or reversion.

   ```
   cluster1::> volume show -state !online
   There are no entries matching your query.
   ```

4. Verify that there are no inconsistent volumes:
   `volume show -is-inconsistent true`

   See the Knowledge Base article [Volume Showing WAFL Inconsistent](#) on how to address the inconsistent volumes.

### Related information
- Disk and aggregate management

#### Enable automatic switchover for MetroCluster configurations

This topic provides information regarding the additional tasks that you must perform after the reversion of MetroCluster configurations.

1. Enable automatic unplanned switchover:
   `metrocluster modify -auto-switchover-failure -domain auso-on-cluster-disaster`

2. Validate the MetroCluster configuration:
   `metrocluster check run`

#### Enable and revert LIFs to home ports after a revert

During a reboot, some LIFs might have been migrated to their assigned failover ports.
After you revert a cluster, you must enable and revert any LIFs that are not on their home ports.

The network interface revert command reverts a LIF that is not currently on its home port back to its home port, provided that the home port is operational. A LIF's home port is specified when the LIF is created; you can determine the home port for a LIF by using the network interface show command.

1. Display the status of all LIFs: `network interface show`

This example displays the status of all LIFs for a storage virtual machine (SVM).

```bash
cluster1::> network interface show -vserver vs0

Logical  Status     Network            Current Is
Vserver   Interface  Admin/Oper Address/Mask       Node          Port
Home
---------- ---------- ------------------ ------------- ------- ----
------- ----
vs0  data001  down/down  192.0.2.120/24     node0         e0e  true
true
true
data003  down/down  192.0.2.122/24     node0         e2a  true
data004  down/down  192.0.2.123/24     node0         e2b  true
data005  down/down  192.0.2.124/24     node0         e0e  false
data006  down/down  192.0.2.125/24     node0         e0f  false
data007  down/down  192.0.2.126/24     node0         e2a  false
data008  down/down  192.0.2.127/24     node0         e2b  false
8 entries were displayed.
```

If any LIFs appear with a Status Admin status of down or with an Is home status of false, continue with the next step.

2. Enable the data LIFs: `network interface modify {-role data} -status-admin up`

```bash
cluster1::> network interface modify {-role data} -status-admin up

8 entries were modified.
```

3. Revert LIFs to their home ports: `network interface revert *`
This command reverts all LIFs back to their home ports.

```
cluster1::> network interface revert *
8 entries were acted on.
```

4. Verify that all LIFs are in their home ports:

```
network interface show
```

This example shows that all LIFs for SVM vs0 are on their home ports.

```
cluster1::> network interface show -vserver vs0
```

Enable Snapshot copy policies after reverting

After reverting to an earlier version of ONTAP, you must enable Snapshot copy policies to start creating Snapshot copies again.

You are reenabling the Snapshot schedules that you disabled before you reverted to an earlier version of ONTAP.

1. Enable Snapshot copy policies for all data SVMs:
volume snapshot policy modify -vserver * -enabled true
snapshot policy modify pg-rpo-hourly -enable true

2. For each node, enable the Snapshot copy policy of the root volume by using the run-nodenodenamevol optionsroot_vol_namenosnap off command.

```
cluster1::> run -node node1 vol options vol0 nosnap off
```

Verify client access (SMB and NFS)

For the configured protocols, test access from SMB and NFS clients to verify that the cluster is accessible.

Verify IPv6 firewall entries

A reversion from any version of ONTAP 9 might result in missing default IPv6 firewall entries for some services in firewall policies. You need to verify that the required firewall entries have been restored to your system.

1. Verify that all firewall policies are correct by comparing them to the default policies: `system services firewall policy show`

   The following example shows the default policies:
cluster1::*> system services firewall policy show

Policy           Service    Action IP-List
---------------- ---------- ------ -------------------
cluster

dns        allow  0.0.0.0/0
http       allow  0.0.0.0/0
https      allow  0.0.0.0/0
ndmp       allow  0.0.0.0/0
ntp        allow  0.0.0.0/0
rsh        allow  0.0.0.0/0
snmp       allow  0.0.0.0/0
ssh        allow  0.0.0.0/0
telnet     allow  0.0.0.0/0

data

dns        allow  0.0.0.0/0, ::/0
http       deny   0.0.0.0/0, ::/0
https      deny   0.0.0.0/0, ::/0
ndmp       allow  0.0.0.0/0, ::/0
ntp        deny   0.0.0.0/0, ::/0
rsh        deny   0.0.0.0/0, ::/0

2. Manually add any missing default IPv6 firewall entries by creating a new firewall policy: `system services firewall policy create`

```
cluster1::*> system services firewall policy create -policy newIPv6 -service ssh -action allow -ip-list ::/0
```

3. Apply the new policy to the LIF to allow access to a network service: `network interface modify`

```
cluster1::*> network interface modify -vserver VS1 -lif LIF1 -firewall-policy newIPv6
```

**Revert password hash function to the supported encryption type**

If you reverted from ONTAP 9.1 or ONTAP 9.0 to ONTAP 8.3.x, SHA-2 account users can no longer be authenticated with their passwords. Passwords must be reset to use the MDS encryption type.

1. Set a temporary password for each SHA-2 user account that you **identified prior to reverting**: `security login password -username user_name -vserver vserver_name`
2. Communicate the temporary password to the affected users and have them log in through a console or SSH session to change their passwords as prompted by the system.

**Considerations for whether to manually update the SP firmware**

If the SP automatic update functionality is enabled (the default), downgrading or reverting to ONTAP 8.3.x does not require a manual SP firmware update. The SP firmware is automatically updated to the newest compatible version that is supported by the ONTAP version you reverted or downgraded to.

If the SP automatic update functionality is disabled (not recommended), after the ONTAP revert or downgrade process is complete, you must manually update the SP firmware to a version that is supported for the ONTAP version you reverted or downgraded to.

**NetApp BIOS/ONTAP Support Matrix**

**NetApp Downloads: System Firmware and Diagnostics**

**Change in user accounts that can access the Service Processor**

If you created user accounts on ONTAP 9.8 or earlier, upgraded to ONTAP 9.9.1 or later (when the -role parameter is changed to admin), and then reverted back to ONTAP 9.8 or earlier, the -role parameter is restored to its original value. You should nonetheless verify that the modified values are acceptable.

During revert, if the role for an SP user has been deleted, the "rbac.spuser.role.notfound" EMS message will be logged.

For more information, see Accounts that can access the SP.