



# **HP-UX host remediation**

## ONTAP 7-Mode Transition

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# 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
state     type      or hardware path
-----      -----      -----
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
state     type      or hardware path
-----      -----      -----
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/lvol1 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.efi "HPUX fourth boot"
```

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