



SAN host transition and remediation

ONTAP 7-Mode Transition

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SAN Host Transition and Remediation Guide

If you are transitioning data and configurations from Data ONTAP operating in 7-Mode to clustered Data ONTAP 8.3 or later using the 7-Mode Transition Tool (7MTT) 2.2 or later, you must perform remediation steps for SAN hosts before and after transition.

The *7-Mode Transition Tool SAN Host Transition and Remediation Guide* provides the necessary pretransition and post-transition steps for VMware ESXi, Windows, Red Hat Enterprise Linux (RHEL), HP-UX, and AIX hosts.

Related information

[Copy-based transition](#)

[Copy-free transition](#)

[7-Mode Transition Tool installation and administration](#)

ONTAP target releases supported by the 7-Mode Transition Tool

Release support for ONTAP transition target clusters depends on the transition method you want to use, copy-based or copy-free, and on the version of the 7-Mode Transition Tool.

Be sure to consult the current 7-Mode Transition Tool *Release Notes* for the latest information about supported target releases and known issues.

[7-Mode Transition Tool Release Notes](#)

Copy-based transitions are supported to these ONTAP target releases.

If your transition target is running ...	You must use this 7-Mode Transition Tool version ...
ONTAP 9.7P2 or later 9.7 P release	3.3.2
 Earlier 9.7 releases are not supported.	
ONTAP 9.6P7 or later 9.6 P release	3.3.2
 Earlier 9.6 releases are not supported.	
ONTAP 9.5 or earlier ONTAP 9 release	3.3.2 or 3.3.1
Clustered Data ONTAP 8.1.4P4 and later 8.x releases.	3.3.2 or 3.3.1

Copy-free transitions are supported to these ONTAP target releases using 7-Mode Transition Tool 3.3.1.

- ONTAP 9.4 and earlier ONTAP 9 releases.
- Clustered Data ONTAP 8.3.2 and later 8.x releases.

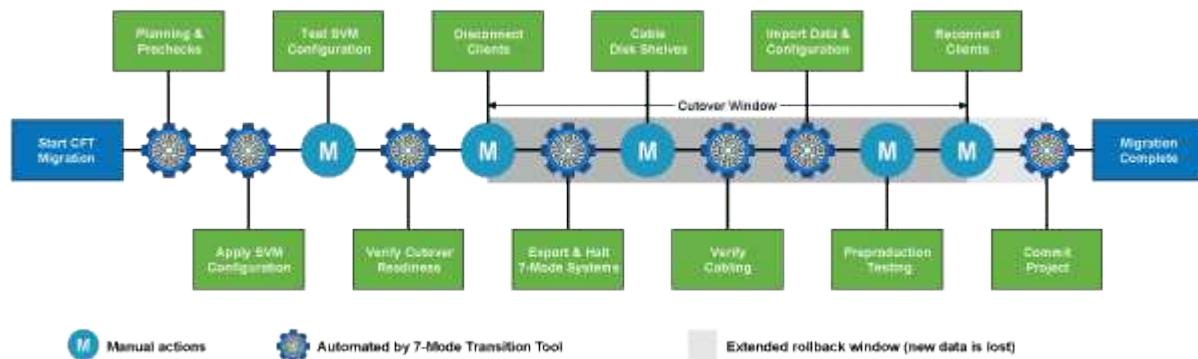


You cannot use the 7-Mode Transition Tool to transition to ONTAP 9.5 or later using the copy-free method. To do so, you must first transition to ONTAP 9.4 using 7-Mode Transition Tool 3.3.1 and then upgrade your cluster to ONTAP 9.5 or later. 7-Mode Transition Tool 3.3.2 does not support copy-free transitions.

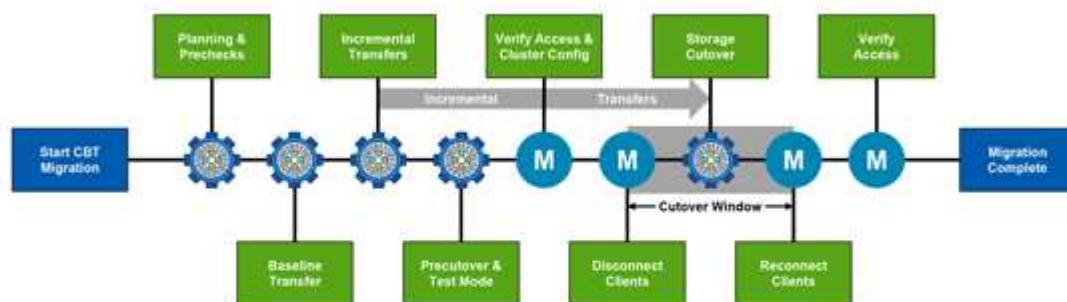
7-Mode Transition Tool transition phases

You can use the 7-Mode Transition Tool (7MTT) to perform a copy-free transition (CFT) or a copy-based transition (CBT) from Data ONTAP operating in 7-Mode to clustered Data ONTAP. You must know the phases of each transition method so that you also understand when to perform the specific remediation steps required for your hosts.

The CFT phases are as follows:



The CBT phases are as follows:



VMware ESXi host remediation

If you are using the 7-Mode Transition Tool (7MTT) to move from Data ONTAP operating in 7-Mode to clustered Data ONTAP in a SAN environment, you must perform a series of steps on your VMware ESXi hosts before the Data ONTAP transition. You must power

down your hosts before cutover and you must perform another series of steps after transition before you can begin servicing data.

Related information

[Testing transitioned LUNs and ESXi host applications before the cutover phase of copy-based transitions](#)

[Post-transition remediation requirements for ESXi hosts](#)

ESXi versions and features supported for SAN transitions using 7MTT

Only certain versions and features of ESXi are supported for SAN transitions using the 7-Mode Transition Tool (7MTT).

The following versions and features are supported as listed in the [NetApp Interoperability Matrix Tool](#)

- ESXi 5.0, 5.1, 5.5, and later

You must upgrade hosts running ESX/ESXi 4.x or earlier to ESX/ESXi 5.0 or later to transition them.

- VMFS3 and VMFS5 datastores
- SAN boot configurations
- RDM (RAW device map) devices
- All Guest OS supported in the Interoperability Matrix
- All SAN protocols (FC/FCoE/iSCSI)

Preparing for transition of ESXi hosts

You must complete several prerequisite tasks before you use the 7-Mode Transition Tool (7MTT) to transition your ESXi hosts from Data ONTAP operating in 7-Mode to ONTAP.

Steps

1. Configure clustered Data ONTAP as described in the [7-Mode Transition Tool Copy-Based Transition Guide](#) or the [7-Mode Transition Tool Copy-Free Transition Guide](#) based on the type of transition that you are performing.
2. Gather the following information for the ESXi hosts that you are transitioning:
 - IP address
 - Host name
 - Authentication details
3. Complete the zoning between FC or FCoE hosts and new clustered Data ONTAP nodes.

You can use the Collect and Assess feature to generate the zoning plan.

4. Use the [NetApp Interoperability Matrix Tool](#) to verify that the following are supported for transition to clustered Data ONTAP:
 - Your version of Data ONTAP operating in 7-Mode

In some cases, you might have to upgrade your version of Data ONTAP operating in 7-Mode to a 7MTT SAN compatible version. For example, Data ONTAP 7.3.7 operating in 7-Mode is not compatible

for transitions using the 7MTT. If you are running this version, you must upgrade it before initiating transition.

- Your ESXi host configuration
- Your HBA driver and firmware

For iSCSI, only software initiators are supported. For FC and FCoE, only QLogic and Emulex initiators are supported. If your ESXi FC or FCoE initiator is not supported, you must upgrade to a version that is supported by clustered Data ONTAP as described in the Interoperability Matrix.

5. If configured, disable VMware high availability (HA) and Distributed Resource Scheduler (DRS).

VMware HA and DRS are not supported during transition.

Related information

[Retaining resource pools when disabling VMware DRS clusters in the vSphere Web Client](#)

[Disabling VMware High Availability \(HA\)](#)

What the Inventory Collect Tool is

The Inventory Collect Tool (ICT) is a stand-alone utility for collecting configuration and inventory information about 7-Mode storage controllers, hosts attached to controllers, and applications running on these hosts for assessing the transition readiness of these systems. You can use the ICT to generate information about your LUNs and the configuration that you need for transition.

The ICT generates an *Inventory Assessment Workbook* and an Inventory Report XML file that contains configuration details of the storage and host systems.

The ICT is available for ESXi, 5.x, ESXi 6.x, and Windows hosts.

Preparing Linux guest operating systems for transition

If have 7-Mode LUNs mapped as physical compatible RDM (PTRDM) to Linux virtual machines (VMs) for the boot device, there are steps you must perform to prepare your Linux VMs for transition.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Obtain the SCSI device serial numbers:

```
cat /boot/grub/menu.lst
```

In the following example, 360a9800032466879362b45777447462d-part2 and 360a9800032466879362b45777447462d-part1 are SCSI device numbers:

```
# cat /boot/grub/menu.lst
...
kernel /boot/vmlinuz-3.0.13-0.27-default root=/dev/disk/by-id/scsi-
360a9800032466879362b45777447462d-part2 resume=/dev/disk/by-id/scsi-
360a9800032466879362b45777447462d-part1
```

2. Determine the mapping between the SCSI device serial numbers and SCSI devices/partitions:

```
# ls -l /dev/disk/by-id
```

The following example shows how the relationship mapping is displayed. The SCSI devices/partitions are displayed following the SCSI device/partition serial numbers. In this example, `../..sda`, `../..sda1`, and `../..sda2` are SCSI devices/partitions.

```
lrwxrwxrwx 1 root root 9 Oct 27 06:54 scsi-
360a9800032466879362b45777447462d -> ../..sda
lrwxrwxrwx 1 root root 10 Oct 27 05:09 scsi-
360a9800032466879362b45777447462d-part1 -> ../..sda1
lrwxrwxrwx 1 root root 10 Oct 27 02:21 scsi-
360a9800032466879362b45777447462d-part2 -> ../..sda2
```

3. Determine the mapping between the SCSI device paths and the UUIDs:

```
ls -l /dev/disk/by-uuid
```

The following example shows how the relationship mapping is displayed. In this example, `33d43a8b-cfae-4ac4-9355-36b479cfa524` is the UUID for SCSI device/partition `sda2`, `603e01f8-7873-440a-9182-878abff17143` is the UUID for SCSI device/partition `sdb`, and `c50b757b-0817-4c19-8291-0d14938f7f0f` is the UUID for SCSI device/partition `sda1`.

```
lrwxrwxrwx 1 root root 10 Oct 27 02:21 33d43a8b-cfae-4ac4-9355-
36b479cfa524 -> ../..sda2
lrwxrwxrwx 1 root root 9 Oct 27 06:54 603e01f8-7873-440a-9182-
878abff17143 -> ../..sdb
lrwxrwxrwx 1 root root 10 Oct 27 05:09 c50b757b-0817-4c19-8291-
0d14938f7f0f -> ../..sda1
```

4. Use the UUID to update the device reference in the grub boot `menu.lst` file by matching it with the SCSI device path and SCSI serial number.

```
#blkid
/dev/sda1: UUID="c50b757b-0817-4c19-8291-0d14938f7f0f" TYPE="swap"
/dev/sda2: UUID="33d43a8b-cfae-4ac4-9355-36b479cfa524" TYPE="ext3"
/dev/sdb: UUID="603e01f8-7873-440a-9182-878abff17143" SEC_TYPE="ext2"
TYPE="ext3"
```

5. Use the UUID you just retrieved to update the device reference in the grub boot `menu.lst` file.

The following example shows the `menu.lst` file after it has been updated:

```
# Modified by YaST2. Last modification on Fri Oct 17 02:08:40 EDT 2014
default 0
timeout 8
##YaST - generic_mbr
gfxmenu (hd0,1)/boot/message
##YaST - activate
###Don't change this comment - YaST2 identifier: Original name: linux###
title SUSE Linux Enterprise Server 11 SP2 - 3.0.13-0.27
root (hd0,1)
kernel /boot/vmlinuz-3.0.13-0.27-default root=/dev/disk/by-
uuid/e5127cdf-8b30-
418e-b0b2-35727161ef41 resume=/dev/disk/by-uuid/d9133964-d2d1-4e29-b064-
7316c5ca5566
splash=silent crashkernel=128M-:64M showopts vga=0x314
initrd /boot/initrd-3.0.13-0.27-default
```

6. Update the `/etc/fstab` file:

- Use the UUID you just retrieved to update the device reference in the `/etc/fstab` file.

The following example shows an `/etc/fstab` file with a SCSI serial number:

```
/dev/disk/by-id/scsi-360a9800032466879362b45777447462d-part1 swap
swap
defaults 0 0
/dev/disk/by-id/scsi-360a9800032466879362b45777447462d-part2 / ext3
acl,user_xattr 1 1
proc /proc proc defaults 0 0
sysfs /sys sysfs noauto 0 0
debugfs /sys/kernel/debug debugfs noauto 0 0
devpts /dev/pts devpts mode=0620,gid=5 0 0
```

- Replace the reference to the SCSI serial number with the UUID.

The following example shows an `/etc/fstab` file that has been updated to replace the SCSI serial number with the UUID:

```
cat /etc/fstab
UUID="c50b757b-0817-4c19-8291-0d14938f7f0f swap swap defaults
0 0
UUID="33d43a8b-cfae-4ac4-9355-36b479cfa524 / ext3 acl,user_xattr
1 1
proc /proc proc defaults 0 0
sysfs /sys sysfs noauto 0 0
debugfs /sys/kernel/debug debugfs noauto 0 0
devpts /dev/pts devpts mode=0620,gid=5 0 0
```

Preparing Windows guest operating systems for transition

If your Windows VMs use physical compatible RDM (PTRDM) devices, you must take the disks offline on the Windows VM before transition. You can use Disk Manager to take the disks offline.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

How to identify VM snapshots that must be removed before transition

Snapshots virtual machines (VMs) with Virtual RDM attached do not survive transition from Data ONTAP operating in 7-Mode to clustered Data ONTAP. These snapshots must be removed before transition. Snapshots of VMs with only VMFS vDisks and Physical RDM (PTRDM) do survive transition and do not have to be removed.

You can use the *Inventory Assessment Workbook* generated by the Inventory Collect Tool to identify all VMs with Virtual RDMs attached. Snapshots listed in the *Inventory Assessment Workbook* under the VM Snapshots column and the NPTRDM column with a value greater than 0 are VMs that have a Virtual RDM attached with VM snapshots.

Deleting VM snapshots copies using vSphere Client

If you are not familiar with the ESXi CLI or if it is more convenient for your environment, you can delete Virtual Machine (VM) snapshots using vSphere Client.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Open the ESXi host or vCenter Server managing the ESXi host.
2. Right-click the VM from which you need to remove snapshots.
3. Open the **Snapshot > Snapshot Manager** Snapshots window.
4. Click **Delete All**.

Removing VM snapshots using the ESXi CLI

You can choose to use the ESXi CLI to remove the snapshots if you are using the Host Remediation Tool (HRT), or if you prefer the flexibility of CLI usage.

You must have the VMID from the Host VMs tab in the *Inventory Assessment Workbook* generated by the 7-Mode Transition Tool (7MTT).

Steps

1. Use SSH to log in to the ESXi console.
2. Remove all VM snapshots of the VM with the applicable VMID:

```
# vim-cmd vmsvc/snapshot.removeall VMID
```

After deleting snapshots, you must regenerate the *Inventory Assessment Workbook* to collect information related to Data ONTAP operating in 7-Mode and your ESXi hosts.

Testing transitioned LUNs and ESXi host applications before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition an ESXi host, you can test your transitioned clustered Data ONTAP LUNs to verify that you can bring your host and applications online before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

- The new test host must be provisioned in a new test environment.

To avoid IP/MAC or UUID duplication or conflicts, test hosts must be configured in a private network.

- If you are transitioning a host booted from a local hard disk, the test host must have the same ESXi version and drivers as the source host.
- Zoning must be complete between FC or FCoE hosts and new clustered Data ONTAP nodes.
- Zoning must not exist between the source host and the new clustered Data ONTAP host.

If transitioned clustered Data ONTAP LUNs are visible to the source host during test mode, you might experience unexpected service disruptions on the source host.

- If you are transitioning a SAN booted host, your network adapter must be disabled.

You must maintain hardware parity between the test host and the source host and you must perform the following steps on the test host:

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. Zone the clustered Data ONTAP nodes on the test host.
4. Log in to the clustered Data ONTAP node, and then add new test host initiators to the igrup created by the 7MTT during the test phase.
5. Navigate to C:\Program Files\NetApp\operating in 7-Mode Transition Tool\.
6. Generate the 7-Mode to clustered Data ONTAP LUN mapping file from the Linux host where the 7MTT is installed:

```
transition cbt export lunmap -p project-name -o file_path
```

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-to-C-LUN-MAPPING.csv
```

7. Bring the test host online.
 - Reconfigure your VMware software iSCSI initiator after transition
 - Set up your ESXi hosts configured for SAN boot after transition
8. Verify that all transitioned clustered Data ONTAP LUNs are discovered.
9. If you are transitioning a non-SAN booted host, reregister your VMs.

[Re-registering VMs after transition of ESXi host.](#)

10. Complete the necessary post-transition steps for ESXi hosts.

[Post transition requirements for ESXi hosts](#)

11. Bring the host and applications online.
12. Perform your testing as needed.
13. Shut down the test host.
14. In the 7MTT UI, click **Finish Testing**.

The new clustered Data ONTAP LUNs are now read-only, and the data from the source 7-Mode LUNs is resynchronized.

15. If you plan to use the same source after you complete your transition, then edit the igrup on the clustered Data ONTAP node to add the appropriate initiator.

If you are planning to promote your test host to production, then you do not need to edit the igrup.

After you complete your test, plan time to shut down the source host connected to your controllers running Data ONTAP operating in 7-Mode. When you click **Complete Transition**, your source 7-Mode volumes and LUNs go offline and the transitioned clustered Data ONTAP LUNs become read/write.

Related information

[Copy-based transition](#)

Downtime at apply configuration (precutover) phase of ESXi host transition

You must plan for downtime at the apply configuration (precutover) phase while transitioning ESXi hosts.

After you complete the prerequisites for ESXi host transitions, you can use the 7-Mode Transition Tool (7MTT) to transition your LUNs from Data ONTAP operating in 7-Mode to ONTAP. ESXi hosts, VMs, and applications can be online until the apply configuration (precutover) phase of the 7MTT transition. However, at the apply configuration (precutover) phase, all applications and guest operating systems must be powered down. If ESXi hosts are SAN booted, or if SAN booted LUNs are part of the transition, the ESXi hosts must also be powered down at the apply configuration (precutover) phase.

If the host is not SAN booted and you need to keep your service running to non-transitioning LUNs or array LUNs that are not made by NetApp, you can choose not to shut it down. However, if you do not shut it down, you might experience the all-paths-down (APD) condition. To avoid the APD condition, you can mask Data ONTAP operating in 7-Mode LUNs. See the [VMware Knowledgebase ID 1009449](#) for more information.

Post-transition remediation requirements for ESXi hosts

After you transition LUNs for ESXi hosts from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT), you must perform a series of remediation tasks to bring your LUNs online and begin servicing data.

Related information

[Preparing for post-transition ESXi host remediation](#)

[Reregistering VMs after transition on non-SAN boot ESXi hosts using vSphere Client](#)

[Setting up ESXi hosts configured for SAN boot after transition](#)

[Determining whether VMFS volumes need to be remounted after transition](#)

[Reattaching RDM LUNs to VMs](#)

[Enabling CAW on a datastore using the ESXi CLI](#)

[Post-transition remediation for Linux and Windows guest operating systems](#)

[Recommended settings for ESXi hosts after transition remediation](#)

Preparing for post-transition ESXi host remediation

After the 7-Mode Transition Tool (7MTT) transition is complete, you must perform various ESXi host remediation tasks. There are several steps you must complete before you can perform those tasks.

- For copy-based transitions (CBTs), perform these steps before initiating the Storage Cutover operation in the 7MTT.
- For copy-free transitions (CFTs), perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Generate the 7-Mode to ONTAP LUN mapping file:

- For CBTs, run the following command from the Linux host where 7MTT is installed:

```
transition cbt export lunmap -p project-name -o file_path
```

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-to-C-LUN-MAPPING.csv
```

- For CFTs, run the following command from the system where the 7MTT is installed:

```
transition cft export lunmap -p project-name -s svm-name -o output-file
```

For example:

```
transition cft export lunmap -p SanWorkLoad -s svm1 -o c:/Libraires/Documents/7-to-C-LUN-MAPPING-svm1.csv
```



You must run this command for each of your storage virtual machines (SVMs).

2. Verify that igroup and initiator mappings are present.

7MTT re-creates the same igroup with initiators used in Data ONTAP operating in 7-Mode, and remaps the clustered Data ONTAP LUN to the host.

3. Verify that zoning is appropriate for the new clustered Data ONTAP target.

4. If you are doing a copy-free transition (CFT), run vol rehost.

See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for vol rehost procedures.

Reregistering VMs after transition on non-SAN boot ESXi hosts using vSphere Client

After you transition a non-SAN booted host, you must reregister your Virtual Machines (VMs).

The host must be online and the LUNs must be discovered.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool.
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

- Open the *Inventory Assessment Workbook* generated by the Inventory Collect Tool (ICT).
- Navigate to the Host VMs tab, and then record the **VM Config File** path and **Location/Datastore Name** of the VM.
- Use vSphere Client to log in to the ESXi host or the vCenter Server managing the ESXi host.
- Under **Host and Clusters**, select the ESXi host.
- Navigate to **Configuration > Hardware > Storage**.

6. Select the datastore with the datastore name you previously noted.

7. Right click and select **Browse Datastore**.

The Datastore Browser window opens.

8. Navigate to the **VM Config File** path you previously noted.

9. Right click the ` .vmx ` file, and then select **Add To Inventory**.

10. Repeat these steps for each VM listed in the **Host VMs** tab in the *Inventory Assessment Workbook* generated by the ICT.

Reconfiguration of VMware software iSCSI initiator after transition

If your ESXi host accessed your Data ONTAP operating in 7-Mode system with the VMware software iSCSI initiator, then after transition from 7-Mode to clustered Data ONTAP, you must reconfigure the VMware software iSCSI initiator on your ESXi host and enable it to discover the new clustered Data ONTAP target.

For copy-based transitions, you must reconfigure your VMware software iSCSI initiator before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT). For copy-free transitions, you must reconfigure your VMware software iSCSI initiator before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

During the reconfiguration, you must retrieve the iSCSI IP and IQN used by the new clustered Data ONTAP target. If the target IP subnet has changed, the respective IP subnet changes are required on the host iSCSI initiator ports as well.

To make the required changes to the software iSCSI initiator on the VMware ESXi host, see the *VMWare vSphere ESXi5.x Storage Guide*.

Related information

[System administration](#)

Setting up ESXi hosts configured for SAN boot after transition

If your ESXi host was configured for SAN boot before transition from Data ONTAP operating in 7-Mode, you must perform several steps before using the host after transition.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7MTT.
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Reconfigure your FC and FCoE HBA BIOS to boot from the SAN boot LUN of the clustered Data ONTAP system.
2. Boot the ESXi host.
3. Reset the host configurations to the pretransition settings.

4. For iSCSI hosts, see how to reconfigure your VMware iSCSI initiator.

[Reconfigure your VMware iSCSI initiator](#)

5. Remount the VMFS datastores created from the boot LUN in the default installation.

Related information

[Remounting VMFS volumes after transition using vSphere Client](#)

[Remounting VMFS volumes after transition using the ESXi CLI](#)

[SAN administration](#)

Determining whether VMFS volumes need to be remounted after transition

After transitioning from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you might have VMFS volumes that need to be remounted to bring VMFS datastores and VMs to their pretransition states.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Open the *Inventory Assessment Workbook* generated by the Inventory Collect Tool (ICT).
2. Click the **SAN Host Filesystems** tab.
3. Check the **Drive / Mount / Datastore Name** column for the filesystems and datastores mounted on the host before transition.
4. Make a note of the corresponding LUN naa IDs in the **SCSI Device ID/Device Name** column for the datastore.
5. Check whether the naa IDs noted for the datastore are listed in the 7MTT mapping file that was generated after the transition.
 - If none of the naa IDs are present in the 7MTT mapping file, the datastore and its underlying LUNs were not part of the 7MTT transition and no remediation is required.
 - If only part of the naa IDs are present in the 7MTT mapping file, your transition is incomplete and you cannot proceed.
 - If all naa IDs are present, you must remount your VMFS volumes.

Related information

[Remounting VMFS volumes after transition using vSphere Client](#)

[Remounting VMFS volumes after transition using the ESXi CLI](#)

[What the Inventory Collect Tool is](#)

Remounting VMFS volumes after transition using vSphere Client

After transition, you must remount your VMFS volumes to bring your datastores and virtual machines (VMs) to their pretransition states. If you are not familiar with the ESXi CLI or it is more convenient in your environment, you can use vSphere Client to remount your volumes.

These steps apply to volumes and spanned volumes.

Steps

1. Log in to the ESXi host or the vCenter Server managing the ESXi host.
2. Under **Hosts and Clusters**, select the ESXi host.
3. Navigate to **Configuration > Hardware > Storage**.
4. In the upper-right corner, click **Add storage**.
5. Select **Disk/LUN**.
6. Click **Next**.
7. In the list of LUNs, locate the **VMFS_label** column displaying the name of the datastore.
8. Select the LUN to complete the remount operation.

If you are remounting a spanned VMFS volume, the first LUN in the span is marked “head”. You must select the “head” LUN to complete the remount operation.

9. Click **Next**.
10. In the Select VMFS Mount Options window, select **Keep the existing signature**.
11. Complete the wizard.
12. Repeat these steps for all of the LUNs displaying the datastore name in the **VMFS_label** column.

Datastores are remounted and VMs are active.

Remounting VMFS volumes after transition using the ESXi CLI

After transition, you can use the ESXi CLI to remount your volumes and bring your datastores and VMs to their pretransition states.

The original 7-Mode LUN must be unmapped or offline.

These steps apply to volumes and spanned volumes.

Steps

1. Log in to the ESXi console using SSH.
2. List the newly added LUNs with existing VMFS signatures and VMFS labels:

```
# esxcfg-volume -1
```

The following is an example of the LUNs listed with VMFS signatures and VMFS labels.

```
# esxcfg-volume -l
VMFS UUID/label: 53578567-5b5c363e-21bb-001ec9d631cb/datastore1
Can mount: Yes
Can resignature: Yes
Extent name: naa.600a098054314c6c445d446f79716475:1 range: 0 - 409599
(MB)
```

3. Remount the VMFS volumes persistently with the same signature:

- For regular volumes:

```
esxcfg-volume -M|--persistent-mount VMFS UUID|label
```

- For spanned volumes:

```
# esxcfg-volume -M vmfs-span-ds
```

Related information

[VMware KB: vSphere handling of LUNs detected as snapshot LUNs](#)

Reattaching RDM LUNs to VMs

For VMs attached to Raw Device Mapped (RDM) LUNs to function after transition, you must remove the RDM disks hosting the LUN from the VM. Then you must reattach the RDM disks to the VM based on the LUN serial number provided by the 7-Mode Transition Tool (7MTT).

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7MTT.
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. In the *Inventory Assessment Workbook*, navigate to the **Host VM Disk Details** tab.
2. Identify the ESXi host VM with PTRDM or NPTRDM in the **Type** column.
3. Note the VM name, the disk path details in the **Disk** column, and the naa ID from the **Device Mapped** column.
4. Verify that the naa ID is listed in the 7MTT mapping file that was generated after transition.
5. Verify that the naa ID has a corresponding new naa ID in the **LUN WWID** column of the mapping file.

This is the new clustered Data ONTAP LUN naa ID.

6. Use the clustered Data ONTAP LUN naa ID from the **LUN WWID** column and the disk path details to reattach the clustered Data ONTAP LUN to the VM.

Related information

[Removing stale RDMs using vSphere Client](#)

[Reattaching RDM to VMs using vSphere Client](#)

Reattaching RDM using ESXi the CLI/console

Removing stale RDMs using vSphere Client

All RDM LUNs become stale during the transition from ONTAP operating in 7-Mode to clustered Data ONTAP. After transition, the RDMs must be removed and reattached before the LUNs can begin servicing data.

You must have the VM name and disk path of the RDM from the *Inventory Assessment Workbook*.

Steps

1. Open the ESXi host or vCenter Server managing the ESXi host.
2. Right-click the VM, and then select **Edit Settings**.

The VM Properties window is displayed.

3. Select the hard disk from the list of devices using the disk path from the *Inventory Assessment Workbook*.
4. Make note of the **Virtual Device Node** and **Compatibility Mode** from the VM Properties window.

Virtual Device Node: SCSI 0:2

Compatibility Mode: Physical

5. Click **Remove**.
6. Select **Remove from virtual machine and delete files from disk**.
7. Click **OK**.

An error message similar to the following appears. You can ignore this message.



8. Click **Close**.

Reattaching RDM to VMs using vSphere Client

After transition of an ESXi host using the 7-Mode Transition Tool (7MTT), you must reattach your RDMs to virtual machines (VMs).

Your stale Raw Device Mappings (RDMs) must have been removed.

Steps

1. Open the ESXi host or vCenter server managing the ESXi host.

2. Right-click the VM, and then select **Edit Settings**.

The VM Properties window opens.

3. Click **Add**.

The Add Hardware window opens.

4. Click **Hard Disk**.

5. Click **Next** to select the disk.

6. Select **Raw Device Mappings**.

7. Click **Next** to select the target LUN.

8. Select the LUN with the new clustered Data ONTAP NAA ID that you noted from the 7MTT mapping file.

9. Click **Next**.

10. Choose **Select Datastore**.

11. Select the datastore that matches the disk path that you noted in the 7MTT mapping file.

12. Click **Next**.

13. Choose either **Physical** or **Virtual** for the **Compatibility Mode**.

Choose the compatibility mode noted when your stale RDM was removed.

14. Click **Next**.

15. Choose **Advance Options**.

16. Select the **Virtual Device Node**.

Select the virtual device mode that you noted when you removed the stale RDM.

17. Click **Next**.

18. Click **Finish** to submit your changes.

19. Repeat the steps for all VMs with RDM attached.

Related information

[Removing stale RDMs using vSphere Client](#)

Reattaching RDM using ESXi the CLI/console

After transition from Data ONTAP operating in 7-Mode to clustered Data ONTAP you must reattach your raw device mapping (RDM).

- You must retrieve the RDM disk file listed in the Disk column of the *Inventory Assessment Workbook*.
- You must retrieve the new clustered Data ONTAP LUN naa ID from the 7MTT mapping file.

Steps

1. Log in to the ESXi console using SSH.

2. Use the mv command to make a backup of the RDM disk file and the associated device file.

The RDM disk file is listed in the Disk column of the *Inventory Assessment Workbook*.

If the RDM disk file is /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-winbus-A.vmdk, you would issue the following command:

```
mv /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-winbus-A.vmdk /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-win-bus-A.vmdk_bak
```

- For physical compatibility RDM (PTRDM):

```
mv RDM_disk_file_name-rdmp.vdmk RDM_disk_file_name-rdmp.vdmk_bak
```

For example:

```
mv /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-winbus-A-rdmp.vmdk /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-winbus-A/VM2-winbus-A-rdmp.vmdk_bak
```

- For virtual compatibility RDM (NPTRDM):

```
mv RDM_disk_file_name-rdmp.vdmk RDM_disk_file_name-rdmp.vdmk_bak
```

For example:

```
mv /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-winbus-A-rdmp.vmdk /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-winbus-A/VM2-winbus-A-rdmp.vmdk_bak
```

3. Use the new clustered Data ONTAP LUN naa ID and the RDM disk file to re-create the RDM configuration and device files.

- For PTRDM:

```
# vmkfstools -z /vmfs/devices/disks/new_clustered_Data_ONTAP_naa_ID.vmdk
```

For example:

```
vmkfstools -z /vmfs/devices/disks/naa.600a098054314c6c442b446f79712313 /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-winbus-A.vmdk
```

- For NPTRDM:

```
# vmkfstools -r /vmfs/devices/disks/new_clustered_Data_ONTAP_naa_ID.vmdk
```

For example:

```
vmkfstools -r /vmfs/devices/disks/naa.600a098054314c6c442b446f79712313 /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A/VM2-winbus-A.vmdk
```

4. Confirm that the configuration and pointer files are created:

```
# ls /vmfs/volumes/datastore/VM_directory
```

```
#ls /vmfs/volumes/53a3ac3d-df5aca03-3a94-001ec9d631cb/VM2-win-bus-A
```

The new configuration and pointer files are displayed under the VM directory path.

5. Repeat the steps for all VMs with RDM attached.
6. Restart the hostd and vpxa agents in the ESXi host:

```
/etc/init.d/hostd/restart
```

```
/etc/init.d/vpxa/restart
```

Post-transition remediation for Linux and Windows guest operating systems

Linux and Windows guest operating systems might require additional remediation after transition of LUNs from Data ONTAP operating in 7-Mode to clustered Data ONTAP.

For copy-based transitions, do the following after completing the Storage Cutover operation in the 7MTT. For copy-free transitions, do the following after the Import Data & Configuration operation in the 7MTT is complete.

- Linux

If the mount points are defined in the `/etc/fstab` file, you must mount the LUN (`mount --a`).

- Windows

If Failover Cluster is configured on the VM, you must bring the disks online from Failover Cluster Manager.

Recommended settings for ESXi hosts after transition remediation

After you complete the post-transition remediation steps for your ESXi host, you should apply the recommended ESXi host settings for clustered Data ONTAP on the host.

You can use Virtual Storage Console (VSC) to configure ESXi host settings. VSC is the standard NetApp plugin that enables vSphere vCenter to configure ESXi host settings for Data ONTAP. ESXi hosts and virtual machines (VMs) deployed on the source 7-Mode system should be configured using VSC. Alternatively, you can configure VMs manually by using the information in the following Knowledgebase articles:

- *Guest OS tunings*
- *Task Set Full (QFull) Tunables for LUNs in vSphere 5.1*
- *Storage Array Type Plugin option for a NetApp array on VMware vSphere*
- *HardwareAcceleratedLocking setting required for VMware deployment*

Enabling CAW on a datastore using the ESXi CLI

If you did not have support for Compare and Write (CAW) in Data ONTAP operating in 7-Mode, you must manually enable CAW support when you transition to clustered Data ONTAP. Clustered Data ONTAP supports CAW by default.

- There must be no I/O or VMs actively running on the VMFS datastore.
- The datastore must be remounted, if it was migrated.

- You must have the new ONTAP LUN naa ID from the 7-Mode Transition Tool (7MTT) mapping file.

CAW must be enabled only when no I/O or VMs are actively running on the VMFS datastore.

- CAW must be enabled only when no I/O or VMs are actively running on the VMFS datastore.
- For copy-based transitions, perform these steps after completing the Storage cutover operation in the 7MTT.
- For copy-free transitions, perform these steps after the Import Data & Configuration operation in the 7MTT is complete.

Steps

1. Open the *Inventory Assessment Workbook* generated by the Inventory Collect Tool (ICT).
2. Navigate to the SAN Host Filesystems tab.
3. Verify the CAW status for the datastore.

The **ATS/CAW** value for the datastore should display **Disabled**, and the Filesystem column should display **VMFS.x**.

4. Note the name of the datastore in the Disk column
5. Log in to the ESXi console using SSH.
6. List the device and partition details:

```
~ # vmkfstools -Ph -v1 datastore_path
```

datastore_path is the datastore name from the Disk column of the *Inventory Assessment Workbook*.

```
# vmkfstools -Ph -v1 /vmfs/volumes/datastorename
```

```

VMFS-5.6.0 file system spanning 1 partitions.
File system label (if any): datastorename
Mode: public
Capacity 9.8 GB, 8.2 GB available, file block size 1 MB, max file size
64
TB
Volume Creation Time: Mon Dec 9 10:29:18 2013
Files (max/free): 27408/27394
Ptr Blocks (max/free): 64512/64495
Sub Blocks (max/free): 3968/3964
Secondary Ptr Blocks (max/free): 256/256
File Blocks (overcommit/used/overcommit %): 0/1593/0
Ptr Blocks (overcommit/used/overcommit %): 0/17/0
Sub Blocks (overcommit/used/overcommit %): 0/4/0
Volume Metadata size: 590675968
UUID: 52a59b7e-52d2fb6c-11d6-001ec9d631cb
Partitions spanned (on "lvm"):
naa.600a098044314c6c442b446d51376749:1
naa.600a098054314c6c445d446f79716431:1
naa.600a098054314c6c445d446f79716433:1
Is Native Snapshot Capable: YES

```

7. Note the first device name and partition number.

In the preceding example, naa.600a098044314c6c442b446d51376749:1 is the device name and partition number.

8. Use the device ID and partition number to enable CAW on the datastore:

```
~# vmkfstools --configATSOnly 1 /vmfs/devices/disks/device-ID:Partition
```

9. Verify that the VMFS volume has been configured with ATS only:

```
# vmkfstools -Ph -v1 /vmfs/volumes/VMFS-volume-name
```

```

VMFS-5.5.4 file system spanning 1 partitions.
File system label (if any): ats-test-1
Mode: public ATS-only

```

Related information

[Remounting VMFS volumes after transition using vSphere Client](#)

[Remounting VMFS volumes after transition using the ESXi CLI](#)

[VMware documentation](#)

RHEL host remediation

If you are using the 7-Mode Transition Tool (7MTT) to move from Data ONTAP operating in 7-Mode to clustered Data ONTAP in a SAN environment, you must perform a series of steps on your Red Hat Enterprise Linux (RHEL) hosts based on your LUN type before and after the transition to avoid transition complications.

7MTT transitions only support RHEL 5 and RHEL 6.

Related information

[Transitioning RHEL DMMP devices without file systems](#)

[Transitioning LUNs with mount points using DMMP device names](#)

[Transitioning LUNs with mount points using DMMP alias names](#)

[Transitioning Linux host file systems on LVM devices](#)

[Transitioning of SAN boot LUNs](#)

Gathering pretransition information from the *Inventory Assessment Workbook*

There is information in the *Inventory Assessment Workbook* that you need in various phases of the transition. You should gather and record this information before you begin the transition so that you can reference it as needed throughout the process.

Steps

1. Use the Inventory Collect Tool (ICT) to generate the *Inventory Assessment Workbook*.
2. Open the *Inventory Assessment Workbook*.
3. Go to the **LUN** tab.
4. In the **LUN name** column, identify and record the name of the LUN to be transitioned.
5. Go to the **SAN Host LUNs** tab.
6. In the **SCSI Device ID** column, identify and record the SCSI device name.
7. In the **OS Device ID** column, identify and record the DMMP device name for the LUN to be transitioned.
8. In the **Filesystems** column, identify and record the file system configured on the DMMP device.
9. In the **UUID** column, identify and record the UUID number for the LUN.
10. In the **Mount** column, identify and record the directory on which the DMMP device is mounted.
11. Go to the **LVMs** tab.
12. In the **Physical Volume Name** column, identify and record the DMMP devices that are used by the logical volume.
13. Go to the **SAN Host LVMs** tab.
14. In the **Volume Group Name** column, identify and record the volume group.
15. In the **Logical Volume Path** column, identify and record the logical volume.
16. Go to the **SAN Host Filesystems** tab.

17. In the **Filesystem** column, identify and record the file system configured on the logical volume.
18. In the **Mount** column, identify and record the directory to which the logical volumes are mounted.
19. Go to the **GRUB Configuration** tab.
20. In the **initrd** column, identify and record the initrd image to be modified.
21. Go to the **SAN Host HBAs** tab.

You can also see the **iSCSI SAN Interfaces** tab to identify the iSCSI IQN number and IP addresses that are configured on 7-Mode controllers.

22. In the **Target IPs (iSCSI)** column identify and record the iSCSI sessions for the 7-Mode controllers.

Related information

[What the Inventory Collect Tool is](#)

What the Inventory Collect Tool is

The Inventory Collect Tool (ICT) is a stand-alone utility for collecting configuration and inventory information about 7-Mode storage controllers, hosts attached to controllers, and applications running on these hosts for assessing the transition readiness of these systems. You can use the ICT to generate information about your LUNs and the configuration that you need for transition.

The ICT generates an *Inventory Assessment Workbook* and an Inventory Report XML file that contains configuration details of the storage and host systems.

The ICT is available for ESXi, 5.x, ESXi 6.x, and Windows hosts.

Transitioning RHEL DMMP devices without file systems

Before transition of a Red Hat Enterprise Linux (RHEL) DMMP device without a file system, you must verify that the DMMP device does not have a file system. You must also perform specific steps to prepare for the cutover phase, and after transition you must replace the WWID.

Related information

[Verifying that RHEL LUNs are ready for transition using the Inventory Assessment Workbook](#)

[Verifying that RHEL 5 LUNs are ready for transition using the CLI](#)

[Verifying that RHEL 6 DDMP devices are ready for transition using CLI](#)

[Preparing for cutover when transitioning a Linux host DMMP device without a file system](#)

[Replacing 7-Mode LUN WWIDs on Linux hosts after transition of LUNs](#)

Verifying that RHEL LUNs are ready for transition using the Inventory Assessment Workbook

If your Red Hat Enterprise Linux (RHEL) 5 or RHEL 6 LUN is configured with a device

mapper multipath (DMMP), you should verify that a file system is not configured before you transition the LUN from Data ONTAP operating in 7-Mode to clustered Data ONTAP.

This procedure applies to copy-based transitions and copy-free transitions.

Steps

1. Gather pretransition information from the *Inventory Assessment Workbook*.
2. Check whether the DMMP device entry is present under the **SAN Host File system** tab.

If the DMMP device entry is not present, a file system is not configured and you can transition the LUN.

Verifying that RHEL 5 LUNs are ready for transition using the CLI

If your Red Hat Enterprise Linux (RHEL) 5 LUN is configured with a device mapper multipath (DMMP), you should verify that a file system is not configured before you transition the LUN from Data ONTAP operating in 7-Mode to clustered Data ONTAP.

Steps

1. Locate the SCSI device name for the LUN to be transitioned:

```
sanlun lunshow
```

2. Identify the DMMP device name for the LUN:

```
multipath -ll
```

The DMMP device name can be a device handle ID (WWID) such as 360a980003753456258244538554b4b53, or it can be an alias, such as, `dmmp_raw_lun`.

3. Verify that the LUN does not have a file system:

```
dumpe2fs /dev/mapper/DMMP device name
```

If the LUN does not have a file system, `Couldn't find valid filesystem superblock` is displayed in the output.

Verifying that RHEL 6 DDMP devices are ready for transition using CLI

Before you transition your Red Hat Enterprise Linux (RHEL) 6 DMMP device, you must verify that it is not part of a Logical Volume Manager (LVM) and that it does not have a file system.

Steps

1. Gather pretransition information from the *Inventory Assessment Workbook*.
2. Verify that the DMMP device exists in the `/dev/mapper` directory:

```
ls /dev/mapper/ DMMP_device_name
```

If the DMMP device is not displayed, the device might be using an alias or a user-friendly name.

3. Determine whether the DMMP device is part of an LVM and whether the DMMP device has a file system:

blkid

If the DMMP device is not part of an LVM and has no file system the device entry should not be displayed in blkidoutput.

Testing DMMP devices without file systems on RHEL hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition your Red Hat Enterprise Linux (RHEL) 5 host, you can test your transitioned clustered Data ONTAP LUNs to verify that you can bring your host and applications online before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your new clustered Data ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. Rescan your new clustered Data ONTAP LUNs on the test host:

rescan-scsi-bus.sh

4. Obtain the new SCSI device names for the clustered Data ONTAP LUNs:

sanlun lun show

In the following example, `/dev/sd1` is the SCSI device name for the `lun_dmmp_raw` LUN, and `/dev/sdk` is the SCSI device name for the `lun_dmmp_raw_alias` LUN:

```
[root@ibmx3550-229-108 /]# sanlun lun show
controller(7mode/E-Series) /
vserver (cDOT/FlashRay lun-pathname    filename
-----
vs_brb    /vol/dmmp_raw_vol/lun_dmmp_raw           /dev/sd1
vs_brb    /vol/dmmp_raw_alias_vol/lun_dmmp_raw_alias /dev/sdk
```

5. Obtain the device handle IDs (WWIDs) for the clustered Data ONTAP LUNs:

/sbin/scsi_id -g-u-s /block/SCSI_device_name

The following is an example of a WWID: “3600a09804d532d79565d47617679764d”

6. Check whether an alias is defined in the `/etc/multipath.conf` file on the source host.
7. If there is an alias defined on the source host, add the alias to the `/etc/multipath.conf` file on the test host, but replace the 7-Mode device handle ID with the clustered Data ONTAP LUN ID.
8. Update the DMMP alias settings:

```
multipath
```

9. Verify that the DMMP alias name correctly references the clustered Data ONTAP LUN:

```
multipath -ll
```

10. Perform your testing as needed.
11. After you have completed your testing, shut down the test host:

```
shutdown -h -t0 now
```

12. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

[Verifying that RHEL LUNs are ready for transition using the Inventory Assessment Workbook](#)

[Preparing for cutover when transitioning a Linux host DMMP device without a file system](#)

Preparing for cutover when transitioning a Linux host DMMP device without a file system

If you are transitioning a DMMP device without a file system from a Linux host, there are several steps you must perform before entering the cutover phase.

For FC configurations, you must have fabric connectivity and zoning to clustered Data ONTAP controllers.

For iSCSI configurations, your iSCSI sessions must be discovered and logged in to your clustered Data ONTAP controllers.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode operation in 7MTT.

Steps

1. Stop I/O to the mount points.
2. Shut down the applications that are accessing the LUNs according to the application vendor's recommendations.
3. Flush the 7-Mode LUN DMMP device or alias:

```
multipath -f device_name
```

If needed, you can get the DMMP device name from the **OS Device ID** column under the SAN Host LUNs tab in the *Inventory Assessment Workbook*.

Replacing 7-Mode LUN WWIDs on Linux hosts after transition of LUNs

After LUN transition, the 7-Mode LUN WWID changes. You must replace it with the corresponding ONTAP LUN WWID before you can begin servicing data.

If you are doing a copy-free transition (CFT), then procedures for vol rehost must be complete.

See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for details.

- For copy-based transitions (CBTs), perform these steps after completing the Storage cutover operation in the 7MTT.
- For CFTs, perform these steps after the Import Data & Configuration operation in the 7MTT is complete.

Steps

1. Generate the 7-Mode to ONTAP LUN mapping file:

- For CBTs, run the following command from the Linux host where the 7MTT is installed:

```
transition cbt export lunmap -p project-name -o file_path
```

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-to-C-LUN-MAPPING.csv
```

- For CFTs, run the following command from the system where the 7MTT is installed:

```
transition cft export lunmap -p project-name -s svm-name -o output-file
```

For example:

```
transition cft export lunmap -p SanWorkLoad -s svml -o c:/Libraries/Documents/7-to-C-LUN-MAPPING-svml.csv
```



You must run this command for each of your storage virtual machines (SVMs).

2. Make a note of the new ONTAP LUN device handle ID from the LUN mapping file.

3. Remove the SCSI devices created for 7-Mode LUNs:

- To remove all of the SCSI devices:

```
rescan-scsi-bus.sh -r
```

- To remove each SCSI device individually:

```
echo 1 > /sys/block/SCSI_ID/delete
```

This command must be executed on all 7-Mode LUN SCSI devices. See the SCSI Device ID column on the SAN Host LUNs tab of the *Inventory Assessment Workbook* to identify the SCSI device IDs for the LUNs.

4. Discover new ONTAP LUNs:

```
rescan-scsi-bus.sh
```

5. Identify the SCSI devices of the new ONTAP LUNs:

```
sanlun lun show
```

6. Get the WWIDs for the new ONTAP LUNs:

```
/lib/udev/scsi_id -g -u -d /dev SCSI_dev
```

7. If a DMMP alias is defined, then update the /etc/multipath.conf file to replace the 7-Mode LUN WWID with its corresponding ONTAP LUN WWID, so that the DMMP alias points to the clustered Data ONTAP LUN:

```
cat /etc/multipath.conf
```

8. Configure the DMMP devices:

```
multipath
```

9. Verify that the DMMP alias is correctly referencing the ONTAP LUN WWID:

```
multipath -ll
```

In the following sample output, the DMMP alias `dmmp_raw_lun` is referencing `3600a098051764b2d4f3f453135452d31` as the ONTAP WWID:

```
root@IBMy3550M3-229-169 ~]# multipath -ll dmmp_raw_lun
dmmp_raw_lun (3600a098051764b2d4f3f453135452d31) dm-8 NETAPP, LUN C-Mode
[size=1.0G] [features=3 queue_if_no_path pg_init_retries 50]
[hwhandler=1 alua] [rw]
\_round-robin 0 [prio=50] [enabled]
  \_5:0:0:6 sdx 65:112 [active] [ready]
    \_8:0:0:6 sdab 65:176 [active] [ready]
\_round-robin 0 [prio=10] [enabled]
  \_6:0:0:6 sdy 65:128 [active] [ready]
    \_7:0:0:6 sdab 65:160 [active] [ready]
```

Transitioning LUNs with mount points using DMMP device names

Before transitioning a LUN with a mount point using a DMMP device name, you must replace the DMMP device name with its corresponding file system UUID number. You must perform specific steps to prepare for the cutover phase and you must remount the DMMP devices on the host after transition. You perform the same procedures for Red Hat Enterprise Linux (RHEL) 5 and RHEL 6.

Related information

[Preparing RHEL LUNs with mount points using DMMP device names for transition using the Inventory Assessment Workbook](#)

[Preparing RHEL LUNs with mount points using DMMP alias names for transition using the CLI](#)

Preparing for the cutover phase when transitioning LUNs with mount points using DMMP device names on Linux hosts

Remounting DMMP devices on Linux hosts after transition

Preparing RHEL LUNs with mount points using DMMP device names for transition using the Inventory Assessment Workbook

Before transition of a LUN with a mount point using a DMMP device name, you must replace the DMMP device name with its respective file system UUID number. This applies to Red Hat Enterprise Linux (RHEL) 5 and RHEL 6.

This procedure applies to copy-based transitions and copy-free transitions.

Steps

1. Gather pretransition information from the *Inventory Assessment Workbook*.

Specifically, you need the following information:

- The file system configured on the DMMP device
- The directory on which the DMMP device is mounted
- The file system UUID for the DMMP device

Steps

1. Verify that the mount points for the DMMP device are defined in the `/etc/fstab` file.

2. Create a backup of the file:

```
cp /etc/fstab /etc/fstab_pre_transition
```

3. Edit the `/etc/fstab` file to replace the DMMP device name with its respective file system UUID number.

In the following example, the DMMP device `/dev/mapper/360a9800037534562572b453855496b41` is replaced by UUID `a073547e-00b6-4bf9-8e08-5eef08499a9c`:

```
[root@IBMy3550M3-229-169 ~]# cat /etc/fstab
/dev/VolGroup00/LogVol00 / ext3 defaults 1 1
LABEL=/boot /boot ext3 defaults 1 2
tmpfs /dev/shm tmpfs defaults 0 0
devpts /dev/pts devpts gid=5, mode=620 0 0
sysfs /sys sysfs defaults 0 0
proc /proc proc defaults 0 0
/dev/VolGroup00/LogVol01 swap swap defaults 0 0
/dev/mapper/test_vg-test_lv /mnt/lvm_ext3 ext3 defaults,_netdev 0 0
UUID=a073547e-00b6-4bf9-8e08-5eef08499a9c /mnt/dmmp_ext3 ext3
defaults,_netdev 0 0
```

Related information

Preparing RHEL LUNs with mount points using DMMP alias names for transition using the CLI

Before transition of a mount point using a DMMP device name, you must replace the DMMP device name with its respective file system UUID number.

This procedure applies to copy-based transitions and copy-free transitions.

Steps

1. Identify and record the SCSI device ID for the LUN to be transitioned:

```
sanlun lun show
```

The SCSI device ID is listed under the filename column in the output.

2. Identify and record the DMMP device name for the LUN to be transitioned:

```
multipath -ll SCSI_device_ID
```

In the following example, 360a9800037534562572b453855496b41 is the DMMP device name:

```
[root@IBMx3550M3-229-169 ~]# multipath -ll /dev/sdc
dmmp_fs_lun (360a9800037534562572b453855496b41) dm-3 NETAPP, LUN
[size=1.0G] [features=3 queue_if_no_path pg_init_retries 50]
[hwhandler=0] [rw]
\_ round-robin 0 [prio=2] [active]
  \_ 9:0:0:1 sdc 8:32  [active] [ready]
  \_ 9:0:0:1 sdg 8:96  [active] [ready]
```

3. Identify the file system configured on the DMMP device:

```
blkid | grep -i DMMP_device_name
```

The TYPE value in the output identifies the file system.

In the following example, the file system is ext3.

```
[root@ibmx3550-229-108 ~]#blkid | grep -i
3600a09804d532d79565d47617679658
/dev/mapper/3600a09804d532d79565d47617679658:
UUID="450b999a-4f51-4828-8139-29b20d2f8708" TYPE="ext3" SEC_TYPE="ext2"
```

4. Identify the UUID number for the LUN:

```
dump2fs device_path_name | grep UUID
```

5. Identify the directory on which the DMMP device is mounted:

```
df -h
```

In the following example, `/mnt/dmmp_ext3` represents the directory on which the DMMP device is mounted:

```
[root@IBMy3550M3-229-169 ~]# df -h
Filesystem Size Used Avail Use% Mounted on
/dev/mapper/dmmp_fs_lun
1008M 34M 924M 4% /mnt/dmnp_ext3
```

6. Verify in the `/etc/fstab` file that the mount points for the DMMP device are defined:

```
cat /etc/fstab
```

The DMMP device name and mount directory should be displayed in the output.

7. Create a backup of the `/etc/fstab` file:

```
cp /etc/fstab /etc/fstab_pre_transition_bkup
```

8. Edit the `/etc/fstab` file to replace the DMMP device name with its respective file system UUID number.

Testing DMMP devices with file systems on RHEL hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to perform a copy-based transition of your Red Hat Enterprise Linux (RHEL) host, you can test your transitioned clustered Data ONTAP LUNs to verify that you can mount your DMMP device before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your new clustered Data ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host.

Perform these steps on the test host.

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. Obtain the new SCSI device names for the clustered Data ONTAP LUNs:

```
sanlun lun show
```

In the following example, `/dev/sd1` is the SCSI device name for the `lun_dmmp_raw` LUN, and `/dev/sdk` is the SCSI device name for the `lun_dmmp_raw_alias` LUN:

```
[root@ibmx3550-229-108 /]# sanlun lun show
controller (7mode/E-Series) /
vserver (cDOT/FlashRay) lun-pathname filename
-----
vs_brb  /vol/dmmp_raw_vol/lun_dmmp_raw           /dev/sd1
vs_brb  /vol/dmmp_raw_alias_vol/lun_dmmp_raw_alias /dev/sd2
```

4. Configure the DMMP devices for your clustered Data ONTAP LUNs:

multipath

5. Obtain the device handle ID for the clustered Data ONTAP LUNs:

multipath -ll

The following is an example of a device handle ID: “3600a09804d532d79565d47617679764d”

6. Identify the file system configured on the DMMP device:

blkid | grep -i device_handle_ID

7. Determine whether a mount point entry for the logical volume exists in the /etc/fstab file on the source host.
8. If a mount point entry exists for the logical volume on the source host, manually edit the /etc/fstab file on the test host to add the mount point entries.
9. Mount the LUN:

mount -a

10. Verify that the DMMP device is mounted:

mount

11. Perform your testing as needed.
12. After you have completed your testing, shut down the test host:

shutdown -h -t0 now

13. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

[Preparing for the cutover phase when transitioning LUNs with mount points using DMMP device names on Linux hosts](#)

Preparing for the cutover phase when transitioning LUNs with mount points using DMMP device names on Linux hosts

If you are transitioning a LUN with a mount point using an alias name on a Linux host, there are several steps you must perform before entering the cutover phase.

For FC configurations, you must have fabric connectivity and zoning to clustered Data ONTAP controllers.

For iSCSI configurations, your iSCSI sessions must be discovered and logged in to your clustered Data ONTAP controllers.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Stop I/O to the mount points.
2. Shut down the applications that are accessing the LUNs according to the application vendor's recommendations.
3. Unmount DMMP devices:

```
umount dir_name
```

4. Flush the 7-Mode LUN DMMP device ID:

```
multipath -f device_name
```

If needed, you can get the DDMP device name from the **OS Device ID** column under the **SAN Host LUNs** tab in the *Inventory Assessment Workbook*.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

Remounting DMMP devices on Linux hosts after transition

After transition from ONTAP operating in 7-Mode to clustered Data ONTAP, you must remount your DMMP devices for RHEL 5 and RHEL 6. Your 7-Mode LUNs are not accessible to the host until your DMMP devices are mounted.

If you are doing a copy-free transition (CFT), procedures for vol rehost must be complete. See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for details.

- For copy-based transitions, perform these steps after completing the Storage cutover operation in the 7-Mode Transition Tool (7MTT).
- For CFTs perform these steps after the Import Data & Configuration operation in the 7MTT is complete.

Steps

1. Generate the 7-Mode to ONTAP LUN mapping file:
 - For copy-based transitions, run the following command from the Linux host where the 7MTT is

installed:

```
transition cbt export lunmap -p project-name -o file_path
```

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-to-C-LUN-MAPPING.csv
```

- For copy-free transitions, run the following command from the system where the 7MTT is installed:

```
transition cft export lunmap -p project-name -s svm-name -o output-file
```

For example:

```
transition cft export lunmap -p SanWorkLoad -s svml -o c:/Libraries/Documents/7-to-C-LUN-MAPPING-svml.csv
```



You must run this command for each of your storage virtual machines (SVMs).

2. Make a note of the new ONTAP LUN device handle ID from the LUN mapping file.

3. Remove the SCSI devices created for 7-Mode LUNs:

- To remove all of the SCSI devices:

```
rescan-scsi-bus.sh -r
```

- To remove each SCSI device individually:

```
echo 1> /sys/block/SCSI_ID/delete
```

This command must be executed on all 7-Mode LUN SCSI devices. See the SCSI Device ID column on the SAN Host LUNs tab of the *Inventory Assessment Workbook* to identify the SCSI device IDs for the LUNs.

4. Discover new ONTAP LUNs:

```
rescan-scsi-bus.sh
```

5. Verify that the ONTAP LUNs are discovered:

```
sanlun lun show
```

The ONTAP LUN's SCSI devices should be listed under the filename column.

6. Configure DMMP devices for ONTAP LUNs:

```
multipath
```

7. Verify that the DMMP devices are present:

```
multipath -ll LUN_SCSI_device_name
```

In the following example, 3600a098051764937303f4479515a7451 represents the DMMP device handle ID:

```
[root@IBMx3550M3-229-169 ~]#multipath -ll /dev/sdq
3600a098051764937303f4479515a7451 dm-6 NETAPP, LUN C-Mode
```

8. Mount the LUN:

```
*mount device_name mountpoint
```

If the mount points are defined in the `/etc/fstab` file, you can run the `mount -a` command to mount all of the mount points.

9. Verify the mount points:

```
mount
```

Transitioning LUNs with mount points using DMMP alias names

When you transition a LUN with a mount point using an alias name, you must perform specific steps to prepare for the cutover phase and you must remount the LUNs after the transition.

Related information

[Preparing for the cutover phase when transitioning LUNs with mount points using DMMP device names on Linux hosts](#)

[Remounting LUNs with mount points using DMMP alias names on Linux hosts after transition](#)

Preparing RHEL LUNs with mount points using DMMP alias names for transition using the CLI

Before transition of a mount point using a DMMP device name, you must replace the DMMP device name with its respective file system UUID number.

This procedure applies to copy-based transitions and copy-free transitions.

Steps

1. Identify and record the SCSI device ID for the LUN to be transitioned:

```
sanlun lun show
```

The SCSI device ID is listed under the filename column in the output.

2. Identify and record the DMMP device name for the LUN to be transitioned:

```
multipath -ll SCSI_device_ID
```

In the following example, `360a9800037534562572b453855496b41` is the DMMP device name:

```
[root@IBMx3550M3-229-169 ~]# multipath -ll /dev/sdc
dmmp_fs_lun (360a9800037534562572b453855496b41) dm-3 NETAPP, LUN
[size=1.0G] [features=3 queue_if_no_path pg_init_retries 50]
[hwhandler=0] [rw]
\_ round-robin 0 [prio=2] [active]
  \_ 9:0:0:1 sdc 8:32  [active] [ready]
  \_ 9:0:0:1 sdg 8:96  [active] [ready]
```

3. Identify the file system configured on the DMMP device:

```
blkid | grep -i DMMP_device_name
```

The TYPE value in the output identifies the file system.

In the following example, the file system is ext3.

```
[root@ibmx3550-229-108 ~]#blkid | grep -i
3600a09804d532d79565d47617679658
/dev/mapper/3600a09804d532d79565d47617679658:
UUID="450b999a-4f51-4828-8139-29b20d2f8708" TYPE="ext3" SEC_TYPE="ext2"
```

4. Identify the UUID number for the LUN:

```
dump2fs device_path_name | grep UUID
```

5. Identify the directory on which the DMMP device is mounted:

```
df -h
```

In the following example, /mnt/dmmp_ext3 represents the directory on which the DMMP device is mounted:

```
[root@IBMx3550M3-229-169 ~]# df -h
Filesystem Size Used Avail Use% Mounted on
/dev/mapper/dmmp_fs_lun
1008M 34M 924M 4% /mnt/dmnp_ext3
```

6. Verify in the /etc/fstab file that the mount points for the DMMP device are defined:

```
cat /etc/fstab
```

The DMMP device name and mount directory should be displayed in the output.

7. Create a backup of the /etc/fstab file:

```
cp /etc/fstab /etc/fstab_pre_transition_bkup
```

8. Edit the /etc/fstab file to replace the DMMP device name with its respective file system UUID number.

Testing LUNs with mount points using DMMP alias names on RHEL hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to perform a copy-based transition of your Red Hat Enterprise Linux (RHEL) host, you can test your transitioned clustered Data ONTAP LUNs with mount points using alias names before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your new clustered Data ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. Obtain the new SCSI device names for the clustered Data ONTAP LUNs:

```
sanlun lun show
```

In the following example, /dev/sd1 is the SCSI device name for the lun_dmmp_raw LUN, and /dev/sdk is the SCSI device name for the

lun_dmmp_raw_alias LUN:

```
[root@ibmx3550-229-108 /]# sanlun lun show
controller(7mode/E-Series) /
vserver (cDOT/FlashRay)      lun-pathname          filename
-----
vs_brb      /vol/dmmp_raw_vol/lun_dmmp_raw          /dev/sd1
vs_brb      /vol/dmmp_raw_alias_vol/lun_dmmp_raw_alias /dev/sdk
```

4. Configure the DMMP devices for your clustered Data ONTAP LUNs:

```
multipath
```

5. Obtain the device handle IDs for the clustered Data ONTAP LUNs:

```
multipath -ll
```

The following is an example of a device handle ID: "3600a09804d532d79565d47617679764d"

6. Check whether an alias is defined in the `/etc/multipath.conf` file on the source host.
7. Manually copy the alias configuration to the `/etc/multipath.conf` file on the test host, but replace the 7-Mode device handle ID with the corresponding clustered Data ONTAP device handle ID.
8. Use the `multipath` command to configure DMMP devices for your clustered Data ONTAP LUNs.
9. Identify the file system created on the DMMP alias device:

```
blkid dmmp_device_name
```

10. Mount the DMMP device:

```
mount
```

11. Perform your testing as needed.
12. After you have completed your testing, shut down the test host:

```
shutdown -h -t0 now
```

13. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

[Preparing for the cutover phase when transitioning LUNs with mount points using DMMP device names on Linux hosts](#)

Preparing for the cutover phase when transitioning LUNs with mount points using DMMP device names on Linux hosts

If you are transitioning a LUN with a mount point using an alias name on a Linux host, there are several steps you must perform before entering the cutover phase.

For FC configurations, you must have fabric connectivity and zoning to clustered Data ONTAP controllers.

For iSCSI configurations, your iSCSI sessions must be discovered and logged in to your clustered Data ONTAP controllers.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode Systems operation in the 7MTT.

Steps

1. Stop I/O to the mount points.
2. Shut down the applications that are accessing the LUNs according to the application vendor's recommendations.

3. Unmount DMMP devices:

```
umount dir_name
```

4. Flush the 7-Mode LUN DMMP device ID:

```
multipath -f device_name
```

If needed, you can get the DDMP device name from the **OS Device ID** column under the **SAN Host LUNs** tab in the *Inventory Assessment Workbook*.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

Remounting LUNs with mount points using DMMP alias names on Linux hosts after transition

After transition from ONTAP operating in 7-Mode to clustered Data ONTAP, you must remount your LUNs with mount points. The 7-Mode volumes are offline and the 7-Mode LUNs are not accessible to your hosts.

If you are doing a copy-free transition (CFT), procedures for `vol rehost` must be complete.

See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for details.

- For copy-based transitions (CBTs), perform these steps after completing the Storage Cutover operation in the 7MTT.
- For CFTs, perform these steps after the Import Data & Configuration operation in the 7MTT.

1. Generate the 7-Mode to ONTAP LUN mapping file:

- For copy-based transitions, run the following command from the Linux host where the 7MTT is installed:

```
transition cbt export lunmap -p project-name -o file_path
```

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-  
to-C-LUN-MAPPING.csv
```

- For copy-free transitions, run the following command from the system where the 7MTT is installed:
*`transition cft export lunmap -p project-name -s svm-name -o output-file`

For example:

```
transition cft export lunmap -p SanWorkLoad -s svml -o  
c:/Libraries/Documents/7-to-C-LUN-MAPPING-svml.csv
```



You must run this command for each of your storage virtual machines (SVMs).

2. Make a note of the ONTAP device handle ID in the LUN mapping file.
3. Remove the SCSI devices created for 7-Mode LUNs:

- To remove all of the SCSI devices:

```
rescan-scsi-bus.sh -r
```

- To remove each SCSI device individually:

```
*echo 1> /sys/block/SCSI_ID/delete_
```

This command must be executed on all 7-Mode LUN SCSI devices. See the SCSI Device ID column on the SAN Host LUNs tab of the *Inventory Assessment Workbook* to identify the SCSI device IDs for the LUNs.

4. Discover the new ONTAP LUNs:

```
rescan-scsi-bus.sh
```

5. Verify that the ONTAP LUNs are discovered:

```
sanlun lun show
```

The ONTAP LUN's SCSI devices should be listed in the `device filename` column.

An example of a SCSI device name is `/dev/sdp`.

6. In the `/etc/multipath.conf` file, replace the 7-Mode device handle ID with the clustered Data ONTAP LUN's device handle ID so that the `alias` name points to the clustered Data ONTAP LUN ID.

You should update the multipaths section as displayed below. The following example shows the `/etc/multipath.conf` file, before replacing the 7-Mode LUN ID. In this example, the LUN ID `360a9800037534562572b453855496b43` is pointing to the `dmmp_fs_lun` alias name.

```
multipaths {
    multipath {
        wwid    360a9800037534562572b453855496b43
        alias    dmmp_fs_lun
    }
}
```

After replacing the 7-Mode LUN ID with the ONTAP LUN ID

`360a9800037534562572b453855496b43`, the example file looks as follows:

```
multipaths {
    multipath {
        wwid    3600a098051764937303f4479515a7452
        alias    dmmp_fs_lun
    }
}
```

7. Configure DMMP devices for ONTAP LUNs:

```
multipath
```

8. Verify that the DMMP alias points to the ONTAP LUN device handle ID:

```
multipath -ll device_handle_ID
```

9. Mount the ONTAP LUN to its mount point directory:

```
mount /dev/mapper/alias_name mount_dir_name
```

If the mount points are defined in the /etc/fstab file, use the mount -a command to mount the LUN.

10. Verify that the DMMP device is mounted:

```
mount
```

Transitioning Linux host file systems on LVM devices

When you transition a Linux host file system on a Logical Volume Manager (LVM), you must perform specific steps to prepare for the cutover phase and you must mount the logical volumes after the transition.

Related information

[Preparing for cutover phase when transitioning Linux host file systems on LVM devices](#)

[Mounting logical volumes on Linux hosts after transition](#)

Testing LUNs with file systems on LVM devices before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to perform a copy-based transition of your Red Hat Enterprise Linux (RHEL) host, you can test your transitioned clustered Data ONTAP LUNs with file systems on LVM devices before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

- Your new clustered Data ONTAP LUNs must be mapped to the test host.
- Your LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

During test mode you do not deactivate or export the volume group. For this reason, you might see file system errors when you mount the logical volumes on the test host.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. On the test host, discover your new clustered Data ONTAP LUNs:

```
rescan-scsi-bus.sh
```

4. Verify that your new clustered Data ONTAP LUNs have been discovered:

```
sanlun lun show
```

5. Configure DMMP devices for your clustered Data ONTAP LUNs:

```
multipath
```

6. Obtain the device handle ID for the clustered Data ONTAP LUNs:

```
multipath -ll
```

The following is an example of a device handle ID: "3600a09804d532d79565d47617679764d"

7. Identify the DMMP devices used by the LVM:

```
pvscan
```

3600a09804d532d79565d476176797655 is an example of a DMMP device used by the LVM.

8. Identify the volume group:

```
vgscan
```

9. Identify the logical volume:

```
lvscan
```

10. Enable the logical volumes: * **vgchange -ay volume_group**

11. Verify the logical volume status: * **lvdisplay**

The LV Status column in the output should display available.

12. Determine whether a mount point entry for the logical volume exists in the /etc/fstab file on the source host.

In the following example, logical volume /dev/mapper/vg_7MTT-lv1 is displayed in the /etc/fstab file:

```
# /etc/fstab
...
tmpfs      /dev/shm    tmpfs      defaults          0  0
devpts     /dev/pts    devpts     gid=5, mode=620  0  0
sysfs      /sys        sysfs      defaults          0  0
proc       /proc       proc       defaults          0  0
/dev/mapper/vg_7MTT-lv1  /7MTT    ext4      defaults  0  0
```

13. If a mount point entry for the logical volume exists in the /etc/fstab file on the source host, manually edit the /etc/fstab file on the test host to add the mount point entry.

14. Mount the mount point:

```
mount -a
```

15. Verify that the mount points are mounted:

```
mount
```

16. Perform your testing as needed.

17. After you have completed your testing, shut down your host:

```
shutdown -h -t0 now
```

18. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

[Preparing for cutover phase when transitioning Linux host file systems on LVM devices](#)

Preparing for cutover phase when transitioning Linux host file systems on LVM devices

If you are transitioning a Linux host file system on a Logical Volume Manager (LVM) device, there are steps you must perform before the cutover phase.

- For FC configurations, you must have fabric connectivity and zoning to clustered Data ONTAP controllers.
- For iSCSI configurations, your iSCSI sessions must be discovered and logged in to your clustered Data ONTAP controllers.
- You must have the following pretransition information gathered from the *Inventory Assessment Workbook*:
 - The DMMP device names used by the LVM
 - The volume group name
 - The logical volume name
 - The file system configured on the logical volume device
 - The directory on which the logical volumes are mounted
- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode operation in the 7MTT.

Steps

1. Stop I/O to LV mount points.
2. Shut down the applications accessing the LUNs according to application vendor's recommendations.
3. Unmount the LV mount point:

```
umount dir_name
```

4. Disable the logical volume:

```
vgchange -an vg_name
```

5. Verify the logical volume status:

```
lvdisplay dir_name
```

The LV status should display “NOT available”.

6. Export the volume group:

```
vgexport vg_name
```

7. Verify the VG status:

```
vgdisplay vg_name
```

The VG status should display “exported”.

8. Flush the 7-Mode DDMP device IDs:

```
multipath -f device_name
```

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

Mounting logical volumes on Linux hosts after transition

After the transition from ONTAP operating in 7-Mode to clustered Data ONTAP, your logical volumes are offline. You must mount those logical volumes for your LUNs to be accessible to your hosts.

If you are doing a copy-free transition (CFT), procedures for vol rehost must be complete. See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for details.

- For copy-based transitions (CBTs), perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For CFTs, perform these steps after the Import Data & Configuration operation in the 7MTT.

1. Generate the 7-Mode to clustered Data ONTAP LUN mapping file:

- For copy-based transitions, run the following command from the Linux host where the 7MTT is installed:

```
transition cbt export lunmap -p project-name -o file_path
```

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-  
to-C-LUN-MAPPING.csv
```

- For copy-free transitions, run the following command from the system where the 7MTT is installed:

```
transition cft export lunmap -p p_project-name_ -s svm-name -o output-file
```

For example:

```
transition cft export lunmap -p SanWorkLoad -s svml -o  
c:/Libraries/Documents/7-to-C-LUN-MAPPING-svml.csv
```



You must run this command for each of your storage virtual machines (SVMs).

2. Remove the SCSI devices created for 7-Mode LUNs:

- To remove all of the SCSI devices:

```
rescan-scsi-bus.sh -r
```

- To remove each SCSI device individually:

```
echo 1> /sys/block/SCSI_ID/delete
```

This command must be executed on all 7-Mode LUN SCSI devices. See the SCSI Device ID column on the SAN Host LUNs tab of the *Inventory Assessment Workbook* to identify the SCSI device IDs for the LUNs.

3. Discover new ONTAP LUNs:

```
rescan-scsi-bus.sh
```

4. Configure DMMP devices for ONTAP LUNs:

```
multipath
```

5. Verify that ONTAP LUNs are discovered:

```
sanlun lun show
```

6. Determine the new ONTAP LUN device handle ID:

```
multipath -ll Device_handle_name
```

7. Import the volume group:

```
vgimport vg_name
```

8. Verify the volume group status:

```
vgdisplay
```

9. Enable logical volumes:

```
vgchange -ay vg_name
```

10. Verify the logical volume status:

```
lvdisplay
```

The LV status should be displayed as “available”.

11. Mount the logical volumes from the ONTAP LUN to its respective mount point directory:

```
mount lv_namemount_point
```

If the mount points are defined in the `etc/fstab` file, you can use the `mount -a` command to mount the logical volumes.

12. Verify the mount points:

```
mount
```

Transitioning of SAN boot LUNs

You must reboot SAN boot LUNs before you transition from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT). You must perform specific steps to prepare for the cutover phase, and after transition you must discover your LUNs.

Related information

[Preparing for transition of FC or FCoE SAN boot LUNs on RHEL hosts](#)

[Preparing for transition of iSCSI SAN boot LUNs](#)

[Discovering SAN boot LUNs after transition](#)

Types of SAN boot LUNs supported for transition

Only certain types of SAN boot LUNs are supported for transition from Data ONTAP operating in 7-Mode to clustered Data ONTAP.

The following SAN boot LUNs are supported for transition:

- FC or FCoE SAN boot LUNs
- iSCSI SAN boot LUNs for Red Hat Enterprise Linux (RHEL) 6

Transition of iSCSI SAN boot LUNs for RHEL 5.x is not supported.

Preparing for transition of FC or FCoE SAN boot LUNs on RHEL hosts

Before you transition an FC or FCoE SAN boot LUN, you must perform specific steps on your Red Hat Enterprise Linux (RHEL) host.

You must have the following information from the *Inventory Assessment Workbook*:

- 7-Mode LUN name on which RHEL 5 or RHEL 6 is installed
- SCSI device name for the transition LUN
- DMMP device name for the transition LUN

- Mount directory
- File system configured on the DMMP device
- UUID number of the /boot partition
- Name of the initrd image

This procedure applies to copy-based transitions and copy-free transitions.

1. Verify that the DMMP device exists in the /dev/mapper directory:

```
ls /dev/mapper/ DMMP_device_name
```

If you cannot locate the DMMP device, then it might be using an alias or user-friendly name.

2. Identify the DMMP devices and Logical Volume Manager (LVM) names on which the RHEL 5 or RHEL 6 operating system /boot and root (/) directories are installed:

```
df - h
```

By default, RHEL 5 and RHEL 6 are installed on the root (/) partition on the logical volume. If the root partition is installed on the logical volume, then no pretransition changes to the configuration are required.

3. If the /boot partition is installed on the DMMP device, confirm how the /boot partition is referenced to mount in /etc/fstab at boot time.
4. If the /boot partition is referenced in /etc/fstab by its DMMP device name, replace the DMMP device name with the file system UUID name.
5. Make a backup of the /etc/fstab file:

```
cp /etc/fstab /etc/fstab_pre_transition_file_name
```

6. Edit the /etc/fstab file to replace the DMMP device name with its respective file system UUID number.

7. Make a backup of the initrd image file:

```
cp /boot/initrd_image_file_name initrd_image_file_name.bak
```

8. For RHEL 5 only:

- a. In the /etc/multipath.conf file, identify the SWAP partition device.

In the following example, /dev/VolGroup00/LogVol01 is the SWAP partition device:

```
/dev/VolGroup00/LogVol01 swap swap defaults 0 0
```

- b. Create a label for mounting the swap partition:

```
swapoff swap-partition_device
```

```
mkswap -L label-for-swap swap-partition-device
```

```
swapon swap-partition_device
```

- c. Replace the SWAP partition device name in the /etc/fstab file with THE SWAP label.

The updated line in the `/etc/fstab` file should be as follows:

```
LABEL=SwapPartition swap swap defaults 0 0
```

9. Re-create the `initrd` image.

- For RHEL5:

```
mkinitrd -f /boot/ initrd-"'uname -r'".img 'uname -r' --with multipath
```

- For RHEL 6:

```
dracut --force --add multipath --verbose
```

10. Restart the host to boot from the new `initrd` image.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

Preparing for transition of iSCSI SAN boot LUNs

Before you transition an iSCSI SAN boot LUN, you must perform specific steps on the host. Transition of Red Hat Enterprise Linux (RHEL) 5.x is not supported. Transition of RHEL 6 is supported.

You must have the following information from the *Inventory Assessment Workbook*:

- Name of the LUN that RHEL 6 is installed on
- DMMP device name for the transition LUN
- Logical volume (LV) name
- Volume group (VG) name
- Physical volume (PV) devices
- Logical Volume Manager (LVM) names and mount directories on which RHEL 6 `/boot` and root (`/`) partitions are installed
- File system configured on DMMP
- iSCSI sessions for 7-Mode controllers
- Grub information
- IQN number of the storage virtual machine (SVM) where the iSCSI SAN boot LUN will be created
- LIF IP address of the clustered Data ONTAP SVM where the iSCSI SAN boot LUN will be created

This procedure applies to copy-based transitions and copy-free transitions.

Steps

1. Verify that the DMMP device exists in the `/dev/mapper` directory:

```
ls /dev/mapper/DMMP_device_name
```

If the DMMP device is not displayed, the device might be using an alias or a user-friendly name.

2. Determine whether the DMMP device is part of an LVM:

blkid

If the DMMP device **TYPE** value is **LVM2_member**, the DMMP is part of an LVM.

3. Obtain the mount point details of the **/** and **/boot** partitions from the **/etc/fstab** file:

- If the **/boot** partition is installed on a DMMP device, check how it is referenced to mount in the **/etc/fstab** file at boot time.
- If the **/boot** partition is mounted using the file system UUID that you obtained using the **blkid** command output, then no pretransition change are required.

4. If the **/boot** partition is referenced in **/etc/fstab** file by its DMMP device name, replace the DMMP device name with the file system UUID name.

5. For iSCSI SAN booted hosts, edit the **/boot/grub/grub.conf** file to create a new kernel command-line entry that includes the clustered Data ONTAP controller's IQN number and iSCSI session information.

This example shows the **/boot/grub/grub.conf** file before editing. The kernel command line has the 7-Mode controller's IQN number and iSCSI session information.

```
title Red Hat Enterprise Linux Server (2.6.32-431.el6.x86_64)
      root (hd0,0)
      kernel /vmlinuz-2.6.32-431.el6.x86_64 ro
      root=/dev/mapper/vg_ibmx3550m3229-LogVol00 ifname=eth0:5c:f3:fc:ba:46:d8
      rd_NO_LUKS netroot=iscsi:@10.226.228.241::3260::iqn.1992-
      08.com.netapp:sn.1574168453 LANG=en_US.UTF-8
      rd_LVM_LV=vg_ibmx3550m3229/LogVol01 rd_LVM_LV=vg_ibmx3550m3229/LogVol00
      rd_NO_MD netroot=iscsi:@10.226.228.155::3260::iqn.1992-
      08.com.netapp:sn.1574168453 iscsi_initiator= iqn.1994-
      08.com.redhat:229.167 crashkernel=auto ip=eth0:dhcp
      initrd /initramfs-2.6.32-431.el6.x86_64.img
```

This example shows the **/boot/grub/grub.conf** file after adding a new title with the cDOT suffix, and the new kernel command line with the clustered Data ONTAP controller's IQN number and iSCSI session information:

```

title Red Hat Enterprise Linux Server (2.6.32-431.el6.x86_64) - cDOT
        root (hd0,0)
        kernel /vmlinuz-2.6.32-431.el6.x86_64 ro
root=/dev/mapper/vg_ibmx3550m3229-LogVol00 ifname=eth0:5c:f3:fc:ba:46:d8
rd_NO_LUKS netroot=iscsi:@10.226.228.99::3260:: :::iqn.1992-
08.com.netapp:sn.81c4f5cc4aa611e5b1ad00a0985d4dbe:vs.15 LANG=en_US.UTF-8
rd_LVM_LV=vg_ibmx3550m3229/LogVol01 rd_LVM_LV=vg_ibmx3550m3229/LogVol00
rd_NO_MD netroot=iscsi:@10.226.228.98::3260:: :::iqn.1992-
08.com.netapp:sn.81c4f5cc4aa611e5b1ad00a0985d4dbe:vs.15
netroot=iscsi:@10.226.228.97::3260:: :::iqn.1992-
08.com.netapp:sn.81c4f5cc4aa611e5b1ad00a0985d4dbe:vs.15
netroot=iscsi:@10.226.228.96::3260:: :::iqn.1992-
08.com.netapp:sn.81c4f5cc4aa611e5b1ad00a0985d4dbe:vs.15 iscsi_initiator=
iqn.1994-08.com.redhat:229.167 crashkernel=auto ip=eth0:dhcp
        initrd /initramfs-2.6.32-431.el6.x86_64.img

```

6. Back up the existing `initramfs` file.

```

# cd /boot
# cp initramfs-2.6.32-71.el6.x86_64.img initramfs-2.6.32-
71.el6.x86_64.img.img_bak

```

7. Update the 7-Mode kernel line in the `/boot/grub/grub.conf` file with the backup `initrd` image name.

For RHEL 6.4 and later, verify that the clustered Data ONTAP kernel line is appended with “`rdloaddriver=scsi_dh_alua`” in the `/boot/grub/grub.conf` file.

8. If the `/boot/grub/grub.conf` file is updated, then update the kernel initial RAM disk (`initramfs`).

The `initramfs` file must be re-created so that the new clustered Data ONTAP IQN number and iSCSI sessions are referenced, and so that the host establishes an iSCSI connection with clustered Data ONTAP controllers at boot time.

9. Re-create the `initrd` image by using the `dracut -force --add multipath --verbose` command.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

Testing SAN boot LUNs on RHEL hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later, and Data ONTAP 8.3.2 or later to perform a copy-based transition your Red Hat Enterprise Linux (RHEL) host, you can test your transitioned ONTAP SAN boot LUNs before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your new ONTAP LUNs must be mapped to your test host and your LUNs must ready for transition.

You should maintain hardware parity between the test host and the source host.

- For copy-based transitions, you must perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool.
- For copy-free transitions, you must perform these steps after the Import Data and Configuration operation in the 7-Mode Transition Tool.

Steps

1. For FC and FCoE configurations only:
 - a. Enter the HBA BIOS settings mode.
 - b. Choose **Rescan** to discover the ONTAP SAN boot LUNs on the host.
 - c. Remove the 7-Mode boot LUN ID.
 - d. Add the ONTAP boot LUN ID in the HBA BIOS.
 - e. Exit the HBA BIOS settings mode, and then reboot the host.
2. After the host reboots, change the IP address and host name on the test host.
3. Verify that your new ONTAP LUNs have been discovered:

```
sanlun lun show
```

4. Configure DMMP devices for your ONTAP LUNs:

```
multipath -ll
```

5. Perform your testing as needed.
6. Shut down the test host:

```
shutdown -h -t0 now
```

7. In the 7-Mode Transition Tool user interface (UI), click **Finish Testing**.

If your ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Related information

[Gathering pretransition information from the Inventory Assessment Workbook](#)

[Preparing for the cutover phase when transitioning SAN boot LUNs](#)

Preparing for the cutover phase when transitioning SAN boot LUNs

If you are transitioning SAN boot LUNs from Data ONTAP operating in 7-Mode to clustered Data ONTAP, there are certain prerequisites you must be aware of before entering the cutover phase.

You must have fabric connectivity and zoning to your clustered Data ONTAP controllers for FC configurations. For iSCSI configurations, your iSCSI sessions must be discovered and logged in to your clustered Data ONTAP controllers. You must also shut down your host.

- For copy-based transitions, you should shut down your host before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT). Copy-free transitions are not supported on HP-UX hosts.
- For copy-free transitions, you should shut down your host before initiating the Export & Halt 7-Mode operation in the 7MTT.

Discovering SAN boot LUNs after transition

After transition of your SAN boot LUNs from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must discover the SAN boot LUNs on your host. This is necessary for copy-based transitions (CBTs) and copy-free transitions (CFTs). This applies to FC, FCoE, and iSCSI configurations.

If you are doing a CFT, procedures for `vol rehost` must be complete. See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for details.

1. Boot the host.
2. For FC and FCoE configurations only:
 - a. Enter the HBA BIOS settings mode.
 - b. Choose **Rescan** to discover the clustered Data ONTAP SAN boot LUNs on the host.
 - c. Remove the 7-Mode boot LUN ID.
 - d. Add the clustered Data ONTAP boot LUN ID in the HBA BIOS.
 - e. Exit the HBA BIOS settings mode, and then reboot the host.
3. After the reboot is complete, verify the clustered Data ONTAP LUNs:

`sanlun lun show`

4. Verify the DMMP device:

`multipath -ll`

Windows host remediation

If you are using the 7-Mode Transition Tool (7MTT) to move from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must perform specific steps to prepare your Windows host for transition. You must also perform specific steps to prepare for the cutover phase, and after transition, you must bring your Windows host online.

Related information

[Preparing Windows hosts for transition](#)

[Preparing for cutover phase when transitioning Windows hosts](#)

[Bringing Windows hosts online after transition](#)

Preparing Windows hosts for transition

There are steps you must perform before you transition Windows hosts from Data ONTAP operating in 7-Mode to clustered Data ONTAP.

This procedure applies to copy-based transitions and copy-free transitions.



If you are using Windows 2003, you must upgrade to Windows 2008. The Host Remediation Tool (HRT) is not supported on Windows 2003 and needs Windows 2008 or later to run properly.

Steps

1. Identify the LUN serial numbers, LUN IDs, and corresponding Windows physical disk numbers of the LUNs being transitioned.
 - If your system is running Data ONTAP DSM, use the Data ONTAP DSM Management Extension Snap-In (accessible through Server Manager or the `get-sandisk` Windows PowerShell cmdlet).
 - If your system is running MSDSM, use the Inventory Collect Tool (ICT).
2. Prepare to make the LUNs visible to the host after transition is complete.
 - If the LUNs being transitioned are FC or FCoE LUNs, create or modify fabric zoning.
 - If the LUNs being transitioned are iSCSI LUNs, create iSCSI sessions that connect to the clustered Data ONTAP controller.
3. Use the ICT to generate the Inventory Assessment workbook.

Related information

[SAN configuration](#)

What the Inventory Collect Tool is

The Inventory Collect Tool (ICT) is a stand-alone utility for collecting configuration and inventory information about 7-Mode storage controllers, hosts attached to controllers, and applications running on these hosts for assessing the transition readiness of these systems. You can use the ICT to generate information about your LUNs and the configuration that you need for transition.

The ICT generates an *Inventory Assessment Workbook* and an Inventory Report XML file that contains configuration details of the storage and host systems.

The ICT is available for ESXi, 5.x, ESXi 6.x, and Windows hosts.

Testing transitioned LUNs on Windows hosts before the cutover phase

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition your Windows host LUNs, you can test your transitioned clustered Data ONTAP LUNs to verify that you can bring your disk online and that your application operations work as expected before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your 7-Mode LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host, and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply configuration**.
3. Generate the 7-Mode to clustered Data ONTAP LUN mapping file:
 - For copy-based transitions, run the following command from the host where the 7MTT is installed:
`transition cbt export lunmap -p project-name -o file_path`

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-to-C-LUN-MAPPING.csv
```

- For copy-free transitions, run the following command from the system where the 7MTT is installed:
`*transition cft export lunmap -p project-name -s svm-name -o output-file`



You must run this command for each of your storage virtual machines (SVMs).

For example:

```
transition cft export lunmap -p SANWorkLoad -s svml -o c:/Libraries/Documents/7-to-C-LUN-MAPPING-svml.csv
```

4. Bring the transitioned disks and applications online:
 - If the transitioned disks are not part of Cluster Failover, use the Windows Disk Manager to bring the disks online.
 - If the transitioned disks are part of Cluster Failover, use the Cluster Failover Manager to bring the disks online.
5. Perform your testing as needed.
6. After your testing is complete, take your applications and disks offline:
 - If the transitioned disks are not part of Cluster Failover, use the Windows Disk Manager to take the disks offline.
 - If the transitioned disks are part of Cluster Failover, use the Cluster Failover Manager to take the disks offline.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Preparing for cutover phase when transitioning Windows hosts

If you are transitioning a Windows host from Data ONTAP operating in 7-Mode to clustered Data ONTAP, there are steps you must perform after the transition begins, but

before the cutover phase begins.

If you are running Data ONTAP DSM, the version of Data ONTAP DSM installed on the server must be supported for the version of Data ONTAP that is running on the target clustered Data ONTAP node.

If you are running MSDSM, the version of Windows Host Utilities installed on the server must be supported for the version of Data ONTAP that is running on the target clustered Data ONTAP node.

- For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode operation in the 7MTT.

Steps

1. Use Disk Manager to take offline the disks to be transitioned.
2. If the host is booted from SAN and the boot LUN is being transitioned, shut down the boot host.
3. If the host is clustered, use Failover Cluster Manager to take offline the clustered disks, including the quorum disk.
4. If the host is running Windows Server 2003 and you need to migrate the quorum device, stop the cluster services on all cluster nodes.
5. If you are transitioning LUNs on a server that has Hyper-V enabled, perform the appropriate host side transition steps for your guest operating system.
6. If you are transitioning LUNs on a server that has Hyper-V enabled and the boot device of the guest OS resides on a Data ONTAP LUN that is being transitioned, do the following:
 - a. Shut down the guest OS.
 - b. Take offline the corresponding disk on the parent system.

Bringing Windows hosts online after transition

After you transition your LUNs using the 7-Mode Transition Tool (7MTT) for Windows hosts, you must complete several steps to bring your host online and begin servicing data again.

If you are doing a copy-free transition (CFT), procedures for `vol rehost` must be complete. See the [7-Mode Transition Tool Copy-Free Transition Guide](#) for details.

- For copy-based transitions (CBTs), perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).
- For CFTs, perform these steps after completing the Import & Data Configuration operation in the 7MTT.
 1. Generate the 7-Mode to ONTAP LUN mapping file:
 - For copy-based transitions, run the following command from the host where the 7MTT is installed:
`transition cbt export lunmap -p project-name -o file_path`

For example:

```
transition cbt export lunmap -p SanWorkLoad -o c:/Libraires/Documents/7-to-C-LUN-MAPPING.csv
```

- For copy-free transitions, run the following command from the system where the 7MTT is installed:
transition cft export lunmap -p project-name -s svm-name -o output-file



You must run this command for each of your storage virtual machines (SVMs).

For example:

```
transition cft export lunmap -p SANWorkLoad -s svml -o
c:/Libraries/Documents/7-to-C-LUN-MAPPING-svml.csv
```

2. If the Windows host is SAN-booted and the boot LUN was transitioned, power on the host.
3. Update the FC BIOS to enable the system to boot from the LUN on the clustered Data ONTAP controller.

See the HBA documentation for more information.

4. On the Windows host, rescan the disks from the Disk Manager.
5. Obtain the LUN serial numbers, LUN IDs, and corresponding Windows physical disk numbers of the LUNs mapped to the host.
 - For systems running Data ONTAP ONTAPDSM: Use the Data ONTAPDSM Management Extension Snap-In or the get-sandisk Windows PowerShell cmdlet.
 - For systems running MSDSM: Use the Inventory Collect Tool (ICT).

The LUN ID, LUN serial number, and corresponding serial number is captured under the SAN Host LUNs tab.

6. Use the LUN serial numbers, LUN IDs, and corresponding Windows physical disk numbers of the LUNs along with the LUN map output and the data collected in the pretransition state, to determine whether the LUNs have transitioned successfully.
7. Note whether the physical disk numbers of the transitioned LUNs have changed.
8. Bring your disks online.
 - Use Windows Disk Manager to bring online disks that are not part of Cluster Failover.
 - Use Failover Cluster Manager to bring online disks that are part of Cluster Failover.
9. If the host you are transitioning is running Windows Server 2003 and you have migrated the quorum device, start the cluster services on all of the cluster nodes.
10. If Hyper-V is enabled on the host and pass-through devices are configured to the VMs, modify the settings from Hyper-V Manager.

The physical disk number of the LUN corresponding to the pass-through device might have changed as a result of the transition.

Related information

[What the Inventory Collect Tool is](#)

Exceptions and known issues when transitioning SAN hosts to ONTAP

You should be aware of certain exceptions and known issues when transitioning SAN

hosts from Data ONTAP operating in 7-Mode to later versions of ONTAP.

- For transitioning Hyper-Virtual Machine (VMs) with only VHD or VHDX file types, you can use storage live migration instead of the 7-Mode Transition Tool (7MTT).

For details about Hyper-V storage live migration, see the Microsoft documentation.

- If you used the same igroup name on both nodes of the 7-Mode controller, the transition tool might fail to resolve the igroup conflict.

Bug ID [769715](#).

HP-UX host remediation

If you are using the 7-Mode Transition Tool (7MTT) to move from Data ONTAP operating in 7-Mode to clustered Data ONTAP in a SAN environment, you must perform a series of steps on your HP-UX host before and after the transition to avoid transition complications.

Related information

[Making a SAN boot LUN the primary boot LUN for HP-UX Emulex HBAs after transition](#)

[Making a SAN boot LUN the primary boot LUN for HP-UX QLogic HBAs after transition](#)

Transitioning HP-UX host LUNs with file systems

If you transition an HP-UX host LUN with a file system from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT), you must perform specific steps before and after transition to remediate transition issues on the host.

Preparing to transition HP-UX host LUNs with file systems

Before you transition HP-UX host LUNs with file systems from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must gather information you need for the transition process.

Steps

1. Display your LUNs to identify the name of the LUNs to be transitioned:

```
lun show
```

2. Locate the SCSI device name for the LUNs to be transitioned and the Agile name for the SCSI device:

```
sanlun lun show -p
```

In the following example, the transition LUNs are lun1 and lun3. The SCSI device names for lun1 are /dev/dsk/c14t0d1, /dev/dsk/c27t0d1, /dev/dsk/c40t0d1, and /dev/dsk/c31t0d1. The SCSI device names for lun3 are /dev/dsk/c14t0d2, /dev/dsk/c27t0d2, /dev/dsk/c40t0d2, and /dev/dsk/c31t0d2.

The Agile name for SCSI device `/dev/dsk/c31t0d1` is `/dev/rdisk/disk11`.

```
ONTAP Path: f8040-211-185:/vol/vol185_n1/lun3
    LUN: 1
    LUN Size: 3g
    Host Device: /dev/rdisk/disk11
        Mode: 7
    Multipath Provider: None
    host      vserver      /dev/dsk
    path      path      filename      host      vserver
    state     type      or hardware path      adapter      LIF
    -----
    up        secondary  /dev/dsk/c14t0d1  fcd0      fc4
    up        primary    /dev/dsk/c27t0d1  fcd0      fc2
    up        primary    /dev/dsk/c40t0d1  fcd1      fc1
    up        secondary  /dev/dsk/c31t0d1  fcd1      fc3
```

```
ONTAP Path: f8040-211-183:/vol/vol183_n1/lun1
    LUN: 3
    LUN Size: 3g
    Host Device: /dev/rdisk/disk14
        Mode: 7
    Multipath Provider: None
    host      vserver      /dev/dsk
    path      path      filename      host      vserver
    state     type      or hardware path      adapter      LIF
    -----
    up        secondary  /dev/dsk/c14t0d1  fcd0      fc4
    up        primary    /dev/dsk/c27t0d1  fcd0      fc2
    up        primary    /dev/dsk/c40t0d1  fcd1      fc1
    up        secondary  /dev/dsk/c31t0d1  fcd1      fc3
```

3. Identify the WWID for the LUN on the host:

```
scsimgr get_info -D Agile name for SCSI device
```

In this example, the LUN WWID for device `/dev/rdisk/disk11` is 0x600a09804d537739422445386b755529:

```
bash-2.05# scsimgr get_info -D /dev/rdisk/disk11 |grep WWID
World Wide Identifier (WWID)      = 0x600a09804d537739422445386b755529
```

4. List and record your volume groups:

vgdisplay

5. List and record your volume groups, logical volumes, and physical volumes:

```
vgdisplay -v vg_name
```

6. Write the VGID and logical volumes for the volume group to a mapfile:

```
vgexport -p -s -m /tmp/mapfile/vg01 vg01
```

7. Make a backup copy of the `mapfile.vg01` to an external source.

8. List and record the mount points:

bdf

The following example shows how the mount points should be displayed:

```
bash-2.05# bdf
Filesystem      kbytes      used      avail      used      Mounted on
/dev/vg01/lvol  123592960  1050952    22189796  5%       /mnt/qa/vg01
/dev/vg01/lvol2 23592960   588480     22645044  3%       /mnt/qa/vg02
```

Testing data LUNs on HP-UX hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to perform a copy-based transition of your HP-UX host data LUNs, you can test your transitioned clustered Data ONTAP LUNs to verify that you can mount your MPIO device before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your new ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host, and you should perform the following steps on the test host.

Your ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. On the test host, rescan your new ONTAP LUNs:

```
ioscan -fnC disk
```

4. Verify that your ONTAP LUNs are present:

```
sanlun lun show
```

5. Copy the `/tmp/mapfile.vg01` mapfile previously copied to your external source to your new host.
6. Use the mapfile to import the volume group:

```
vgimport -s -m /tmp/mapfile/vg01 vg01
```

7. Verify that the VG Status is displayed as available:

```
vgdisplay
```

8. Convert the legacy Device Special Filename (DSF) to persistent DSF:

```
vgdsf -c /dev/vg01
```

9. Use the mount command to manually mount each of the logical volumes.
10. Run the `fsck` command if you are prompted to do so.
11. Verify the mount points:

```
bdf
```

12. Perform your testing as needed.
13. Shut down the test host.
14. In the 7MTT UI, click **Finish Test**.

If your ONTAP LUNs must be remapped to your source host, then you must prepare your source host for the cutover phase. If your ONTAP LUNs must remain mapped to your test host, then no further steps are required on the test host.

Preparing for cutover phase when transitioning HP-UX host data LUNs with file systems

If you are transitioning an HP host data LUN with a file system from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must perform certain steps before entering the cutover phase.

If you are using an FC configuration, fabric connectivity and zoning to the clustered Data ONTAP nodes must be established.

If you are using an iSCSI configuration, the iSCSI sessions to the clustered Data ONTAP nodes must be discovered and logged in.

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool (7MTT). Copy-free transitions are not supported for HP-UX hosts.

Steps

1. Stop I/O on all mount points.
2. Shut down each application accessing the LUNs according to the recommendations of the application vendor.
3. Unmount all of the mount points:

```
umount mount_point
```

4. Export your volume group and write the VGID and logical volumes for the volume group to a mapfile:

```
vgexport -p -s -m /tmp/mapfile.vg01 vg01
```

5. Make a backup copy of the mapfile.vg01 file to an external source.

6. Disable the volume group:

```
vgchange -a n vg_name
```

7. Export the volume group:

```
vgexport vg_name
```

8. Verify that the volume group has been exported:

```
vgdisplay
```

The exported volume group information should not be displayed in the output.

Mounting HP-UX host LUNs with file systems after transition

After transitioning HP-UX host LUNs with file systems from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must mount the LUNs.

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool (7MTT). Copy-free transitions are not supported for HP-UX hosts.

Steps

1. Discover new clustered Data ONTAP LUNs:

```
ioscan -fnC disk
```

2. Verify that the clustered Data ONTAP LUNs have been discovered:

```
sanlun lun show
```

3. Verify that the lun-pathname for the clustered Data ONTAP LUNs is the same as the lun-pathname for the 7-Mode LUNs prior to transition.

4. Verify that the output in the mode column has changed from 7 to C.

5. Use the mapfile file to import the volume group:

```
vgimport -s -v -m /tmp/mapfile.vg01 /dev/vg01"
```

6. Activate the logical volumes:

```
vgchange -a y vg_name
```

7. Convert the legacy Device Special Filename (DSF) to persistent DSF:

```
vgdsf -c /dev/vg01
```

8. Verify that the VG Status is displayed as available:

```
vgdisplay
```

9. Manually mount each of the devices:

```
mount -F vxfs -o largefiles device_name mount_point
```

10. Run the fsck command if you are prompted to do so.

11. Verify the mount points:

```
bdf
```

The following example shows how the mount points should be displayed:

```
bash-2.05# bdf
Filesystem      kbytes   used   avail   used   Mounted on
/dev/vg01/lvol1 23592960 1050952 22189796 5%   /mnt/qa/vg01
/dev/vg01/lvol2 23592960 588480 22645044 3%   /mnt/qa/vg02
```

Transitioning HP-UX host SAN boot LUNs with FC/FCoE configurations

If you transition an HP host SAN boot LUN with an FC or FCoE configuration from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT), you must perform specific steps before and after transition to remediate transition issues on the host.

Preparing to transition SAN boot LUNs on HP-UX hosts with FC configurations

Before you transition a SAN boot LUN on an HP-UX host with an FC configuration, you must record the name of the 7-Mode LUN on which HP-UX is installed, the SCSI device name for that LUN, the Agile naming convention, and the WWID.

1. From the console of the 7-Mode controller, display your 7-Mode LUNs to identify the LUN name on which the "HPUX11v3 March 2014" operating system is installed:

```
lun show
```

2. Obtain the SCSI device name for the LUN:

```
sanlun lun show -p
```

In this example, the transition LUN is bootlun_94. The SCSI devices for this LUN are /dev/dsk/c14t0d0, /dev/dsk/c27t0d0, /dev/dsk/c40t0d0, and /dev/dsk/c31t0d0 .

```

ONTAP Path: f8040-211-183:/vol/vol_183/bootlun_94
          LUN: 0
          LUN Size: 100g
          Host Device: /dev/rdisk/disk6
          Mode: 7
Multipath Provider: None
host      vserver    /dev/dsk
path      path      filename
state     type      or hardware path
-----  -----  -----
up        secondary  /dev/dsk/c14t0d0  fcd0    fc4
up        primary    /dev/dsk/c27t0d0  fcd0    fc2
up        primary    /dev/dsk/c40t0d0  fcd1    fc1
up        secondary  /dev/dsk/c31t0d0  fcd1    fc3

```

3. Identify the WWID for the LUN on the host:

```
scsimgr get_info -D SCSI_device_name | grep WWID
```

In the following example, the LUN WWID for device /dev/rdisk/disk6 is 0x600a09804d537739422445386b75556:

```

bash-2.05# scsimgr get_info -D /dev/rdisk/disk6 | grep WWID
World Wide Identifier (WWID)      = 0x600a09804d537739422445386b755564
bash-2.05#

```

Testing transitioned SAN boot LUNs on HP-UX hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition your HP-UX host SAN boot LUNs, you can test your transitioned clustered Data ONTAP LUNs before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your new clustered Data ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition

You should maintain hardware parity between the test host and the source host, and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.

3. On the test host, enter the HBA BIOS.
4. Change the IP address and host name on the test host.
5. Verify that your clustered Data ONTAP LUNs are present on the test host:

```
sanlun lun show
```

6. Perform your testing as needed.
7. Shut down the test host:

```
shutdown -h -y 0
```

8. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Preparing for the cutover phase when transitioning SAN boot LUNs

If you are transitioning SAN boot LUNs from Data ONTAP operating in 7-Mode to clustered Data ONTAP, there are certain prerequisites you must be aware of before entering the cutover phase.

You must have fabric connectivity and zoning to your clustered Data ONTAP controllers for FC configurations. For iSCSI configurations, your iSCSI sessions must be discovered and logged in to your clustered Data ONTAP controllers. You must also shut down your host.

- For copy-based transitions, you should shut down your host before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT). Copy-free transitions are not supported on HP-UX hosts.
- For copy-free transitions, you should shut down your host before initiating the Export & Halt 7-Mode operation in the 7MTT.

Making a SAN boot LUN the primary boot LUN for HP-UX Emulex HBAs after transition

If your Data ONTAP operating in 7-Mode HP-UX host was SAN booted, you must make the SAN boot LUN the primary boot LUN after transition to clustered Data ONTAP.

Your data migration must be complete and your boot LUN must be mapped to your host from your clustered Data ONTAP node.

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool. Copy-free transitions are not supported on HP-UX hosts.

Steps

1. From the shell prompt, list the Emulex HBAs:

```
drivers
```

2. Select the Emulex HBA, and then press Enter.
3. Select **Setup Utility**.

4. Select **Configure Boot Parameters**.
5. Select **Configure Boot Devices**.
6. Select any device from the list, and then press Enter.
7. Select **Scan Targets**.
8. Select the LUN with the boot path you want, and then press Enter.
9. Select **Peripheral dev** as the Mode, and then press Enter.
10. Select **Boot this device via WWN**, and then press Enter.

Your boot LUN is displayed.

11. Press **Esc** until you return to the shell prompt.
12. Display your LUN to obtain the path of the LUN from which you want to boot:

```
map -r
```

The LUN paths are listed under the Device column. The bootable SAN disk are displayed under the mapping table column and have “WWN” and “Part 1” in the output string.

13. Enter the LUN path of your SAN boot LUN.

An example of a LUN path is fs0.

14. Exit the EFI shell:

```
cd efi
```

15. Enter the HPUX directory:

```
cd hpx
```

16. Make the new clustered Data ONTAP SAN boot LUN the primary boot LUN:

```
bcfg boot add 1 hpx.efd "HP-UX-Primary Boot"
```

17. Manually update the HBA BIOS by making an entry in the EFI for the SAN boot LUN.

18. Create an alternate boot path:

```
bcfg boot add 2 hpx.efd "HPUX alternate boot"
```

19. Create a third boot path:

```
bcfg boot add 2 hpx.efd "HPUX third boot"
```

20. Create a fourth boot path:

```
bcfg boot add 2 hpx.efd "HPUX fourth boot"
```

Making a SAN boot LUN the primary boot LUN for HP-UX QLogic HBAs after transition

If your Data ONTAP operating in 7-Mode HP-UX host was SAN booted, you must make

the SAN boot LUN the primary boot LUN after transition to clustered Data ONTAP.

- Your data migration must be complete.
- Your boot LUN must be mapped to your host from your clustered Data ONTAP node.

SAN boot is supported for HP-UX 11.3x on HP 9000 systems using the BCH menu and on HP Integrity servers using the HP-UX Loader (EFI).

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool. Copy-free transitions are not supported on HP-UX hosts.

Steps

1. Open the shell prompt:

Ctrl B

2. Boot to the EFI shell.

The EFI shell is available only on HP Integrity systems.

3. Use a serial console to access the login to the service processor (MP).
4. Access the console list: CO

This opens the EFI Boot Manager menu.

5. From the EFI Boot Manager menu, select the EFI shell menu option to access the EFI shell environment.
6. Identify your QLogic driver numbers:

drivers

The driver numbers are located in the DRV column.

7. Identify the corresponding controller number for each driver:

drvcfg driver_number

In the following example, 27 is the corresponding controller number for driver 23 and 26 is the corresponding controller number for driver 24:

```
Shell> drvcfg 23
Configurable Components
    Drv[23]      Ctrl[27]      Lang[eng]

Shell> drvcfg 24
Configurable Components
    Drv[24]      Ctrl[26]      Lang[eng]
```

8. Open the driver BIOS:

drvcfg drv_number ctrl_number -s

9. Enter **4** to select **4. Edit Boot Settings**.
10. In Edit Boot Settings, enter **6** to select **6. EFI Variable EFIFCScanLevel**.
11. Enter **1** to change the value of EFI Variable EFIFCScanLevel from 0 to 1.
12. Enter **7** to select **7. Enable World Login**.
13. Enter **y** to enable world login.
14. Enter **0** to go to the previous menu.
15. In the Main Menu, enter **11** to save your changes.
16. Enter **12** to quit.
17. In the shell prompt, rescan your devices:

```
reconnect -r
```

18. Display the LUN to obtain the path of the LUN from which you want to boot:

```
map -r
```

The LUN paths are listed under the Device column. The bootable SAN disk are displayed under the mapping table column and have “WWN” and “Part 1” in the output string.

19. Enter the LUN path of your SAN boot LUN.

An example of a LUN path is fs0.

20. Exit the EFI shell:

```
cd efi
```

21. Enter the HPUX directory:

```
cd hpx
```

22. Make the new clustered Data ONTAP SAN boot LUN the primary boot LUN:

```
bcfg boot add 1 hpx.efd "HP-UX-Primary Boot"
```

23. Manually update the HBA BIOS by making an entry in the EFI for the SAN boot LUN.

24. Create an alternate boot path:

```
bcfg boot add 2 hpx.efd "HPUX alternate boot"
```

25. Create a third boot path:

```
bcfg boot add 2 hpx.efd "HPUX third boot"
```

26. Create a fourth boot path:

```
bcfg boot add 2 hpx.efd "HPUX fourth boot"
```

AIX host remediation

If you are using the 7-Mode Transition Tool (7MTT) to move from Data ONTAP operating in 7-Mode to clustered Data ONTAP in a SAN environment, you must perform a series of steps on your AIX host before and after transition to avoid transition complications.

Transition of SAN boot LUNs on AIX hosts with FC/FCoE configurations

If you transition a SAN boot LUN on an AIX host with an FC or FCoE configuration from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT), you must perform specific steps before and after transition to remediate transition issues on the host.

Preparing to transition SAN boot LUNs on AIX hosts with FC/FCoE configurations

Before you transition a SAN boot LUN on an AIX host with an FC/FCoE configuration, you must record the name of the 7-Mode LUN on which AIX is installed and the SCSI device name for that LUN.

1. From the console of your Data ONTAP operating in 7-Mode controller, identify the 7-Mode LUN name on which AIX 7.1 and AIX 6.1 operating system is installed:

```
lun show
```

2. Obtain the SCSI device name for the LUN on the host:

```
sanlun lun show
```

In the following example, the transition LUN is `lun_sanboot_fas3170_aix04` and the SCSI device for this LUN is `hdisk0`.

```
[04:02 AM root@822-aix03p1/]: sanlun lun show
controller[7mode]/
vserver[Cmode] lun-pathname
-----
fas3170-aix04  /vol/vol_fas3170_aix04_sanboot/lun_sanboot_fas3170_aix04
kit            /vol/kit/kit_0
kit            /vol/kit/kit_0
filename      adapter protocol    size      mode
-----
hdisk0        fcs0      FCP      100g      7
hdisk1        fcs0      FCP      5g        C
hdisk2        fcs0      FCP      5g        C
```

Testing transitioned SAN boot LUNs on AIX hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or

later to transition your 7-Mode Windows host LUNs, you can test your transitioned clustered Data ONTAP LUNs before the cutover phase to verify that they are functioning as desired.

Your 7-Mode LUNs must be ready for transition.

You should maintain hardware parity between the test host and the source host, and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. On the test host, log in to the Hardware Management Console, and then boot your host in the **SMS** menu.
4. After the host boots, change the IP address and host name.
5. Verify that your clustered Data ONTAP LUNs are present:

```
sanlun lun show
```

6. Perform your testing as needed.
7. Shut down the test host:

```
shutdown -h
```

8. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Preparing for the cutover phase when transitioning AIX hosts with FC/FCoE configurations.

Before entering the cutover phase for AIX hosts with FC or FCoE configurations, you must perform specific steps.

Fabric connectivity and zoning to the clustered Data ONTAP nodes must be established.

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool. Copy-free transitions are not supported on AIX hosts.

Steps

1. Shut down your host:

```
shutdown -h
```

Booting from SAN boot LUN on AIX hosts with FC/FCoE configurations after transition

After transitioning a SAN boot LUN on an AIX host with an FC or FCoE configuration, you

must perform certain steps to boot your host from the SAN boot LUN.

For copy-based transitions, you must perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool. Copy-free transitions are not supported on AIX hosts.

1. Log in to the Hardware Management Console (HMC), and then boot your host in the SMS menu.
2. Select the host.
3. Select **Operations > Activate > Profile**.
4. Click the Advanced tab.
5. Select **SMS**, and then click **OK**.
6. In the SMS Main Menu, enter **5** to select **5. Select Boot Options**.
7. Enter **1** to select **1. Select Install/Boot Device**.
8. Enter **5** to select **5. List all Devices**.
9. Enter the device number of the ONTAP SAN boot LUN that you want to boot with.

In the following example, the desired LUN is option 5:

```
Select Device
Device  Current      Device
Number      Position      Name
1.      -      PCIe2 4-port 1GbE Adapter
        ( loc=U78CB.001.WZS062Y-P1-C12-T1 )
2.      -      PCIe2 4-port 1GbE Adapter
        ( loc=U78CB.001.WZS062Y-P1-C12-T2 )
3.      -      PCIe2 4-port 1GbE Adapter
        ( loc=U78CB.001.WZS062Y-P1-C12-T3 )
4.      -      PCIe2 4-port 1GbE Adapter
        ( loc=U78CB.001.WZS062Y-P1-C12-T4 )
5.      -      107 GB      FC Harddisk, part=2 (AIX 7.1.0)
        ( loc=U78CB.001.WZS062Y-P1-C7-T1-W232200a09830ca3a-
L0000000000000000 )
6.      -      107 GB      FC Harddisk, part=2 (AIX 7.1.0)
        ( loc=U78CB.001.WZS062Y-P1-C7-T2-W232200a09830ca3a-
L0000000000000000 )
-----
Navigation keys:
M = return to Main Menu  N = Next page of list
ESC key = return to previous screen  X = eXit System Management
Services
-----
Type menu item number and press Enter or select Navigation keys: 5
```

10. Enter **2** to select **2. Normal Mode Boot**.
11. Enter **1** to exit the SMS menu.

12. Wait for your operating system to boot.

13. Display the LUN path name:

```
sanlun lun show
```

The output in the mode column should have changed from 7 to C.

Transitioning AIX host data LUNs with file systems

If you transition an AIX host data LUN with a file system from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT), you must perform specific steps before and after transition to remediate transition issues on the host.

Preparing to transition AIX host data LUNs with file systems

Before you transition AIX host data LUNs with file systems from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must gather information you need for the transition process.

1. On the 7-Mode controller, identify the name of the LUN to be transitioned:

```
lun show
```

2. On the host, locate the SCSI device name for the LUN:

```
sanlun lun show
```

The SCSI device name is located in the device filename column.

3. List and record the physical volumes used by the volume group configured in the data LUNs to be transitioned:

```
lsvg -p vg_name
```

4. List and record the logical volumes used by the volume group:

```
lsvg -l vg_name
```

Testing transitioned LUNs on AIX hosts before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition your AIX host LUNs, you can test your transitioned clustered Data ONTAP LUNs to verify that you can mount your MPIO device before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your LUNs must be prepared for transition.

You should maintain hardware parity between the test host and the source host and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. After the Baseline Data Copy is complete select **Test Mode** in the 7MTT user interface (UI).
2. In the 7MTT UI, click **Apply Configuration**.
3. On the test host, rescan your new clustered Data ONTAP LUNs:

```
cfgmgr
```

4. Verify that your new clustered Data ONTAP LUNs are present:

```
sanlun lun show
```

5. Verify the volume group status:

```
lsvg vg_name
```

6. Mount each of the logical volumes:

```
mount -o log/dev/loglv00 file_system_mount_point
```

7. Verify the mount points:

```
df
```

8. Perform your testing as needed.

9. Shut down the test host:

```
shutdown -h
```

10. In the 7MTT UI, click **Finish Testing**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Preparing for cutover phase when transitioning AIX host data LUNs with file systems

If you are transitioning an AIX host data LUN with a file system from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must perform certain steps before entering the cutover phase.

Fabric connectivity and zoning to the clustered Data ONTAP nodes must be established.

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool. Copy-free transitions are not supported on AIX hosts.

Steps

1. Stop I/O on all of the mount points.
2. Shut down each application accessing the LUNs according to the recommendations of the application vendor.

3. Unmount all of the mount points:

```
umount mount_point
```

4. Disable the volume group:

```
varyoffvg vg_name
```

5. Export the volume group:

```
exportvg vg_name
```

6. Verify the volume group status:

```
lsvg
```

The exported volume group should not be listed in the output.

7. If there are any stale entries, remove them:

```
rmdev -Rdl hdisk#
```

Mounting AIX host data LUNs with file systems after transition

After transitioning AIX host data LUNs with file systems from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must mount the LUNs.

After LUN transition, the Logical Volume Manager (LVM) attributes, such as the logical volume name and volume group name, do not change. You continue to use the pretransition logical volume name and volume group name for post-transition configuration.

For copy-based transitions, perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool. Copy-free transitions are not supported on AIX hosts.

Steps

1. Discover your new clustered Data ONTAP LUNs:

```
cfgmgr
```

2. Verify that your clustered Data ONTAP LUNs have been discovered:

```
sanlun lun show
```

Your clustered Data ONTAP LUNs should be listed and the output in the mode column should be changed from 7 to C.

3. Import your volume group:

```
importvg -y vg_name pv_name
```

You can use any physical volume name in your volume group.

4. Verify that your volume group was imported:

```
lsvg vg_name
```

5. Mount each device:

```
mount -o log=/dev/loglv00 file_system mount_point
```

6. Verify the mount points:

```
df
```

Solaris host remediation

If you are using the 7-Mode Transition Tool (7MTT) to move from ONTAP operating in 7-Mode to clustered ONTAP in a SAN environment, you must perform a series of steps on your Solaris host before and after transition to avoid transition complications.

The following scenarios are not supported for any transition workflow (support for copy-based or copy-free transitions):

- Transition of SAN boot LUNs

You can set up a SAN boot LUN to work in a Veritas dynamic multipathing (DMP) environment or a Solaris MPxIO environment by running the Solaris Host Utilities and using the FC protocol. The method you use to set up a SAN boot LUN can vary, depending on your volume manager and file system.

[Solaris Host Utilities 6.2 Installation and Setup Guide](#)

- Solaris host clustering transition
- Veritas configuration

Transitioning Solaris host data LUNs with ZFS file systems

If you transition a Solaris host data LUN with ZFS file system from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT), you must perform specific steps before and after transition to remediate transition issues on the host.

Preparing to transition Solaris host data LUNs with ZFS file system

Before you transition Solaris host LUNs with ZFS file systems from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must gather information you need for the transition process.

This applies to copy-based transitions and copy-free transitions.

Steps

1. On the 7-Mode controller, identify the name of the LUN to be transitioned:

```
lun show
```

```

fas8040-shu01> lun show
    /vol/ufs/ufs1                                5g (5368709120)  (r/w, online,
mapped)
    /vol/ufs/ufs2                                5g (5368709120)  (r/w, online,
mapped)
    /vol/zfs/zfs1                                6g (6442450944)  (r/w, online,
mapped)
    /vol/zfs/zfs2                                6g (6442450944)  (r/w, online,
mapped)

```

2. On the host, locate the SCSI device file name for the LUN:

```
sanlun lun show
```

The SCSI device file name is located in the **device** **filename** column.

```

# sanlun lun show
controller(7mode) /                                device
host          lun
vserver(Cmode)   lun-pathname   filename
adapter      protocol   size   mode
-----
-----
fas8040-shu01      /vol/zfs/zfs2
/dev/rdsk/c0t60A98000383035356C2447384D396550d0s2 scsi_vhci0 FCP
6g      7
fas8040-shu01      /vol/zfs/zfs1
/dev/rdsk/c0t60A98000383035356C2447384D39654Ed0s2 scsi_vhci0 FCP
6g      7
fas8040-shu01      /vol/ufs/ufs2
/dev/rdsk/c0t60A98000383035356C2447384D39654Ad0s2 scsi_vhci0 FCP
5g      7
fas8040-shu01      /vol/ufs/ufs1
/dev/rdsk/c0t60A98000383035356C2447384D396548d0s2 scsi_vhci0 FCP
5g      7

```

3. List the zpool:

```
zpool list
```

4. Record the zpool and get the disks associated with the zpool:

```
zpool status pool-name
```

```

# zpool list
NAME      SIZE  ALLOC   FREE   CAP  HEALTH  ALTROOT
n_pool   11.9G  2.67G  9.27G  22%  ONLINE   -
         

# zpool status
  pool: n_pool
  state: ONLINE
  scan: none requested
config:

          NAME                               STATE    READ WRITE
CKSUM
          n_pool                           ONLINE      0      0
0
          c0t60A98000383035356C2447384D396550d0  ONLINE      0      0
0
          c0t60A98000383035356C2447384D39654Ed0  ONLINE      0      0
0

errors: No known data errors

```

5. List and record the ZFS datasets within a ZFS storage pool:

zfs list

```

# zfs list
NAME      USED  AVAIL   REFER  MOUNTPOINT
n_pool   2.67G  9.08G  160K   /n_pool
n_pool/pool1  1.50G  2.50G  1.50G   /n_pool/pool1
n_pool/pool2  1.16G  2.84G  1.16G   /n_pool/pool2

```

Testing data LUNs on Solaris hosts with ZFS file system before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition your Solaris host ZFS data LUNs, you can test your transitioned clustered Data ONTAP LUNs to verify that you can mount your MPIO device before the cutover phase.

- Your source host with ZFS data LUNs need to be offline before starting the test phase transition.

See *Oracle Doc ID 1316472.1: LUN Copy Is Not Supported While ZFS Zpool Is Online* for details.

- Your new clustered Data ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition.

- Exporting the zpool on the production host causes application disruption; all I/O operations should be stopped prior to 7-Mode LUN.

You should maintain hardware parity between the test host and the source host, and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

1. On the production (source) host, export the zpool:

```
#zpool export pool-name
```

```
# zpool export n_pool

# zpool import
pool: n_pool
  id: 5049703405981005579
  state: ONLINE
action: The pool can be imported using its name or numeric identifier.
config:

  n_pool                                ONLINE
    c0t60A98000383035356C2447384D396550d0  ONLINE
    c0t60A98000383035356C2447384D39654Ed0  ONLINE
```

2. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).

3. In the 7MTT UI, click **Apply Configuration**.



After this step, you can set the application back to online and start I/O operations to 7-Mode LUNs. Subsequent steps do not cause any application disruptions.

4. On the production host, import the zpool:

```
#zpool import pool-name
```

```
# zpool import n_pool
```

5. On the test host, rescan your new clustered Data ONTAP LUNs:

- a. Identify the FC host ports (type fc-fabric):

```
#cfgadm -1
```

- b. Unconfigure the first fc-fabric port:

```
#cfgadm -c unconfigure c1
```

- c. Configure the 1st fc-fabric port:

```
#cfgadm -c unconfigure c2
```

- d. Repeat the steps for other fc-fabric ports.
- e. Display information about the host ports and their attached devices:
`# cfgadm -al`
- f. Reload the driver:
`# devfsadm -Cv`
`# devfsadm -i iscsi`

- 6. Verify that your clustered Data ONTAP LUNs are present:

```
#sanlun lun show
```

```
# sanlun lun show
controller(7mode) /                               device
host          lun
vserver(Cmode)       lun-pathname    filename
adapter      protocol   size    mode
-----
-----
vs_5          /vol/zfs/zfs2
/dev/rdsk/c5t600A0980383030444D2B466542485935d0s2 scsi_vhci0 FCP
6g          C
vs_5          /vol/zfs/zfs1
/dev/rdsk/c5t600A0980383030444D2B466542485934d0s2 scsi_vhci0 FCP
6g          C
vs_5          /vol/ufs/ufs2
/dev/rdsk/c5t600A0980383030444D2B466542485937d0s2 scsi_vhci0 FCP
5g          C
vs_5          /vol/ufs/ufs1
/dev/rdsk/c5t600A0980383030444D2B466542485936d0s2 scsi_vhci0 FCP
5g          C
```

- 7. Verify that the zpool planned to test is available for import:

```
#zpool import
```

```

# zpool import
pool: n_pool
  id: 5049703405981005579
  state: ONLINE
action: The pool can be imported using its name or numeric identifier.
config:

  n_pool                                ONLINE
  c5t600A0980383030444D2B466542485935d0  ONLINE
  c5t600A0980383030444D2B466542485934d0  ONLINE

```

8. Import the zpool using the pool name or the pool ID:

- **#zpool import pool-name**
- **#zpool import pool-id**

```
#zpool import n_pool
```

+

```
#zpool import 5049703405981005579
```

9. Verify that the ZFS datasets are mounted:

- **zfs list**
- **df -ah**

```
# zfs list
  NAME      USED  AVAIL  REFER  MOUNTPOINT
  n_pool    2.67G  9.08G  160K  /n_pool
  n_pool/pool1  1.50G  2.50G  1.50G  /n_pool/pool1
  n_pool/pool2  1.16G  2.84G  1.16G  /n_pool/pool2
```

10. Perform testing as needed.

11. Shut down the test host.

12. In the 7MTT UI, click **Finish Test**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Preparing for cutover phase when transitioning Solaris host data LUNs with ZFS file systems

If you are transitioning a Solaris host data LUN with ZFS file system from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must perform certain steps before entering the cutover phase.

If you are using an FC configuration, fabric connectivity and zoning to the clustered Data ONTAP nodes must be established.

If you are using an iSCSI configuration, the iSCSI sessions to the clustered Data ONTAP nodes must be discovered and logged in.

For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).

For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode operation in 7MTT.

Steps

1. Stop I/O on all mount points.
2. Shut down each application accessing the LUNs according to the recommendations of the application vendor.
3. Export the zpool:

```
zpool export pool-name
```

```
# zpool export n_pool
```

4. Verify that the zpools are exported:

- Should list the zpool that is exported: + **zpool import**
- Should not list the zpool that is exported: + **zpool list**

```
# zpool export n_pool

# zpool list
no pools available

# zpool import
pool: n_pool
  id: 5049703405981005579
  state: ONLINE
action: The pool can be imported using its name or numeric identifier.
config:

  n_pool                                     ONLINE
  c0t60A98000383035356C2447384D396550d0  ONLINE
  c0t60A98000383035356C2447384D39654Ed0  ONLINE
```

Mounting Solaris host LUNs with ZFS file systems after transition

After transitioning Solaris host LUNs with ZFS file systems from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must mount the LUNs.

For copy-based transitions, you perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).

For copy-free transitions, you perform these steps after the Import Data & Configuration operation in the 7MTT is complete.

1. Discover your new clustered Data ONTAP LUNs by rescanning the host.

a. Identify the FC Host Ports (type fc-fabric):

```
#cfgadm -l
```

b. Unconfigure the 1st fc-fabric port:

```
#cfgadm -c unconfigure c1
```

c. Unconfigure the second fc-fabric port:

```
#cfgadm -c unconfigure c2
```

d. Repeat the steps for other fc-fabric ports.

e. Verify that the information about the host ports and their attached devices is correct:

```
# cfgadm -al
```

f. Reload the driver:

```
# devfsadm -Cv # devfsadm -i iscsi
```

2. Verify that your clustered Data ONTAP LUNs have been discovered:

sanlun lun show The lun-pathname values for the clustered Data ONTAP LUNs should be the same as the lun-pathname values for the 7-Mode LUNs prior to transition. The mode column should display "C" instead of "7".

```

# sanlun lun show
controller(7mode) /                               device
host          lun
vserver(Cmode)       lun-pathname   filename
adapter      protocol   size    mode
-----
-----
vs_sru17_5           /vol/zfs/zfs2
/dev/rdsk/c5t600A0980383030444D2B466542485935d0s2 scsi_vhci0 FCP
6g      C
vs_sru17_5           /vol/zfs/zfs1
/dev/rdsk/c5t600A0980383030444D2B466542485934d0s2 scsi_vhci0 FCP
6g      C
vs_sru17_5           /vol/ufs/ufs2
/dev/rdsk/c5t600A0980383030444D2B466542485937d0s2 scsi_vhci0 FCP
5g      C
vs_sru17_5           /vol/ufs/ufs1
/dev/rdsk/c5t600A0980383030444D2B466542485936d0s2 scsi_vhci0 FCP
5g      C

```

3. Check for zpools that are available to import:

zpool import

```

# zpool import
pool: n_vg
  id: 3605589027417030916
  state: ONLINE
action: The pool can be imported using its name or numeric identifier.
config:

  n_vg                                ONLINE
  c0t600A098051763644575D445443304134d0  ONLINE
  c0t600A098051757A46382B445441763532d0  ONLINE

```

4. Import the zpools that were used for transition by pool name or using the pool ID:

- **zpool import pool-name**
- **zpool import pool-id**

```
# zpool list
no pools available

# zpool import
pool: n_pool
  id: 5049703405981005579
  state: ONLINE
action: The pool can be imported using its name or numeric identifier.
config:

  n_pool                                ONLINE
  c0t60A98000383035356C2447384D396550d0  ONLINE
  c0t60A98000383035356C2447384D39654Ed0  ONLINE

# zpool import n_pool
```

+

```
# zpool import 5049703405981005579
[59] 09:55:53 (root@sunx2-shu04) /tmp
# zpool list
NAME      SIZE  ALLOC   FREE   CAP  HEALTH  ALTROOT
n_pool   11.9G  2.67G  9.27G  22%  ONLINE  -
```

5. Check whether the zpool is online by doing one of the following:

- **zpool status**
- **zpool list**

```

# zpool status
  pool: n_pool
    state: ONLINE
      scan: none requested
    config:

      NAME                               STATE    READ WRITE
  CKSUM
      n_pool                            ONLINE      0      0
  0
      c0t60A98000383035356C2447384D396550d0  ONLINE      0      0
  0
      c0t60A98000383035356C2447384D39654Ed0  ONLINE      0      0
  0

  errors: No known data errors

```

+

```

# zpool list
NAME      SIZE  ALLOC   FREE   CAP  HEALTH  ALTROOT
n_pool   11.9G  2.67G  9.27G  22%  ONLINE   -

```

6. Verify the mount points by using one of the following commands:

- **zfs list**
- **df -ah**

```

# zfs list
NAME      USED  AVAIL   REFER  MOUNTPOINT
n_pool   2.67G  9.08G  160K   /n_pool
n_pool/pool1  1.50G  2.50G  1.50G   /n_pool/pool1
n_pool/pool2  1.16G  2.84G  1.16G   /n_pool/pool2

#df -ah
n_pool           12G   160K   9.1G    1%   /n_pool
n_pool/pool1    4.0G   1.5G   2.5G   38%   /n_pool/pool1
n_pool/pool2    4.0G   1.2G   2.8G   30%   /n_pool/pool2

```

Transitioning Solaris host data LUNs with Sun Volume Manager

If you transition a Solaris host data LUN with Solaris Volume Manager from Data ONTAP operating in 7-Mode to clustered Data ONTAP using the 7-Mode Transition Tool (7MTT),

you must perform specific steps before and after transition to remediate transition issues on the host.

Preparing to transition Solaris host LUNs with Sun Volume Manager

Before you transition Solaris host data LUNs with Sun Volume Manager from ONTAP operating in 7-Mode to clustered ONTAP, you must gather information you need for the transition process.

This task applies to copy-based transitions and copy-free transitions.

Steps

1. Display your LUNs to identify the name of the LUNs to be transitioned:

```
lun show
```

```
fas8040-shu01> lun show
    /vol/ufs/ufs1                      5g (5368709120)  (r/w, online,
mapped)
    /vol/ufs/ufs2                      5g (5368709120)  (r/w, online,
mapped)
    /vol/zfs/zfs1                      6g (6442450944)  (r/w, online,
mapped)
    /vol/zfs/zfs2                      6g (6442450944)  (r/w, online,
mapped)
```

2. On the host, locate the device file name for the LUN:

```
#sanlun lun show
```

The device file name is listed in the `device filename` column.

```
# sanlun lun show
controller(7mode) /                               device
host          lun
vserver(Cmode)      lun-pathname   filename
adapter      protocol   size    mode
-----
-----
fas8040-shu01      /vol/zfs/zfs2
/dev/rdsk/c0t60A98000383035356C2447384D396550d0s2 scsi_vhci0 FCP
6g      7
fas8040-shu01      /vol/zfs/zfs1
/dev/rdsk/c0t60A98000383035356C2447384D39654Ed0s2 scsi_vhci0 FCP
6g      7
fas8040-shu01      /vol/ufs/ufs2
/dev/rdsk/c0t60A98000383035356C2447384D39654Ad0s2 scsi_vhci0 FCP
5g      7
fas8040-shu01      /vol/ufs/ufs1
/dev/rdsk/c0t60A98000383035356C2447384D396548d0s2 scsi_vhci0 FCP
5g
```

3. List and record the SVM, and then get the disks associated with the SVM:

metaset

metaset -s set-name

```
# metaset
Set name = svm, Set number = 1
Host          Owner
Solarisx2-shu04      Yes
Drive          Dbase
/dev/dsk/c0t60A98000383035356C2447384D39654Ad0  Yes
/dev/dsk/c0t60A98000383035356C2447384D396548d0  Yes
```

```

# metastat -s svm
svm/d2: Concat/Stripe
  Size: 10452992 blocks (5.0 GB)
  Stripe 0:
    Device                               Start Block
  Dbase  Reloc
    /dev/dsk/c0t60A98000383035356C2447384D396548d0s0      0
  No      Yes

svm/d1: Concat/Stripe
  Size: 10452992 blocks (5.0 GB)
  Stripe 0:
    Device                               Start Block
  Dbase  Reloc
    /dev/dsk/c0t60A98000383035356C2447384D39654Ad0s0      0
  No      Yes

Device Relocation Information:
Device                               Reloc  Device ID
/dev/dsk/c0t60A98000383035356C2447384D396548d0      Yes
id1, sd@n60a98000383035356c2447384d396548
/dev/dsk/c0t60A98000383035356C2447384D39654Ad0      Yes
id1, sd@n60a98000383035356c2447384d39654a

```

4. List and record the mount points:

df -ah

```

# df -ah
Filesystem      size  used  avail capacity  Mounted on
/dev/md/svm/dsk/d1  4.9G  1.5G   3.4G   31%      /d1
/dev/md/svm/dsk/d2  4.9G  991M   3.9G   20%      /d2

```

Testing data LUNs on Solaris hosts with Sun Volume Manager before the cutover phase of copy-based transitions

If you are using the 7-Mode Transition Tool (7MTT) 2.2 or later and Data ONTAP 8.3.2 or later to transition your Solaris host ZFS data LUNs, you can test your transitioned clustered Data ONTAP LUNs to verify that you can mount your MPIO device before the cutover phase. Your source host can continue to run I/O to your source 7-Mode LUNs during testing.

Your source host with Sun Volume Manager data LUNs needs to be offline before starting the test phase transition.

Your new clustered Data ONTAP LUNs must be mapped to your test host and your LUNs must be ready for transition

You should maintain hardware parity between the test host and the source host, and you should perform the following steps on the test host.

Your clustered Data ONTAP LUNs are in read/write mode during testing. They convert to read-only mode when testing is complete and you are preparing for the cutover phase.

Steps

1. On the production host, disable the disk sets:

```
metaset -s svm -t  
  
metaset -s svm -A disable  
  
metaset -s svm -r  
  
metaset -s svm -P  
  
metaset
```

2. After the baseline data copy is complete, select **Test Mode** in the 7MTT user interface (UI).
3. In the 7MTT UI, click **Apply Configuration**.
4. In the production host, import the disk sets:

```
metaimport -s set-name
```

```

# metainport -s svm
Drives in regular diskset including disk
c0t60A98000383035356C2447384D39654Ad0:
  c0t60A98000383035356C2447384D39654Ad0
  c0t60A98000383035356C2447384D396548d0
More info:
  metainport -r -v c0t60A98000383035356C2447384D39654Ad0

[22] 04:51:29 (root@sunx2-shu04) /
# metastat -s svm
svm/d2: Concat/Stripe
  Size: 10452992 blocks (5.0 GB)
  Stripe 0:
    Device                               Start Block
  Dbase   Reloc
    /dev/dsk/c0t60A98000383035356C2447384D396548d0s0      0
  No      Yes

svm/d1: Concat/Stripe
  Size: 10452992 blocks (5.0 GB)
  Stripe 0:
    Device                               Start Block
  Dbase   Reloc
    /dev/dsk/c0t60A98000383035356C2447384D39654Ad0s0      0
  No      Yes

Device Relocation Information:
Device                               Reloc  Device ID
/dev/dsk/c0t60A98000383035356C2447384D396548d0      Yes
id1, sd@n60a98000383035356c2447384d396548
/dev/dsk/c0t60A98000383035356C2447384D39654Ad0      Yes
id1, sd@n60a98000383035356c2447384d39654a

```

5. On the test host, rescan your new clustered Data ONTAP LUNs:
 - a. Identify the FC host ports (type fc-fabric):


```
#cfgadm -l
```
 - b. Unconfigure the first fc-fabric port:


```
#cfgadm -c unconfigure c1
```
 - c. Configure the first fc-fabric port:


```
#cfgadm -c unconfigure c2
```
 - d. Repeat the steps for the other fc-fabric ports.
 - e. Display information about the host ports and their attached devices:


```
# cfgadm -al
```

f. Reload the driver:

```
# devfsadm -Cv
```

```
# devfsadm -i iscsi
```

6. Verify that your clustered Data ONTAP LUNs are present:

```
sanlun lun show
```

```
# sanlun lun show
controller(7mode) / device
host lun
vserver(Cmode) lun-pathname filename
adapter protocol size mode
-----
-----
vs_5 /vol/zfs/zfs2
/dev/rdsk/c5t600A0980383030444D2B466542485935d0s2 scsi_vhci0 FCP
6g C
vs_5 /vol/zfs/zfs1
/dev/rdsk/c5t600A0980383030444D2B466542485934d0s2 scsi_vhci0 FCP
6g C
vs_5 /vol/ufs/ufs2
/dev/rdsk/c5t600A0980383030444D2B466542485937d0s2 scsi_vhci0 FCP
5g C
vs_5 /vol/ufs/ufs1
/dev/rdsk/c5t600A0980383030444D2B466542485936d0s2 scsi_vhci0 FCP
5g C
```

7. Verify that the Sun Volume Manager planned to test is available for import:

```
metainport -r -v
```

```
# metainport -r -v
Import: metainport -s <newsetname> c5t600A0980383030444D2B466542485937d0
Device offset length replica
flags
c5t600A0980383030444D2B466542485937d0 16 8192 a m
luo
c5t600A0980383030444D2B466542485936d0 16 8192 a
luo
```

8. Import the metaset with a new name:

```
metainport -s set-name disk-id
```

Disk-id is obtained from the `metainport --r --v` command.

```
# metainport -s svm c5t600A0980383030444D2B466542485937d0
Drives in regular diskset including disk
c5t600A0980383030444D2B466542485937d0:
  c5t600A0980383030444D2B466542485937d0
  c5t600A0980383030444D2B466542485936d0
More info:
  metainport -r -v c5t600A0980383030444D2B466542485937d0
```

9. Check whether the metaset is available:

metaset

10. Run the file system check:

```
fsck -F ufs /dev/rdsk/c0t0d0s0
```

11. Use the mount command to manually mount.
12. Perform testing as needed.
13. Shut down the test host.
14. In the 7MTT UI, click **Finish Test**.

If your clustered Data ONTAP LUNs are to be remapped to your source host, you must prepare your source host for the cutover phase. If your clustered Data ONTAP LUNs are to remain mapped to your test host, no further steps are required on the test host.

Preparing for cutover phase when transitioning Solaris host Sun Volume Manager data LUNs

If you are transitioning a Solaris host data LUN with Sun Volume Manager from Data ONTAP operating in 7-Mode to clustered Data ONTAP, you must perform certain steps before entering the cutover phase.

If you are using an FC configuration, fabric connectivity and zoning to the clustered Data ONTAP nodes must be established.

If you are using an iSCSI configuration, the iSCSI sessions to the clustered Data ONTAP nodes must be discovered and logged in.

For copy-based transitions, perform these steps before initiating the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).

For copy-free transitions, perform these steps before initiating the Export & Halt 7-Mode operation in 7MTT.

1. Stop I/O on all mount points.
2. Shut down each application accessing the LUNs according to the recommendations of the application vendor.
3. Unmount all of the mount points:

```
umount mount_point
```

```
#umount /d1  
#umount /d2
```

4. Perform the following operations on metaset:

```
metaset -s set-name -A disable
```

```
metaset -s set-name -r
```

```
metaset -s set-name -P
```

```
metaset -s n_vg -A disable  
metaset -s n_vg -r  
metaset -s n_vg -P
```

Mounting Solaris host LUNs with Solaris Volume Manager after transition

After transitioning Solaris host LUNs with Solaris Volume Manager from ONTAP operating in 7-Mode to clustered ONTAP, you must mount the LUNs.

For copy-based transitions, you perform these steps after completing the Storage Cutover operation in the 7-Mode Transition Tool (7MTT).

For copy-free transitions, you perform these steps after the Import Data & Configuration operation in the 7MTT is complete.

Steps

1. Discover your new clustered ONTAP LUNs by rescanning the host.

- a. Identify the FC host ports (type fc-fabric):

```
#cfgadm -l
```

- b. Unconfigure the first fc-fabric port:

```
#cfgadm -c unconfigure c1
```

- c. Unconfigure the second fc-fabric port:

```
#cfgadm -c unconfigure c2
```

- d. Repeat the steps for other fc-fabric ports.

- e. Verify the host ports and their attached devices:

```
# cfgadm -a1
```

- f. Reload the driver:

```
# devfsadm -Cv
```

```
# devfsadm -i iscsi
```

2. Verify that your clustered ONTAP LUNs have been discovered:

sanlun lun show

- The lun-pathname values for the clustered ONTAP LUNs should be the same as the lun-pathname values for the 7-Mode LUNs prior to transition.
- The mode column should display “C” instead of “7”.

```
# sanlun lun show
controller(7mode) /                               device
host          lun
vserver(Cmode)   lun-pathname   filename
adapter      protocol   size   mode
-----
-----
vs_sru17_5           /vol/zfs/zfs2
/dev/rdsk/c5t600A0980383030444D2B466542485935d0s2 scsi_vhci0 FCP
6g      C
vs_sru17_5           /vol/zfs/zfs1
/dev/rdsk/c5t600A0980383030444D2B466542485934d0s2 scsi_vhci0 FCP
6g      C
vs_sru17_5           /vol/ufs/ufs2
/dev/rdsk/c5t600A0980383030444D2B466542485937d0s2 scsi_vhci0 FCP
5g      C
vs_sru17_5           /vol/ufs/ufs1
/dev/rdsk/c5t600A0980383030444D2B466542485936d0s2 scsi_vhci0 FCP
5g      C
```

3. Import disk sets into existing Solaris Volume Manager configurations, using the same disk set name:

metainport -s set-name

```

# metainport -s svm
Drives in regular diskset including disk
c0t60A98000383035356C2447384D39654Ad0:
  c0t60A98000383035356C2447384D39654Ad0
  c0t60A98000383035356C2447384D396548d0
More info:
  metainport -r -v c0t60A98000383035356C2447384D39654Ad0

# metastat -s svm
svm/d2: Concat/Stripe
  Size: 10452992 blocks (5.0 GB)
  Stripe 0:
    Device                               Start Block
  Dbase   Reloc
    /dev/dsk/c0t60A98000383035356C2447384D396548d0s0      0
  No      Yes

svm/d1: Concat/Stripe
  Size: 10452992 blocks (5.0 GB)
  Stripe 0:
    Device                               Start Block
  Dbase   Reloc
    /dev/dsk/c0t60A98000383035356C2447384D39654Ad0s0      0
  No      Yes

Device Relocation Information:
  Device                               Reloc  Device ID
  /dev/dsk/c0t60A98000383035356C2447384D396548d0      Yes
  id1, sd@n60a98000383035356c2447384d396548
  /dev/dsk/c0t60A98000383035356C2447384D39654Ad0      Yes
  id1, sd@n60a98000383035356c2447384d39654a

```

4. Run file system check:

```
fsck -F ufs /dev/rdsk/d1
```

```
# fsck -F ufs /dev/md/svm/rdsk/d1
** /dev/md/svm/rdsk/d1
** Last Mounted on /d1
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3a - Check Connectivity
** Phase 3b - Verify Shadows/ACLs
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cylinder Groups
3 files, 1573649 used, 3568109 free (13 frags, 446012 blocks, 0.0%
fragmentation)
```

5. Manually mount each of the devices using the `mount` command.

```
# /sbin/mount -F ufs -o largefiles /dev/md/svm/dsk/d1 /d1
# /sbin/mount -F ufs -o largefiles /dev/md/svm/dsk/d2 /d2
```

6. Verify the mount point:

```
df -ah
```

Rolling back LUNs to 7-Mode after transition

If you are not satisfied with the performance of your clustered Data ONTAP LUNs, you can rollback from clustered Data ONTAP to Data ONTAP operating in 7-Mode for copy-free transitions (CFTs). Rollback is not supported for copy-based transitions (CBTs). Rollback is only supported on certain hosts.

You can rollback from clustered Data ONTAP to Data ONTAP operating in 7-Mode at any point before you click **commit** in the 7-Mode Transition Tool (7MTT). After you click **commit**, you cannot rollback.

The following hosts support rollback:

- Windows
- Red Hat Enterprise Linux (RHEL)
- ESXi

The following hosts do not support rollback:

- HP-UX
- AIX

Rolling back ONTAP LUNs to 7-Mode LUNs on RHEL hosts

If your ONTAP LUNs are not performing as you expect after transition from Data ONTAP

operating in 7-Mode, you can rollback from ONTAP to 7-Mode LUNs on a Red Hat Enterprise Linux (RHEL) 5 or RHEL 6 host.

Your 7-Mode LUNs must be mapped back to your RHEL 5 or RHEL 6 host.

Steps

1. Discover the 7-Mode LUNs:

```
rescan-scsi-bus.sh
```

2. Configure your DMMP devices for 7-Mode LUNs:

```
multipath
```

3. Verify your 7-Mode LUNs:

```
sanlun lun show
```

4. Determine the 7-Mode LUN device handle ID:

```
multipath -ll device_handle_name
```

5. If the host was configured with Logical Volume Manager (LVM), do the following:

- a. Import the volume group:

```
vgimport vg_name
```

- b. Verify the volume group status:

```
vgdisplay
```

- c. Enable logical volumes:

```
vgchange -ay vg_name
```

- d. Verify logical volume status:

```
lvdisplay
```

The LV Status should be displayed as available.

- e. Mount the logical volumes from the ONTAP LUN to its respective mount point directory:

```
mount lv_name mount_point
```

If the mount points are defined in the `etc/fstab` file, you can also use the `mount -a` command to mount the logical volumes.

- f. Verify the mount points:

```
mount
```

Rolling back ONTAP LUNs to 7-Mode LUNs on Windows hosts

If your ONTAP LUNs are not performing as you expect after transition from Data ONTAP operating in 7-Mode, you can rollback from ONTAP to 7-Mode LUNs on a Windows host.

Your 7-Mode LUNs must be remapped to your host.

Steps

1. Use Hyper-V Manager to shut down all virtual machines (VMs) running on the LUNs.
2. Use Windows Disk Manager to take the LUNs offline.
3. Use Cluster Disk Manager to take the cluster disks offline.
4. Shut down the host.
5. Revert back to Data ONTAP operating in 7-Mode.
6. Boot the host.
7. Use Windows Disk Manager to bring your 7-Mode LUNs online.
8. Use Cluster Disk Manager to bring cluster disks online.
9. Use Hyper-V Manager to bring your VMs online.

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