Convert FlexVol volumes to FlexGroup volumes

ONTAP 9

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Convert FlexVol volumes to FlexGroup volumes

Learn about converting ONTAP FlexVol volumes to FlexGroup volumes

If you want to expand a FlexVol volume beyond its space limit, you can convert the FlexVol volume to a FlexGroup volume. Beginning with ONTAP 9.7, you can convert standalone FlexVol volumes or FlexVol volumes that are in a SnapMirror relationship to FlexGroup volumes.

Considerations for converting FlexVol volumes to FlexGroup volumes

You should be aware of the features and operations that are supported before you decide to convert FlexVol volumes to FlexGroup volumes.

Operations not supported during conversion

The following operations are not allowed when volume conversion is in progress:

- Volume move
- Aggregate relocation
- Planned takeover and giveback in a high-availability configuration
- Manual and automatic giveback in an high-availability configuration
- Cluster upgrade and revert
- FlexClone volume split
- Volume rehost
- Volume modify and autosize
- Volume rename
- Attaching an object store to an aggregate
- Negotiated switchover in MetroCluster configuration
- SnapMirror operations
- Restoring from a snapshot
- Quota operations
- Storage efficiency operations

You can perform these operations on the FlexGroup volume after successful conversion.

Configurations that are not supported with FlexGroup volumes

- Offline or restricted volume
- SVM root volume
- SAN
- SMB 1.0

- NVMe namespaces
- Remote Volume Shadow Copy Service (VSS)

Convert ONTAP FlexVol volumes to ONTAP FlexGroup volumes

Beginning with ONTAP 9.7, you can perform an in-place conversion of a FlexVol volume to a FlexGroup volume without requiring a data copy or additional disk space.

Before you begin

- Transitioned volumes can be converted to FlexGroup volumes beginning with ONTAP 9.8.
- The FlexVol volume that is being converted must be online.
- The operations and configurations on the FlexVol volume must be compatible with the conversion process.

  Check for the following conditions that can prevent the conversion from succeeding:

  - A FlexVol volume was transitioned from 7-Mode using 7MTT (ONTAP 9.7).

    Transitioned volumes can be converted beginning with ONTAP 9.8.

  - Something is enabled on the volume that is not yet supported with FlexGroup volume; for example, SAN LUNs, Windows NFS, SMB1, snapshot naming/autodelete, vmalign set, SnapLock with releases earlier than ONTAP 9.11.1 (SnapLock is supported beginning with ONTAP 9.11.1), space SLO, or logical space enforcement/reporting. For more information see Supported and unsupported configurations for FlexGroup volumes.
  - The SVM where the FlexVol volume to be converted is located is currently using SVM DR.
  - NetApp FlexClone volumes are present, and the FlexVol volume is the parent volume. The volume being converted cannot be a parent or a clone.
  - The volume is a NetApp FlexCache origin volume.
  - For ONTAP 9.7 and earlier, NetApp snapshots must not exceed 255. For ONTAP 9.8 and later, 1023 snapshots are supported.
  - Storage efficiencies are enabled. These must be disabled and can be reenabled after conversion.
  - The volume is a source of a SnapMirror relationship, and the destination has not yet been converted.
  - The volume is part of an active (not quiesced) SnapMirror relationship.
  - Autonomous Ransomware Protection (ARP) has been disabled on the volume. You should not enable it again until the conversion is complete.
  - Quotas are enabled. These must be disabled and can be reenabled after conversion.
  - Volume names are longer than 197 characters.
  - The volume is associated with an application.

    This is applicable to ONTAP 9.7 only. The limitation is removed in ONTAP 9.8.

  - ONTAP processes are running, such as mirroring, jobs, wafliron, NDMP backup, and inode conversion in process.
  - The volume is an SVM root volume.

- The volume is too full.

  If any of these incompatibilities exist, an error message is generated if the FlexVol volume, and the volume conversion is aborted. You can take corrective actions and retry the conversion.

- If a FlexVol volume is currently at 80% or greater maximum capacity, consider copying the data to a newly created FlexGroup volume instead of performing an in-place conversion. Although FlexGroup member volumes will naturally rebalance over time, converting a high-capacity FlexVol volume to a FlexGroup volume may create performance or balance issues that will not quickly be rebalanced across member volumes.

> Converting a very large FlexGroup volume results in a very full FlexGroup volume member constituent, which can create performance issues. For more information, see the section called "When not to create a FlexGroup volume" in the TR FlexGroup volumes - Best Practices and Implementation Guide.

Steps

1. Verify that the FlexVol volume is online: `volume show -fields vol_name volume-style-extended,state`

```
cluster-1::> volume show my_volume -fields volume-style-extended,state
vserver volume    state  volume-style-extended
------- --------- ------ ---------------------
vs0     my_volume online flexvol
```

2. Verify whether the FlexVol volume can be converted without issues:
   a. Log in to the advance privilege mode: `set -privilege advanced`
   b. Verify the conversion process: `volume conversion start -vserver vs1 -volume flexvol -check-only true`

      You must rectify all errors before converting the volume.

      > You cannot convert a FlexGroup volume back to a FlexVol volume.

3. Start the conversion: `volume conversion start -vserver svm_name -volume vol_name`

```
cluster-1::*> volume conversion start -vserver vs0 -volume my_volume

Warning: Converting flexible volume "my_volume" in Vserver "vs0" to a
FlexGroup
         will cause the state of all Snapshot copies from the volume to
be set
         to "pre-conversion". Pre-conversion Snapshot copies cannot be
         restored.
Do you want to continue? {y|n}: y
[Job 57] Job succeeded: success
```

4. Verify that the conversion is successful: `volume show vol_name -fields volume-style-extended,state`

```
cluster-1::*> volume show my_volume -fields volume-style-extended,state
vserver volume    state  volume-style-extended
------- --------- ------ ---------------------
vs0     my_volume online flexgroup
```

Results

The FlexVol volume is converted to a single-member FlexGroup volume.

After you finish

You can expand the FlexGroup volume, as required.

Convert ONTAP FlexVol volume SnapMirror relationships to ONTAP FlexGroup volume SnapMirror relationships

To convert a FlexVol volume SnapMirror relationship to a FlexGroup volume SnapMirror relationship in ONTAP, you must first convert the destination FlexVol volume followed by the source FlexVol volume.

About this task

- Mixing FlexGroups with FlexVol volumes in SnapMirror/SnapVault relationships is not supported beyond the conversion process.
- FlexGroup conversion is supported only for SnapMirror asynchronous relationships.
- FlexGroup conversion is not supported in SnapMirror cloud relationships.
- Conversion time depends on several variables. Some of the variables include:
  - CPU of the controller
  - Utilization of CPU by other applications
  - Amount of data in the initial snapshot
  - Network bandwidth
  - Bandwidth used by other applications

Before you begin

- The FlexVol volume that is being converted must be online.
- The source FlexVol volume in the SnapMirror relationship must not be the source volume for multiple SnapMirror relationships.

  Beginning with ONTAP 9.9.1, fanout SnapMirror relationships are supported for FlexGroup volumes. For more information, see Considerations for creating SnapMirror cascade and fanout relationships for FlexGroup volumes.

- The operations and configurations on the FlexVol volume must be compatible with the conversion process.

  An error message is generated if the FlexVol volume has any incompatibility and the volume conversion is

aborted. You can take corrective actions and retry the conversion.

Steps

1. Verify that the SnapMirror relationship is healthy:

```
snapmirror show
```

Only XDP type mirror relationships can be converted.

Example:

```
cluster2::> snapmirror show

Progress
Source            Destination Mirror  Relationship   Total
Last
Path        Type  Path        State   Status         Progress  Healthy
Updated
----------- ---- ------------ ------- -------------- --------- -------
--------
vs0:src_dpv DP   vs2:dst_dpv  Snapmirrored
                                     Idle           -         true    -
vs0:src_xdp XDP  vs2:dst_xdp  Snapmirrored
                                     Idle           -         true    -
```

2. Verify whether the source volume is compatible for conversion:
   a. Log in to the advance privilege mode:

```
set -privilege advanced
```

   b. Verify the conversion process:

```
volume conversion start -vserver <src_svm_name> -volume <src_vol>
-check-only true
```

   Example:

```
volume conversion start -vserver vs1 -volume src_vol -check-only true
```

   You must rectify all errors before converting the volume.

3. Convert the destination FlexVol volume to FlexGroup volume.

a. Quiesce the FlexVol SnapMirror relationship:

```
snapmirror quiesce -destination-path <dest_svm:dest_volume>
```

Example:

```
cluster2::> snapmirror quiesce -destination-path vs2:dst_xdp
```

b. Start the conversion:

```
volume conversion start -vserver <dest_svm> -volume <dest_volume>
```

Example:

```
cluster-1::> volume conversion start -vserver vs2 -volume dst_xdp

Warning: After the volume is converted to a FlexGroup, it will not be
possible
to change it back to a flexible volume.
Do you want to continue? {y|n}: y

[Job 510] Job succeeded: SnapMirror destination volume "dst_xdp" has
been successfully converted to a FlexGroup volume.
You must now convert the relationship's source volume, "vs0:src_xdp",
to a FlexGroup.
Then, re-establish the SnapMirror relationship using the "snapmirror
resync" command.
```

4. Convert the source FlexVol volume to FlexGroup volume: `

```
volume conversion start -vserver <src_svm_name> -volume <src_vol_name>
```

Example:

```
cluster-1::> volume conversion start -vserver vs0 -volume src_xdp

Warning: Converting flexible volume "src_xdp" in Vserver "vs0" to a
FlexGroup
         will cause the state of all Snapshot copies from the volume to
be set
         to "pre-conversion". Pre-conversion snapshots cannot be
         restored.
Do you want to continue? {y|n}: y
[Job 57] Job succeeded: success
```

5. Resync the relationship:

```
snapmirror resync -destination-path dest_svm_name:dest_volume
```

Example:

```
cluster2::> snapmirror resync -destination-path vs2:dst_xdp
```

After you finish

You must ensure that when the source FlexGroup volume is expanded to include more constituents, the destination volume is also expanded.

Related information

- snapmirror quiesce
- snapmirror resync
- snapmirror show

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