Planning a copy-free transition project

ONTAP 7-Mode Transition

NetApp
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Planning a copy-free transition project involves selecting the source 7-Mode controllers and target cluster nodes, mapping 7-Mode volumes to a storage virtual machine (SVM), selecting the LIFs to be transitioned, and running prechecks.

You can create multiple projects with the same target cluster HA pair nodes. You can then run prechecks and apply the SVM configurations on all these projects. However, only one project can be in the critical section window at a given time. A project is in the critical section window if the project is in any of the phases from export to commit, or if a rollback operation has been initiated for the project. You can proceed with the export and halt operation for another project only after the commit or rollback operation is completed for the project in the critical section window.

Copy-free transition project planning worksheets

You can use the copy-free transition planning worksheets to record information about node mapping, SVM mapping, volume mapping, and LIFs to transition. The worksheets are useful when creating a transition project by using the 7-Mode Transition Tool. You should be aware of the guidelines for completing the worksheets.

You can follow these guidelines to complete the worksheets:

- Map each vFiler unit to an SVM.

  If there are no vFiler units in the 7-Mode controller, map the controller to a single SVM.

- Record the 7-Mode volume name and the corresponding Data ONTAP volume name.

  The ONTAP volume name might be different from the 7-Mode volume name.

- Identify the LIFs to be configured on each SVM.

  The IP addresses for the LIFs can either be existing on the 7-Mode system or can be new LIFs.

Node mapping

7-Mode controller	Mapped cluster node

SVM and volume mapping

7-Mode controller	vFiler unit or controller	Mapped SVM	7-Mode volume	SVM volume

7-Mode controller	vFiler unit or controller	Mapped SVM	7-Mode volume	SVM volume

LIF mapping (7-Mode IP addresses)

7-Mode controller	vFiler unit or controller	Mapped SVM	7-Mode IP address	Netmask	Default gateway	Home node	Home port

LIF mapping (new LIFs)

SVM	New IP address	Netmask	Default gateway	Home node	Home port

Example

The following table shows an example of completed worksheets for a 7-Mode HA pair with the controllers hostA_7mode and hostB_7mode.

Node mapping

7-Mode controller	Mapped cluster node
hostA_7mode	cluster1_01
hostB_7mode	cluster1_02

SVM and volume mapping

7-Mode controller	Mapped cluster node	vFiler unit or controller	Mapped SVM	7-Mode volume	SVM volume
hostA_7mode	cluster1_01	vfilerA	svm1	volA	volA
				volB	volB
		vfilerB	svm2	vol1	vol_nfs
				vol2	vol_cifs
hostB_7mode	cluster1_02	Not applicable	svm3	vol3	vol3
				vol4	vol4
				vol5	vol5
				vol6	vol6

LIF mapping (7-Mode IP addresses)

7-Mode controller	vFiler unit or controller	Mapped SVM	Existing 7-Mode IP	Netmask	Default gateway	Home node	Home port
hostA_7mode	vfilerA	svm1	192.0.2.129	255.255.255.128	192.40.0.1	cluster1_01	e0a
			192.0.2.135	255.255.255.128	192.40.0.1	cluster1_02	e0b
	vfilerB	svm2	-				
			-				
hostB_7mode	Not applicable	svm3	192.0.2.110	255.255.255.128	192.40.0.1	cluster1_01	e0c
			192.0.2.111	255.255.255.128	192.40.0.1	cluster1_02	e0d

LIF mapping (new LIFs)

SVM	New IP address	Netmask	Default gateway	Home node	Home port
svm1	-				
	-				
svm2	192.0.2.130	255.255.255.128	192.40.0.1	cluster1_01	e1c
	192.0.2.131	255.255.255.128	192.40.0.1	cluster1_02	e1d
svm3	192.0.2.136	255.255.255.128	192.40.0.1	cluster1_01	e0c
	192.0.2.137	255.255.255.128	192.40.0.1	cluster1_02	e0d

Adding controllers and clusters

Before you start the transition, you must add the 7-Mode controllers, including both nodes of a 7-Mode HA pair, and the clusters that are required for the transition. You should add the clusters using the cluster-management interface.

- For a copy-free transition, you must add the cluster, and not the cluster nodes that are the target of transition.
- The 7-Mode controllers and clusters information that you provide is not persistent.

  If the 7-Mode Transition Tool service is restarted, the tool prompts in the project dashboard for information about controllers and cluster that are part of active projects.

Steps

1. From the top pane, click **Storage Systems**.
2. In the **Hostname** field, enter the FQDN or IP address of the 7-Mode controller or the ONTAP system.

   For a cluster, you can specify the IP address or FQDN of the cluster-management interface. For a 7-Mode controller, you must specify the IP address of the default vFiler unit, because the IP addresses of individual vFiler units are not accepted.

3. Enter the administrator credentials for the specified host, and then click **Add**.

   The 7-Mode controllers are added to the “7-Mode Controllers” table and clusters are added to the “Clustered Data ONTAP Systems” table.

4. Repeat Steps 2 and 3 to add all of the controllers and clusters that you require for the transition.
5. If the Status column indicates that the credentials of the system are missing or the credentials have changed from what was initially entered in the tool, click the  icon, and then enter the credentials again.
6. Click **Next**.

   The Select Source Systems screen is displayed.

Creating a copy-free transition project

The first step in planning a transition project is to select the source 7-Mode HA pair from which you want to transition the disk shelves, aggregates, volumes, and configurations, and then create a transition project.

- The 7-Mode controllers in the HA pair must be running a supported ONTAP version on a platform that is supported for a copy-free transition.

  NetApp Interoperability Matrix Tool

- Both controllers in the HA configuration must be healthy.

1. Select the **Copy-Free Transition** migration method from the homepage and click **Start Planning**.

   If the controller and cluster required for a new project are not added, you can enter the details in the Enter Device Credentials pane.

2. Select the source 7-Mode HA pair that you want to transition.
3. Click **Create Project**.
   a. In the Project Details window, provide a name for the project.
   b. Select a project group to which the project should be added.

      You can either create a new project group or add the project to the default group.

      Creating a project group enables you to group and monitor related projects.

   c. Click **Save**.

      The Select Target Cluster screen is displayed.

Selecting the target cluster nodes for transition

You can select the target cluster HA pair and map each 7-Mode controller in the HA pair to a corresponding target cluster node. The mapped node specifies the cluster node to which the disk shelves from the corresponding 7-Mode controller must be connected.

The target cluster must be running Data ONTAP 8.3.2 or later.

You can transition the 7-Mode disk shelves to a target HA pair that has preexisting data aggregates and volumes.

For a two-node cluster, you must have a data aggregate to host the root volumes of the target SVMs. For a cluster with four or more nodes, the root volumes of the SVMs can be hosted either on the target nodes of the transition or on other nodes in the cluster.

Steps

1. Select the target HA pair to which the 7-Mode disk shelves must be connected.

   The tool automatically maps each 7-Mode storage system to a target cluster node.

The disk and aggregate ownership from each 7-Mode controller is transferred to its corresponding mapped target cluster node during the import phase.

2. Click **Swap Node Mapping** to change the automatic assignment of source-to-target node mapping.
3. Click **Save and Continue**.

   The SVM and Volume Mapping screen is displayed.

Mapping SVMs and volumes

You should map each 7-Mode controller in the HA pair to a target SVM. If you have vFiler units, you should select a target SVM for each vFiler unit. The volumes from the 7-Mode controller or vFiler unit are transitioned to the mapped SVM.

You must have created the SVMs on the target cluster.

Cluster management with System Manager

System administration

A vFiler unit can be mapped only to a single SVM. Volumes from any other 7-Mode controller or vFiler unit cannot be transitioned to a mapped SVM.

Steps

1. In the SVM and Volume Mapping tab, select the target SVM to which you want to transition the volumes from each 7-Mode controller or vFiler unit.

   The target SVM can be in the default or non-default IPspace.

2. Depending on whether you want to apply the same junction path policy for the volumes in all the SVMs or a different junction path policy for the volumes in each SVM, choose one of the following actions:

If you want to…	Then…
Apply the same junction path policy to all the SVMs	a. Click **Apply**. b. Select an option for the junction path policy. c. Click **OK**.
Specify the junction path policy for each SVM	Select the junction path policy from the drop-down list for each target SVM.

   The junction path policy specifies the path with which the target clustered Data ONTAP volumes must be mounted for client access. You can add one of the following values for the junction path policy:

   - **Preserve 7-Mode mount paths**

     Retains the same junction paths as that being used on the source 7-Mode volumes and the volumes are mounted with junction paths in the format `/vol/source_volume_name` after transition.

- **Use clustered Data ONTAP volume name**

  All the target clustered Data ONTAP volumes are mounted with junction paths with the clustered Data ONTAP volume name in the format `/target_volume_name` after transition.

- **Use 7-Mode volume name**

  All the target clustered Data ONTAP volumes are mounted with junction paths with the 7-Mode volume name in the format `/source_volume_name` after transition.

3. Click  to modify the name of the target clustered Data ONTAP volume.

   By default, the target clustered Data ONTAP volume has the same name as the 7-Mode volume. If a volume with the same name as the 7-Mode volume already exists on the SVM, the target volume is automatically assigned a new name.

4. Click **Save Mapping** for each mapped SVM.
5. Click **Next**.

   The Networking screen is displayed.

Selecting LIFs for transition

You can optionally specify the LIFs that you want to configure on the SVMs after transition. These LIFs can be existing IP addresses on the 7-Mode systems or they can be new LIFs. Only NAS LIFs are transitioned. FC and iSCSI LIFs must be manually configured before the SVM provision phase.

The LIFs that are selected for transition are configured on the SVMs during the SVM provision phase in the following ways:

- Existing 7-Mode IP addresses that are selected for transition are created in the administrative down state.

  These IP addresses can continue to serve data in 7-Mode until the cutover starts. During the import phase, these IP addresses are configured in the administrative up state.

- New IP addresses are created in the administrative up state.

  You can use these LIFs to test the connectivity of the SVMs to the name servers after the SVM provision phase.

Steps

1. In the LIF configuration tab, choose one of the following options:

If you want to transition…	Then…
An existing IP address on the 7-Mode system	a. Click **Select 7-Mode LIF**. b. Select the IP address that you want to transition, and then specify the target SVM and other network parameters. c. Click **Save**.
A new IP address	a. Click **Add New LIF**. b. Specify the IP address that you want to configure, the target SVM, and other network parameters. c. Click **Save**.

The target ports must be in the same IPspace as the target SVM.

2. Click **Next**.

   The Plan Configuration tab is displayed.

Customizing the transition of 7-Mode configurations

When planning the transition of configurations from 7-Mode to ONTAP, you can customize the configuration transition in two ways. You can ignore or skip the transition of one or more configurations. You can consolidate the 7-Mode NFS export rules, and then reuse an existing NFS export policy and Snapshot policy on the target SVM.

The 7-Mode Transition Tool does not perform prechecks for the configuration that is excluded.

By default, all 7-Mode configurations are selected for transition.

It is a best practice to run the prechecks with all configurations first, and then exclude one or more configurations in the subsequent run of the prechecks. This helps you to understand which configurations are excluded from transition and which prechecks are skipped subsequently.

Steps

1. From the Plan Configuration page, select the following options from the **SVM Configuration** pane:
   - For excluding the transition of configurations, clear the check box for those configurations.
   - For consolidating similar 7-Mode NFS export rules to a single export policy in ONTAP, which can then be applied to the transitioned volume or qtree, select the **Consolidate NFS Export Policies on 7-Mode** check box.
   - For reusing an existing NFS export policy on the SVM that matches the export policy that will be created by the tool, which can then be applied to the transitioned volumes or qtrees, select the **Reuse Export Policies of SVM** check box.
   - For consolidating similar 7-Mode Snapshot schedules to a single Snapshot policy in ONTAP, which can then be applied to the transitioned volume, select the **Consolidate 7-Mode Snapshot Policies** check box.

- For reusing an existing Snapshot policy on the SVM that matches the Snapshot policy that will be created by the tool, which can then be applied to the transitioned volumes, select the **Reuse Snapshot Policies of SVM** check box.

2. Click **Save and go to Dashboard**.

Related information

NFS transition: supported and unsupported configurations, and required manual steps

Supported and unsupported CIFS configurations for transition to ONTAP

Data protection transition: supported and unsupported configurations

Name services transition: supported and unsupported configurations, and required manual steps

Examples of consolidating NFS export rules and Snapshot schedules for transition

You might want to review examples of how similar 7-Mode export rules and 7-Mode Snapshot schedules are consolidated to a single NFS export policy and a single Snapshot policy in ONTAP. You might also want to understand how the consolidated policies are assigned to the transitioned volumes or qtrees with or without reusing a matching existing policy on the target SVM.

Example of consolidating NFS export rules for transition

NFS export rules in 7-Mode and ONTAP before transition

7-Mode export rules

```
/vol/vol1       -sec=sys,rw,nosuid
/vol/vol2       -sec=sys,rw,nosuid
/vol/vol3       -sec=sys,rw,nosuid
```

Export policies existing in ONTAP

```
cluster-2::> vserver export-policy show -vserver vs1
Vserver          Policy Name
---------------  -------------------
vs1              default
vs1              export_policy_1
```

The existing export policy export_policy_1 has the following export rule:

```
cluster-2::> vserver export-policy rule show -vserver vs1 -policyname
export_policy_1
             Policy          Rule    Access   Client                RO
Vserver      Name            Index   Protocol Match                 Rule
------------ --------------- ------  -------- ---------------------
---------
vs1          export_policy_1 1       nfs      0.0.0.0/0             sys
```

Export policies in ONTAP after transition with consolidation (no reuse)

Volumes vol1, vol2, and vol3 have similar export rules in 7-Mode; therefore, a new consolidated export policy, transition_export_policy_1, is assigned to these volumes after transition:

```
cluster-2::> vserver export-policy show -vserver vs1
Vserver          Policy Name
---------------  -------------------
vs1              default
vs1              export_policy_1
vs1              transition_export_policy_1
3 entries were displayed.
```

```
cluster-2::> vserver export-policy rule show -vserver vs1 -policyname
transition_export_policy_1
             Policy          Rule    Access   Client                RO
Vserver      Name            Index   Protocol Match                 Rule
------------ --------------- ------  -------- ---------------------
---------
vs1          transition_export_policy_1
                             1       nfs      0.0.0.0/0             sys
```

```
cluster-2::> volume show -vserver vs1 -volume vol1,vol2,vol3 -fields
policy
vserver volume policy
------- ------ -------------------------
vs1     vol1   transition_export_policy_1
vs1     vol2   transition_export_policy_1
vs1     vol3   transition_export_policy_1
3 entries were displayed.
```

Export policies in ONTAP after transition with consolidation and reuse

Volumes vol1, vol2, and vol3 have similar export rules in 7-Mode; therefore, a consolidated export policy is assigned to these volumes after transition. The export policy, export_policy_1, which matches the 7-Mode

export rules, already exists on the SVM. Therefore, the policy is applied to these volumes:

```
cluster-2::> vserver export-policy show -vserver vs1
Vserver          Policy Name
---------------  -------------------
vs1              default
vs1              export_policy_1
2 entries were displayed.
```

```
cluster-2::> vserver export-policy rule show -vserver vs1 -policyname
export_policy_1
             Policy          Rule    Access   Client                RO
Vserver      Name            Index   Protocol Match                 Rule
------------ --------------- ------  -------- ---------------------
---------
vs1          export_policy_1 1       nfs      0.0.0.0/0             sys
```

```
cluster-2::> volume show -vserver vs1 -volume vol1,vol2,vol3 -fields
policy
vserver volume policy
------- ------ --------------------------
vs1     vol1   export_policy_1
vs1     vol2   export_policy_1
vs1     vol3   export_policy_1
3 entries were displayed.
```

Example of consolidating Snapshot policies for transition

Snapshot schedules in 7-Mode and ONTAP before transition

7-Mode schedule

7-Mode volume	7-Mode Snapshot schedule
vol1	0 2 4@8,12,16,20 (weekly Snapshot copies: 0, daily Snapshot copies: 2, hourly Snapshot copies: 6 at 2, 4, 8, 12, 16, 20 hours)
vol2	0 2 4@8,12,16,20
vol3	0 2 4@8,12,16,20

7-Mode volume	7-Mode Snapshot schedule
vol4	1 2 3@8,12,16 (weekly Snapshot copies: 1, daily Snapshot copies: 2, hourly Snapshot copies: 3 at 8,12,16 hours)
vol5	2 2 3@8,12,16 (weekly Snapshot copies: 2, daily Snapshot copies: 2, hourly Snapshot copies: 3 at 8,12,16 hours)

Snapshot policies existing in ONTAP

Snapshot policy name	Policy details
ScheduleWeekly	Weekly, count: 1
ScheduleDailyHourly4	**Schedule details** • Schedule1: daily, count1: 2 • Schedule2: hourly, count2: 4 every 8, 12, 16, 20 hours
ScheduleHourly1	Hourly at 8, 12, 16, 20 hours, count: 4

Snapshot policy in ONTAP after transition with consolidation (no reuse)

7-Mode volume	7-Mode Snapshot schedule	Snapshot policy in ONTAP
vol1	0 2 4@8,12,16,20 (weekly Snapshot copies: 0, daily Snapshot copies: 2, hourly Snapshot copies: 4 at 8, 12, 16, 20 hours)	**Consolidated policy for vol1, vol2, and vol3** • Name: transition_snapshot_policy_0 • Schedule details ◦ Schedule1: daily, count1: 2 ◦ Schedule2: hourly, count2: 4 every 8, 12, 16, 20 hours
vol2	0 2 4@8,12,16,20	vol3
0 2 4@8,12,16,20	vol4	1 2 3@8,12,16 (weekly Snapshot copies: 1, daily Snapshot copies: 2, hourly Snapshot copies: 3 at 8,12,16 hours)

7-Mode volume	7-Mode Snapshot schedule	Snapshot policy in ONTAP
• Name: transition_snapshot_policy_1 • Schedule details ◦ Schedule1: weekly, count1: 1 ◦ Schedule2: daily, count2: 2 ◦ Schedule3: hourly, count3: 3 every 8,12,16 hours	vol5	2 2 3@8,12,16 (weekly Snapshot copies: 2, daily Snapshot copies: 2, hourly Snapshot copies: 3 at 8,12,16 hours)

Snapshot policy in ONTAP after transition with consolidation and reuse

7-Mode volume	7-Mode Snapshot schedule	Snapshot policy in ONTAP
vol1	0 2 4@8,12,16,20 (weekly Snapshot copies: 0, daily Snapshot copies: 2, hourly Snapshot copies: 4 at 2, 4, 8, 12, 16, 20 hours)	Consolidated policy for vol1, vol2, and vol3 for which the existing ONTAP policy is reused Name: ScheduleDailyHourly4
vol2	0 2 4@8,12,16,20	vol3
0 2 4@8,12,16,20	vol4	1 2 3@8,12,16 (weekly Snapshot copies: 1, daily Snapshot copies: 2, hourly Snapshot copies: 3 at 8,12,16 hours)
• Name: transition_snapshot_policy_1 • Schedule details ◦ Schedule1: weekly, count1: 1 ◦ Schedule2: daily, count2: 2 ◦ Schedule3: hourly, count3: 3 every 8,12,16 hours	vol5	2 2 3@8,12,16 (weekly Snapshot copies: 2, daily Snapshot copies: 2, hourly Snapshot copies: 3 at 8,12,16 hours)

Running prechecks

You can run prechecks to identify any issues before you start a transition. Prechecks verify that the 7-Mode sources, ONTAP targets, and configurations are valid for your transition. You can run prechecks any number of times.

The prechecks run more than 200 different checks. For example, the tool checks for items such as if volumes are online and network access exists between the systems.

1. From Dashboard, select the project for which you want to run the prechecks.
2. Click **Run Prechecks**.

   After the prechecks are complete, the result summary is displayed in the dialog box.

   The prechecks usually take only a few minutes to run, but the duration of the precheck phase depends on the number and type of errors or warnings that you resolve.

Steps

1. Choose an option under **Apply Type Filter** to filter the results:
   - To view all messages related to security, select **Error**, **Warning**, **Informational**, and **Security Only**.
   - To view all error messages related to security, select **Error** and **Security Only**.
   - To view all warning messages related to security, select **Warning**and **Security Only**.
   - To view all informational messages related to security, select **Informational** and **Security Only**.
2. To save the raw results in comma-separated values (CSV) format and export the results, click **Save As CSV**.

   You can view the transition operations that have been performed during the transition along with the operation type, status, start time, end time, and results in the Operation History tab on the Dashboard pane.

You must resolve all the errors detected by the prechecks before you start data copy. It is also a best practice to resolve all warnings prior to proceeding with the migration process. Resolution can be resolving the source issue of the warning message, implementing a workaround, or accepting the result of the issue.

Severity levels for precheck messages

You can verify whether the 7-Mode volumes can be transitioned by running the transition precheck operation. Transition precheck reports all the transition issues. Transition issues are assigned different severity levels, depending on the impact of the issue on the transition process.

The issues detected by the prechecks are classified into the following categories:

- **Error**

  Configurations that cannot be transitioned.

  You cannot continue the transition if there is even one error. The following are a few example configurations on the 7-Mode system that cause an error:

  - Traditional volumes
  - SnapLock volumes
  - Offline volumes
- **Warning**

  Configurations that can cause minor problems after transition.

Features that are supported in ONTAP, but are not transitioned by the 7-Mode Transition Tool, also generate a warning message. You can continue the transition with these warnings. However, after the transition you might lose some of these configurations or might have to complete some manual tasks for enabling these configurations in ONTAP.

The following are a few example configurations on the 7-Mode system that generate a warning:

- IPv6
- NFSv2
- NDMP configurations
- Interface groups and VLANs
- Routing Information Protocol (RIP)

- **Information**

Configurations that have been successfully transitioned.

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