



# Preparing 7-Mode aggregates and volumes for transition

## ONTAP 7-Mode Transition

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# Preparing 7-Mode aggregates and volumes for transition

Before transition, you must ensure that the 7-Mode aggregates and volumes are eligible for transition and perform some manual steps before transition. For example, some volume types cannot be transitioned and any 32-bit data must be removed from the 7-Mode systems before transition.

## Restrictions for transitioning 7-Mode aggregates and volumes

You must be aware of certain restrictions for transitioning 7-Mode aggregates and volumes. Some of the restrictions are due to features that are not supported in ONTAP. For some restrictions, you can perform a corrective action that enables you to continue with the transition.

### Volume types

The following types of volumes are not supported for transition:

- Traditional volumes

You can use host-based transition methods to transition traditional volumes.

[NetApp Technical Report 4052: Successfully Transitioning to Clustered Data ONTAP \(Data ONTAP 8.2.x and 8.3\)](#)

- SnapLock volumes

The transition of SnapLock volumes is supported to ONTAP releases 9.0 through 9.5.

- FlexCache volumes

### Aggregate and volume states

Transition is blocked if any of the 7-Mode aggregates and volumes selected for the transition are in one of the following states:

- Offline
- Restricted
- Inconsistent (`wapl inconsistent`)

### FlexClone volumes

The clone hierarchy and storage efficiency are preserved during the copy-free transition. However, you must ensure that the parent FlexVol volume and all of its FlexClone volumes belong to the same vFiler unit. If the FlexClone volumes are in different vFiler units from the parent volume, you must choose one of the following actions:

- Move the FlexClone volumes to the vFiler unit that owns the parent FlexVol volume.
- Split the clones from the parent FlexClone volume, and then transition these volumes as FlexVol volumes.

## Volume with qtrees that belong to a different vFiler unit

You cannot transition volumes with qtrees, where the qtrees are owned by a different vFiler unit than that of the volume. Before transition, you must ensure that each volume and all of its qtrees belong to the same vFiler unit by performing one of the following actions:

- Move the qtrees to the vFiler unit that owns the volume.
- Delete the qtrees.

## Inode to parent pathname translation setting

The inode to parent pathname translations must be enabled on each volume. You can enable the parent to pathname translations by turning off the `no_i2p` option:

```
vol options vol_name no_i2p off
```

You do not have to wait for the i2p scan to finish, and you can continue with the transition preparation.

## Preparing for transitioning 7-Mode systems with 32-bit aggregates

32-bit aggregates, volumes, and Snapshot copies are not supported in ONTAP 8.3 and later. Therefore, you must expand the 32-bit aggregates to 64-bit, and then find and remove any 32-bit volumes and Snapshot copies from the 7-Mode system before transition.

- **32-bit aggregates**
  - a. [Expanding an aggregate to the 64-bit format](#)
  - b. [Finding and removing 32-bit volumes and Snapshot copies](#)
- **32-bit volumes or Snapshot copies**

Even if you have only 64-bit aggregates and volumes, some 32-bit or mixed-format FlexVol volumes or Snapshot copies might remain. You must remove these volumes and Snapshot copies before transition.

[Finding and removing 32-bit volumes and Snapshot copies](#)

### Related information

[NetApp Technical Report 3978: In-Place Expansion of 32-Bit Aggregates to 64-Bit Overview and Best Practices](#)

## Expanding an aggregate to the 64-bit format

If your system contains 32-bit aggregates, you must expand them to the 64-bit format on your 7-Mode system *before* transitioning to Data ONTAP 8.3 or later versions, because

those versions of Data ONTAP do not support the 32-bit format.

- If the aggregate contains destination volumes for a SnapMirror relationship with a 32-bit source volume, the aggregate containing the source volume must be expanded before expanding the aggregate containing the destination volume.

For volumes in a SnapMirror relationship, the destination volume inherits the format of the source volume while the mirror is intact. If the aggregate you are expanding contains a destination volume whose source is a 32-bit volume and you break the mirror before expanding the aggregate, the destination volume is expanded to the 64-bit format. However, if you reestablish the mirror and the source volume is still 32-bit, the destination volume returns to the 32-bit format. For this reason, you must expand the aggregate containing the source volume before reestablishing the SnapMirror relationship if you want to expand all 32-bit volumes in the aggregate to the 64-bit format.

### Steps

1. Enter advanced privilege mode:

```
priv set advanced
```

2. Initiate the expansion:

```
aggr 64bit-upgrade start aggr_name
```

3. Perform the appropriate action:

If the command...	Then...
Initiates successfully	Proceed to the next step.
Indicates that one or more volumes could not be expanded because they did not have enough space	Retry the command, adding the <code>grow-all</code> option.
Indicates that the expansion could not be completed for some other reason	Perform the appropriate action, based on the issue outlined in the error message.

4. Display the status of the expansion:

```
aggr 64bit-upgrade status aggr_name
```

The current status of the expansion is displayed. When the message indicates that there is no upgrade in progress, the expansion is complete.

5. Confirm that all volumes in the aggregate are 64-bit format:

```
aggr 64bit-upgrade status aggr_name -all
```

6. Return to administrative privilege mode: `priv set admin`

The aggregate is expanded to the 64-bit format. However, even if all volumes are expanded, some 32-bit Snapshot copies might remain. The presence of 32-bit Snapshot copies in the source volumes prevents an upgrade or transition to Data ONTAP 8.3 or later.

## Finding and removing 32-bit volumes and Snapshot copies

Even if you have expanded all of your aggregates to the 64-bit format, some 32-bit or mixed-format FlexVol volumes or Snapshot copies can remain. These volumes and Snapshot copies must be removed before your data can be accessed by a cluster running Data ONTAP 8.3 or later.

- You must have expanded all 32-bit aggregates on the system to the 64-bit format.

You must repeat the steps in this task for each aggregate that contains 32-bit volumes and Snapshot copies.

### Steps

1. Enter advanced mode:

```
priv set advanced
```

2. Display the format of all volumes in the aggregate:

```
aggr 64bit-upgrade status aggr_name -all
```

Each volume in the aggregate is displayed with its format.

3. For each 32-bit or mixed-format volume, determine the reason that the volume has not been expanded to the 64-bit format, and then take the appropriate action.

If you cannot determine the reason that the volume was not expanded, retry the aggregate expansion.

If the volume...	Then...
Is the destination of a SnapMirror relationship	Expand the aggregate containing the source volume to the 64-bit format.
Is a read-only volume (but not a SnapMirror destination)	Make the volume writable and retry the expansion, or destroy the volume.
Did not expand because of insufficient free space in the volume or aggregate	Increase the free space in the volume or aggregate and retry the expansion.

All 32-bit and mixed-format volumes in the aggregate are now 64-bit. You can confirm this by repeating the previous step.

4. Display the format of all Snapshot copies on the system:

```
snap list -fs-block-format
```

5. Remove the 32-bit Snapshot copies by using the snap delete command.



This action deletes the data in the Snapshot copies. You must be certain that you do not need to retain the Snapshot copies before you delete them. Alternatively, you can wait for the 32-bit Snapshot copies to be aged out. The amount of time this takes depends on your Snapshot copy schedule.

If a Snapshot copy is the base Snapshot copy for a FlexClone volume, you must split the FlexClone volume from its parent before you can remove the Snapshot copy.

All 32-bit Snapshot copies are removed. You can confirm this by repeating the previous step.

6. Return to the administrative privilege level:

```
priv set admin
```

## Aggregate space requirements for transition

Before transition, you must ensure that the 7-Mode aggregates have adequate free space. The 7-Mode Transition Tool performs various space checks on the aggregates based on the physical space, logical space, space occupied by Snapshot copies, and space guarantee settings. You must also be aware of the space considerations with Flash Pool aggregates.

### Physical space in the aggregates

Transition is blocked if the free space is less than 5% of the physical space in the 7-Mode aggregates. The best practice is to have at least 20% free space in the 7-Mode aggregates before transition.

The additional space is required in the aggregates for the following reasons:

- Creating the aggregate-level Snapshot copy for each 7-Mode aggregate during the export phase
- Testing the workload on the transitioned aggregates with new data in the preproduction testing phase

If you do not have additional space, you can add disks to the 7-Mode systems before transition. If adding disks is not feasible or if you can ensure that only limited amount of data is written on the transitioned volumes during the preproduction phase, the 7-Mode Transition Tool allows you to acknowledge this error and continue with the transition. However, you must continue to monitor the aggregate space during the transition and ensure that the aggregates do not grow in the preproduction testing phase.

### Logical space in the aggregates

If the logical space in the 7-Mode aggregates is more than 97% full, 7-Mode Transition Tool throws a blocking error during precheck. You can ignore this error during the planning phase and continue with the transition; however, you must ensure that the logical space used is less than 97% before the export and halt operation by either reducing the size of the volumes in such aggregates or adding more disks to the aggregates. You cannot ignore this error in the export and halt phase.

### Snapshot spill

If the Snapshot copies in the 7-Mode aggregates occupy more space than the allocated space for Snapshot copy reserve, the creation of aggregate-level Snapshot copies in the export and halt operation might fail. 7-Mode Transition Tool throws a blocking error during precheck for this condition. In such conditions, you must delete all the existing aggregate-level Snapshot copies during the planning phase.

If you do not want to delete the existing Snapshot copies, you can ignore this error during the planning phase and continue with the transition; however, you must ensure that the Snapshot copy used capacity percentage is less than 100% before the export and halt operation.

## Space guarantee settings

7-Mode Transition Tool throws a blocking error during precheck if the 7-Mode controllers have volumes with the following space guarantee settings:

- Volume-guaranteed volumes with guarantee disabled
- File-guaranteed volumes
- **Volume-guaranteed volumes with guarantee disabled**

In some cases, the space guarantee is disabled for the volume guaranteed volumes because of lack of space in the aggregates.

You must create sufficient free space on the 7-Mode aggregates and then enable space guarantee for such 7-Mode volumes by using the following 7-Mode command:

```
vol options volume_name guarantee volume
```

If you do not want to perform any corrective actions on 7-Mode, you can ignore this error. After the transition, examine the volumes for which guarantee is disabled and enable the guarantee manually by using the following command:

```
volume modify -vserver -volume -space-guarantee volume
```

- **File-guaranteed volumes**

File guarantee is not supported in ONTAP.

If you have file-guaranteed volumes, you must perform one of the following actions:

- If the 7-Mode volumes contain space-reserved LUNs or files, change the space guarantee type of the volumes to volume by using the 7-Mode command:

```
vol options volume_name guarantee volume
```

You must ensure that there is enough free space on the 7-Mode aggregates before running this command.

- If the 7-Mode volumes do not contain any space-reserved LUNs or files, change the space guarantee of the volumes to none by using the following 7-Mode command:

```
vol options volume_name guarantee none If you do not want to perform any corrective actions on 7-Mode, you can ignore this error and continue with the transition.
```

During the transition, if these volumes contain space-reserved LUNs or files, their space guarantee will be automatically converted to `volume`, but the space guarantee will be disabled initially. You must create sufficient free space on the aggregates and then manually enable the guarantee by using the following command:

```
+ volume modify -vserver -volume -space-guarantee volume
```

+ If the volumes do not contain any space-reserved LUNs or files, their space guarantee will be automatically converted to none during the transition.



## Additional consideration for Flash Pool aggregates

Transition is not supported if the free space in the SSDs of Flash Pool aggregates is less than 5% of the total disk space of the SSDs. You must either disable the SSD cache or add more SSDs to continue with the transition.

### Related information

[Ignorable errors during transition](#)

[Disk and aggregate management](#)

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