



Host remediation

ONTAP FLI

NetApp
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Host remediation

Recommended ONTAP FLI approaches by operating system and configuration

Align the host operating system and storage configuration with the recommended Foreign LUN Import (FLI) approach before selecting a migration method.

Intent

The table below helps align host operating system and storage configuration with the recommended Foreign LUN Import (FLI) approach before selecting a migration method. For each host type and usage model, it indicates whether Online FLI, Offline FLI, or either is appropriate. The Notes / Rationale column highlights key technical constraints—such as clustering semantics, SCSI 3 persistent reservations, and boot dependencies—that directly influence whether host I/O can safely coexist with an active import relationship. This guidance should be used early in planning to avoid unsupported workflows and to set realistic expectations around outage windows and remediation timing.

Key Guidance

- Clustering almost always implies Offline FLI due to SCSI 3 Persistent Reservation requirements.
- Standalone hosts and non clustered virtualized workloads are generally flexible and can use either Online or Offline FLI.
- SAN boot use cases are technically supported in both modes but are often operationally simpler to execute as Offline FLI.
- Final mode selection should factor in application downtime tolerance, rollback requirements, and operational complexity, not just protocol support.

Detailed Guidance

Windows

Configuration	Recommendation	Reasons if any
NTFS Volume	Online / Offline FLI	Supported in both modes; choice depends on application downtime tolerance.
Windows Failover Cluster (WFSC)	Offline FLI	SCSI 3 Persistent Reservations are required by WFSC and are not supported while a LUN is in an active import relationship.
Hyper V	Online / Offline FLI	Standalone Hyper V supported; clustered Hyper V follows WFSC guidance.
SAN Boot	Online / Offline FLI	Requires careful cutover planning; typically treated as offline unless downtime is well controlled.

Linux (RHEL/SLES)

Configuration	Recommendation	Reasons if any
Filesystem / RAW Disk	Online / Offline FLI	Supported in both modes with standard multipathing.
LVM	Online / Offline FLI	Supported; ensure correct host discovery and PV/VG consistency during cutover.
Pacemaker Cluster	Online / Offline FLI	Supported, but cluster behavior must be validated during cutover.
SAN Boot	Online / Offline FLI	Usually operationally simpler as offline, though technically supported online.

Solaris

Configuration	Recommendation	Reasons if any
Standalone	Online / Offline FLI	Either mode supported depending on outage tolerance.
Oracle Solaris Cluster (OSC / Sun Cluster)	Offline FLI	Cluster requires exclusive SCSI behaviors not supported during active import.
SAN Boot	Online / Offline FLI	Treat similarly to other OS SAN boot scenarios.

AIX

Configuration	Recommendation	Reasons if any
Standalone	Online / Offline FLI	Supported in both modes.
PowerHA (HACMP)	Offline FLI	Clustered disks require reservation semantics incompatible with online import.
Virtualized (PowerVM NPIV/VFC, vSCSI - no clustering)	Online / Offline FLI	Supported when not part of a cluster.
Virtualized (PowerVM with clustering)	Offline FLI	Same clustering limitations as physical PowerHA.
SAN Boot	Online / Offline FLI	Operational preference often offline.

HP-UX

Configuration	Recommendation	Reasons if any
Standalone	Online / Offline FLI	Supported in both modes.

Configuration	Recommendation	Reasons if any
Host Clustering (MC/ServiceGuard)	Offline FLI	Cluster disk semantics require offline migration.
SAN Boot	Online / Offline FLI	Usually planned as offline in practice.

VMware ESXi

Configuration	Recommendation	Reasons if any
VMDK (Standard Datastores)	Online / Offline FLI	Either mode supported; online minimizes VM downtime.
RDM (Standard)	Online / Offline FLI	Supported; ensure consistent host rescans during cutover.
VMSC / VMHA	Online / Offline FLI	Supported with careful coordination.
WFSC (Clustered VMDK)	Offline FLI	Windows clustering limitations apply.
WFSC (RDM)	Offline FLI	SCSI 3 PR required, online import unsupported.

ONTAP FLI AIX host remediation

Before running the ONTAP FLI migration on an AIX host, complete these pre-migration steps. There are separate steps for offline and online migrations.

Pre-Migration - Offline FLI

These steps are common for both online and offline FLI. Before unprovisioning the source LUN from the host, ensure the following steps are completed.

Filesystem	Block device	LVM (FS)	Cluster	Sanboot
Step 1: Capture LUN details for filesystems in scope for migration.	Step 1: Capture LUN details used as raw block devices (no filesystem) in scope for migration.	Step 1: Capture LUNs mapped to the host with LVM configuration that are in scope for migration.	Step 1: Capture overall cluster details and the disks involved in the migration.	Step 1: Capture SAN-booted LUN details and associated partition information.

Filesystem	Block device	LVM (FS)	Cluster	Sanboot
Step 2: Unmount the filesystem.	Step 2: Remove the SCSI block devices associated with the multipath device	Step 2: Unmount the LVM device if it is already mounted.	Step 2: Shut down cluster services gracefully as per the recommended procedure.	Step 2: Verify the boot device list from OS as well as from the IPL Initial Program Load/SMS menu. Ensure all devices are referenced by their device name properly.
Step 3: Remove the SCSI block devices associated with the multipath device.	Step 3: Rescan all the devices.	Step 3: Take a backup of the VG and deactivate/varyoff the VG. eg: varyoffvg vg_name	Step 3: Remove the SCSI block devices associated with the multipath device. eg: rmdev -Rdl hdiskx	
Step 4: Rescan the host to make sure no stale entries of the existing device mapping.	Step 4: Rescan the host to make sure no stale entries of the existing device mapping.	Step 4: Rescan the host to make sure no stale entries of the existing device mapping. eg: cfgmgr	Step 4: Rescan the host to ensure there are no stale entries in the existing device mapping.	



Refer to OS Vendor Documentation for Latest and updated command list.

Steps

1. Identify storage devices.

```
lsdev -Cc disk
sanlun lun show all (This works only for NetApp storage)
sanlun lun show all -pv
lsmpio -l hdiskx
```

2. Identify the volume group and filesystems.

```
lspv
lsvg <vg_name>
lsvg -l <vg_name>
lsvg -p <vs_name>
```

3. Varyoffvg and unmount filesystems.

```
df -g (to get the mount points)
umount /mount_point
varyoffvg <vg_name>
df -g (to ensure its unmounted)
```

4. Remove the scsi block devices.

```
rmdev -Rdl hdiskx
```

5. Verify device is detached.

```
lspv |grep hdiskx
```

6. Rescan after detaching to confirm clean state.

```
cfgmgr
```

Pre-Migration - Online FLI

Below are specific steps for online FLI but these steps must be preceded by steps in the Pre-Migration - Offline FLI section above.

The following steps must be carried out after the NetApp LUN is provisioned to the Host.

At this point the lun import is already created, lun is mapped to the host igroup and there is either an iSCSI or FC Initiator logged in from the Host.

For offline FLI, the NetApp LUN remains in the offline state.

Filesystem	Block device	LVM (FS)	Sanboot
Step 1: Rescan storage on all the mapped AIX hosts.	Step 1: Rescan storage on all the mapped AIX hosts.	Step 1: Rescan storage on all the mapped AIX hosts.	Step 1: Power on the server.
Step 2: Identify the multipath devices. eg: lsdev -Cc disk; lsmPIO -l hdiskx	Step 2: Identify the multipath devices. eg: lsdev -Cc disk; lsmPIO -l hdiskx	Step 2: Identify the multipath devices. eg: lsdev -Cc disk; lsmPIO -l hdiskx	Step 2: Verify the boot device list from the IPL Initial Program Load/SMS menu will list the new LUNS referencing the devices list coming from new Storage device. Set the boot order to the new device list path.
Step 3: Check for the filesystem details.	Step 3: Identify the multipath device ID and present it to the respective application.	Step 3: Ensure the new LUNs are discovered.	Step 3: Ensure that the server boots up properly.
Step 4: Mount the devices back to the respective folders.		Step 4: The VGs should be activated automatically.	

Filesystem	Block device	LVM (FS)	Sanboot
		Step 5: Verify the VG, LV and Filesystems are active and mountable.	



Refer to OS Vendor Documentation for Latest and updated command list.

Steps

1. Identify storage devices

```
lsdev -Cc disk
sanlun lun show all (This works only for NetApp storage)
sanlun lun show all -pv
lsmpio -l hdiskx
```

2. Identify the volume group and filesystems.

```
lspv
lsvg <vg_name>
lsvg -l <vg_name>
lsvg -p <vs_name>
```

3. Varyoffvg and unmount filesystems.

```
df -g (to get the mount points)
umount /mount_point
varyoffvg <vg_name>
df -g (to ensure its unmounted)
```

4. Remove the scsi block devices.

```
rmdev -Rdl
```

5. Verify device is detached.

```
lspv |grep hdiskx
```

6. Rescan after detaching to confirm clean state.

```
cfgmgr
```

ONTAP FLI ESXi host remediation

Before running the ONTAP FLI migration on an ESXi host, complete these pre-migration

steps. There are separate steps for offline and online migrations.

Pre-Migration - Offline FLI

This group of steps are common for both Online and Offline FLI. Before unprovisioning the source LUN from the host, ensure that the following steps have been completed.

VMs/VMDK	RDM	WSFC	VMSC
Step 1: Shut down guest VMs gracefully.	Step 1: For VMs using RDMs, Identify the backend mapping with nmp device and remove RDM disks gracefully.	Step 1: If WFSC is present, shut down the cluster gracefully and follow Windows remediation steps to remove disks.	Step 1: If VM-HA or VMSC is configured, disable HA, release heartbeat disk(s) if present, and adjust cluster configuration as needed.
Step 2: Unmount datastores planned for migration; if shared, unmount from all hosts.	Step 2: Detach relevant NMP devices involved in the migration.	Step 2: Shut down guest VMs gracefully.	Step 2: Unmount datastores planned for migration; if shared, unmount from all hosts.
Step 3: Check VMFS locking mode (ATS-only vs ATS+SCSI). If ATS-only, change to SCSI (required only for Online FLI).		Step 3: Unmount datastores planned for migration; if shared, unmount from all hosts. a	Step 3: Detach relevant NMP devices involved in the migration.
Step 4: Detach relevant NMP devices involved in the migration.		Step 4: Detach relevant NMP devices involved in the migration.	

Key points to know

- The **ATS-only** setting is stored in the VMFS header, which resides on the first extent of the datastore. If the datastore spans multiple extents, only the first extent needs remediation.
- If the datastore is shared across multiple ESXi hosts, updating it from one host is typically sufficient; other hosts pick up the change after a rescan/remount.
- No active I/O can be running against the datastore while changing ATS-only mode. VMware guidance is to evacuate/migrate or shut down VMs and unmount/remount as required to apply the change.

ESX Example Commands: Sync Block

Put Host in Maintenance Mode

```
esxcli system maintenanceMode set --enable true
```

Identify storage devices and datastores

```
esxcli storage core device list
esxcli storage filesystem list
```

Check VMFS ATS locking mode

```
vmkfstools --queryfs -h /vmfs/volumes/<DATASTORE_NAME>
```

Unmount the datastore (repeat on all ESXi hosts if shared)

```
esxcli storage filesystem unmount -l <DATASTORE_NAME>
```

Detach the backing device (NMP / naa device)

```
esxcli storage core device set -d <naa.ID> --state=off
```

Verify device is detached

```
esxcli storage core device list -d <naa.ID>
```

Rescan after detaching to confirm clean state

```
esxcli storage core adapter rescan --all
```

Exit maintenance mode after completion

```
esxcli system maintenanceMode set --enable false
```

Pre-Migration - Online FLI

Below are specific steps of online FLI but these steps must be preceded by steps in the Pre-Migration Offline FLI.

The following steps must be carried out after the NetApp LUN is provisioned to the Host.

At this point the lun import is already created, lun is mapped to the host igroup and there is either iSCSI or FC Initiator logged in from the Host.

In case of offline FLI the NetApp LUN remains in offline state.

VMs/VMDK	RDM	VMSC
Step 1: Rescan storage on all mapped ESXi hosts.	Step 1: Rescan storage on all mapped ESXi hosts.	Step 1: Rescan storage on all mapped ESXi hosts.
Step 2: List volume/device details to confirm filesystem details on the LUN.	Step 2: Identify new NAA IDs and add RDMs back to the respective VMs.	Step 2: List volume/device details to confirm filesystem details on the LUN.
Step 3: Identify datastore details and mount datastores back to ESXi.	Step 3: Power on guest VMs and start applications.	Step 3: Identify datastore details and mount datastores back to ESXi.
Step 4: Power on guest VMs and start applications.		Step 4: Power on guest VMs and start applications.
		Step 5: Power on guest VMs and start applications



Refer to OS Vendor Documentation for latest and updated command list.

Put Host in Maintenance Mode

```
esxcli system maintenanceMode set --enable true
```

Identify storage devices and datastores

```
esxcli storage core device list
esxcli storage filesystem list
```

Check VMFS ATS locking mode

```
vmkfstools --queryfs -h /vmfs/volumes/<DATASTORE_NAME>
```

Unmount the datastore (repeat on all ESXi hosts if shared)

```
esxcli storage filesystem unmount -l <DATASTORE_NAME>
```

If ATS-only is detected, convert to ATS+SCSI

```
vmkfstools --configATSOOnly 0 /vmfs/volumes/<DATASTORE_NAME>
```

Detach the backing device (NMP / naa device)

```
esxcli storage core device set -d <naa.ID> --state=off
```

Verify device is detached

```
esxcli storage core device list -d <naa.ID>
```

Rescan after detaching to confirm clean state

```
esxcli storage core adapter rescan --all
```

ONTAP FLI HP host remediation

Before running the ONTAP FLI migration on an HP host, complete these pre-migration steps. There are separate steps for offline and online migrations.

Pre-Migration - Offline FLI

These steps are common for both online and offline FLI. Before unprovisioning the source LUN from the host, ensure the following steps are completed.

Filesystem (LVM & Non-LVM)	Host Cluster (SCSI3 PR)	SANBOOT
Step 1: Collect end-to-end Block Device configuration: multipath health/paths, LVM layout on the boot LUN, and UEFI settings confirming the correct boot device and boot parameters.	Step 1: Capture overall cluster details and the disks involved in the migration.	Step 1: Collect end-to-end SAN-boot configuration: multipath health/paths, LVM layout on the boot LUN, and UEFI settings confirming the correct boot device and boot parameters.

Filesystem (LVM & Non-LVM)	Host Cluster (SCSI3 PR)	SANBOOT
Step 2: Make sure the /etc/fstab entries for the respective data devices (LVM/Non-LVM) are proper.	Step 2: Shut down cluster services gracefully as per the recommended procedure.	Step 2: Make sure the /etc/fstab entries for SAN Boot device including the data devices (lvm/nonlvm) are proper
Step 3: Ensure all the operations to the target mount points are paused. Ensure there are no processes still accessing the blockdevice . If required drain/kill the open process handles.	Step 3: Remove the SCSI block devices associated with the multipath device.	Step 3: From the UEFI shell, verify the device mapping table and boot into hpux from the Storage device
Step 4: Umount the filesystem & perform the LVM volume group configuration backup. Deactivate the VG & export the VG	Step 4: Rescan the host to ensure there are no stale entries in the existing device mapping.	Step 4: Make sure primary boot device is set to Storage device so that it will automatically boot on subsequent reboots
Step 5: Remove all the stale SCSI device files.		Step 5: Reboot the host to ensure the host can come up fine the above changes. Once the host comes up fine, understand the host pre remediation for FLI migration is ready.
Step 6: Rescan the sci bus so that the host has the updated device list eg: ioscan -fnC disk		Step 6: Now shutdown the sanboot host, to proceed with ONTAP FLI workflow.

Pre-Migration - Online FLI

Below are specific steps of Online FLI but these steps must be preceded by steps in the Pre-Migration Offline FLI The following steps must be carried out after the NetApp LUN is provisioned to the Host.

Filesystem	Block device	LVM (FS)	Sanboot
Step 1: Rescan storage on all the mapped HP-UX hosts	Step 1: Rescan storage on all the mapped HP-UX hosts.	Step 1: Rescan storage on all the mapped HP-UX hosts	Step 1: PowerON the server
Step 2: identify the multipath devices	Step 2: identify the multipath devices	Step 2: identify the multipath devices	Step 2: From the UEFI shell, verify the device mapping table and boot into hpux from the new Storage device
Step 3: Check for the filesystem details	Step 3: Identify the multipath device ID and present it to the respective application.	Step 3: Ensure the new LVM device files are properly created	Step 3: modify the primary boot device to new Storage lun Restart the host to boot from newly mapped LUN that is part of LUN Import
Step 4: Mount the devices back to the respective folders		Step 4: Import the VG/LVM	

Filesystem	Block device	LVM (FS)	Sanboot
		Step 5: Activate the VG	
		Step 6: List down the LVs present on the VG	
		Step 7: Mount the LVMs back to the respective folders	



Refer to OS Vendor Documentation for Latest and updated command list.

Steps

1. Identify storage devices.

```
ioscan -fnC disk
sanlun lun show all (Works on Netapp Storage)
sanlun lun show all -pv
sanlun lun show -wwpn
```

2. Identify the volume group and filesystems.

```
vgdisplay -v /dev/vg_name
vgdisplay /dev/vg_name
lvdisplay /dev/vg_name/lv_name
```

3. Unmount filesystem and export VG.

```
bdf
umount /mount_point
vgchange -a n /dev/vg_name
vgexport /dev/hpux_vg_online
```

4. Rescan after detaching to confirm clean state.

```
insf -e
ioscan -fnC disk
```

ONTAP FLI Linux host remediation

Before running the ONTAP FLI migration on a Linux host, complete these pre-migration steps. There are separate steps for offline and online migrations.

Pre-Migration - Offline FLI

These steps are common for both online and offline FLI. Before unprovisioning the source LUN from the host, ensure the following steps are completed.

Filesystem (LVM & Non-LVM)	Pacemaker with LVM (SCSI3 PR)	SANBOOT
Step 1: Collect end-to-end Block Device configuration: multipath health/paths, LVM layout on the block device and GRUB/bootloader settings confirming the correct boot device and boot parameters.	Step 1: Collect end-to-end Block Device configuration: multipath health/paths, LVM layout on the block device and GRUB/bootloader settings confirming the correct boot device and boot parameters.	Step 1: Collect end-to-end SAN-boot configuration: multipath health/paths, LVM layout on the boot LUN, and GRUB/bootloader settings confirming the correct boot device and boot parameters.
Step 2: Make sure the <code>/etc/fstab</code> entries for the respective data devices (LVM/Non-LVM) are referenced by their FS UUID.	Step 2: Disable the cluster resource groups for the respective LUNs being migrated. Once disabled, delete the resource groups.	Step 2: Make sure the <code>/etc/fstab</code> entries for SAN Boot device including the data devices (lvm/nonlvm) are referenced by their FS UUID.
Step 3: Ensure all the operations to the target mount points are paused. Ensure there are no processes still accessing the block device. If required, drain/kill the open process handles.	Step 3: Perform the LVM VG configuration backup to a file for the respective resource groups that we just disabled/deleted. Followed by Deactivation of the VGs.	Step 3: Ensure that you have updated the <code>GRUB_CMDLINE_LINUX</code> line with the correct UUID references. Recreate a new GRUB settings based on the UUID device references.
Step 4: Umount the filesystem and perform the LVM volume group configuration backup. Deactivate the VG and export the VG	Step 4: Remove the source LUNs from the PCS stonith configuration.	Step 4: Validate the changes with the new grub settings and recreate the new initrd image to reflect changes with SAN Boot Device.
Step 5: Flush the multipath configuration for the device and remove all the stale SCSI device files.	Step 5: Flush the multipath configuration for the device and remove all the stale SCSI device files. NOTE: If any lun persistent reservations is seen, clear them and ensure no PR keys are	Step 5: Reboot the host to ensure the host can come up fine the above changes. Once the host comes up fine, understand the host pre remediation for FLI migration is ready.
Step 6: Reload the multipath configuration so that the host has the updated device list. If required, perform the host SCSI Bus rescan.	Step 6: Rescan the host to ensure there are no stale entries in the existing device mapping.	Step 6: Now shutdown the sanboot host, to proceed with ONTAP FLI workflow.

Pre-Migration - Online FLI

Below are specific steps of online FLI but these steps must be preceded by steps in the pre-migration offline FLI. The following steps must be carried out after the NetApp LUN is provisioned to the host. These steps must be carried out after the NetApp LUN is provisioned to the host. And it is applicable only the online FLI.

Filesystem (LVM & Non-LVM)	Pacemaker with LVM (SCSI3 PR)	SANBOOT
Step 1: Rescan storage on all the mapped Linux hosts.	Step 1: Rescan storage on all the mapped Linux hosts.	Step 1: PowerON the server.
Step 2: Discover the multipath devices.	Step 2: Discover the multipath devices. Ensure the migrated LUNs are added to PCS Stonith Configuration.	Step 2: On the server HBA BIOS or UEFI configure the new boot device that is presented to this Host HBA.
Step 3: Import the Volume Groups and perform the VG activation.	Step 3: Perform VG Configuration Backup restore for those newly discovered VG/LVM, followed by VG activation.	Step 3: Restart the host to boot from newly mapped LUN that is part of LUN Import.
Step 4: Mount the LVM config on to the respective mount points.	Step 4: Create the new PCS resource groups and add the respective resources for the available LV and filesystems. NOTE: Please note that the newly activated LVM objects have the LV and filesystem structures intact.	
	Step 5: Verify the PCS Cluster status for all the resources are online and available status.	

ONTAP FLI Solaris host remediation

Before running the ONTAP FLI migration on a Solaris host, complete these pre-migration steps. There are separate steps for offline and online migrations.

Pre-Migration - Offline FLI

These steps are common for both online and offline FLI. Before unprovisioning the source LUN from the host, ensure the following steps are completed.

Filesystem (ZFS/Zpool)	OSC (Oracle Sun Cluster) (SCSI3 PR) with Zpool	SANBOOT
Step 1: Collect end-to-end Block Device configuration: multipath health/paths, Zpool layout on the block device and OBP (ok prompt) settings confirming the correct boot device and boot parameters.	Step 1: Collect end-to-end Block Device configuration: multipath health/paths, LVM layout on the block device and OBP settings confirming the correct boot device and boot parameters.	Step 1: Collect end-to-end SAN-boot configuration: multipath health/paths, RPool layout on the boot LUN, and OBP settings confirming the correct boot device and boot parameters.
Step 2: Ensure all the operations to the target mount points are paused. Ensure there are no processes still accessing the block device . If required drain/kill the open process handles.	Step 2: Disable the cluster resource groups for the respective LUNs being migrated.	Step 2: Reboot the host to ensure the host can come up fine the above changes. Once the host comes up fine, understand the host pre remediation for FLI migration is ready.

Filesystem (ZFS/Zpool)	OSC (Oracle Sun Cluster) (SCSI3 PR) with Zpool	SANBOOT
Step 3: Ensure the Pool is not in use Unmount any filesystems using the pool:	Step 3: Ensure the pool is not in use	Step 3: Now shutdown the sanboot host, to proceed with ONTAP FLI workflow.
Step 4: Export the pool Verify export	Step 4: Remove the source LUNs from the OSC configuration.	
Step 5: If required, perform the host SCSI Bus rescan. eg: devfsadm	Step 5: Remove all the stale SCSI device files if they exist NOTE: If any lun persistent reservations is seen, clear them and ensure no PR keys are present	
	Step 6: Rescan the host to ensure there are no stale entries in the existing device mapping.	



Refer to OS Vendor Documentation for Latest and updated command list.

Steps

1. Identify storage devices.

```
echo | format
sanlun lun show all (This is only applicable for NetApp devices)
mpathadm list lu
mpathadm show lu lu_name
luxadm display node wwn/ disk path
```

2. Identify the zpool and filesystems.

```
zpool status <zpool_name>
df -h
```

3. Unmount and export filesystems.

```
zfs umount /mount_point
zpool export <zpool_name>
df -h (to ensure its unmounted)
```

4. Remove the scsi block devices.

```
rm /dev/rdisk/disk_ID
```

5. Verify device is detached.

```
format | grep disk_id
```

6. Rescan after detaching to confirm clean state.

```
cfgadm -al
```

Pre-Migration - Online FLI

Below are specific steps of online FLI but these steps must be preceded by steps in the pre-migration - offline FLI. The following steps must be carried out after the NetApp LUN is provisioned to the Host.

Filesystem	Block device	LVM (FS)	Sanboot
Step 1: Rescan storage on all the mapped Solaris hosts.	Step 1: Rescan storage on all the mapped Solaris hosts.	Step 1: Rescan storage on all the mapped Solaris hosts.	Step 1: Power on the server.
Step 2: Identify the multipath storage devices.	Step 2: Identify the multipath devices.	Step 2: Identify the multipath devices.	Step 2: On the SPARC server OBP, configure the new boot device that is presented to this Host HBA. Modify the nvalias to represent new disk path.
Step 3: Check for the filesystem details.	Step 3: Identify the multipath device ID and present it to the respective application.	Step 3: Verify the Pool status.	Step 3: Restart the host to boot from newly mapped LUN that is part of LUN Import.
Step 4: Mount the devices back to the respective folders.		Step 4: Import the Pool.	
		Step 5: Check the pool status.	
		Step 6: Mount the pool/ZFS.	



Refer to OS Vendor Documentation for Latest and updated command list.

Steps

1. Identify storage devices.

```
format
sanlun lun show all
mpathadm list lu
mpathadm show lu
```

2. Identify the zpool and filesystems.

```
zpool status <zpool_name>
df -h
```

3. Varyoffvg and unmount filesystems.

```
zfs umount /mount_point
zpool export <zpool_name>
df -h (to ensure its unmounted)
```

4. Remove the scsi block devices.

```
rm /dev/rdisk/disk_ID
```

5. Verify device is detached.

```
format | grep disk_id
```

6. Rescan after detaching to confirm clean state.

```
cfgadm -al
```

ONTAP FLI Windows host remediation

Before running the ONTAP FLI migration on a Windows host, complete these pre-migration steps. There are separate steps for offline and online migrations.

Pre-Migration - Offline FLI

These steps apply to both Offline and Online FLI. Complete the following host-side preparation before unmapping the source LUNs from the Windows host.

Filesystem devices	Physical drives (no filesystem)	WSFC (WFC)	Hyper V
Step 1: Identify the filesystem disks that panned for migration	Step 1: Identify the physical disks that panned for migration	Step 1: Identify the Cluster disks that panned for migration	Step 1: Stop all the application on the Virtual Machines and Shutdown the Virtual Machines.
Step 2: Shutdown the applications gracefully	Step 2 Shutdown the applications gracefully	Step 2 Shutdown the applications gracefully	Step 2: Offline the disk from the host.
Step 3: Offline the disks		Step 3: Shutdown the cluster and stop the cluster services on all the cluster nodes	Step 3: Unmap all the LUNs from the host.

Filesystem devices

Steps

1. Identify the filesystem disks that planned for migration.

```
Get-Disk | Format-Table Number, FriendlyName, Size, PartitionStyle
```

2. Shutdown the applications gracefully.

```
Stop-Service -Name <ServiceName>
```

3. Offline the disks.

```
Set-Disk -Number <DiskNumber> -IsOffline $true
```

Physical drives (no filesystem)

Steps

1. Identify the physical disks that planned for migration.

```
Get-PhysicalDisk | Format-Table FriendlyName, Size, MediaType
```

2. Shutdown the applications gracefully.

```
Stop-Service -Name <ServiceName>
```

WSFC (Windows Server Failover Clustering)

Steps

1. Identify the Cluster disks that planned for migration.

```
Get-ClusterResource | Where-Object ResourceType -eq "Physical Disk"
```

2. Shutdown the applications gracefully.

```
Stop-ClusterResource -Name <ResourceName>
```

3. Shutdown the cluster and stop the cluster services on all the cluster nodes.

```
Stop-Cluster -Name <ClusterName>
```

Hyper V

Steps

1. Stop all the application on the Virtual Machines and Shutdown the Virtual Machines.

```
Stop-VM -Name <VM_Name> -Force
```

2. Offline the disk from the host.

```
Set-Disk -Number <DiskNumber> -IsOffline $true
```

3. Unmap all the LUNs from the host from the storage array side.

4. Make sure the Disks are removed properly from the Host.

```
Get-Disk | Where-Object OperationalStatus -ne "Online"
```

Pre-Migration - Online FLI

Below are specific steps of online FLI but these steps must be preceded by steps in the pre-migration - offline FLI.

The following steps must be carried out after the NetApp LUN is provisioned to the host.

At this point the lun import is already created, lun is mapped to the host igroup and there is either iSCSI or FC Initiator logged in from the host.

For offline FLI, the NetApp LUN remains in the offline state.

Filesystem devices	Physical drives (no filesystem)
Step 1: Rescan the storage on all the mapped hosts.	Step 1: Rescan the storage on all the mapped hosts.
Step 2: Identify the drives that are listed and online the disks.	Step 2: add the physical disk to the required application and start.
Step 3: Verify if all the filesystem disks are available and working.	
Step 4: Start the required applications.	

Filesystem devices

Steps

1. Rescan the storage on all the mapped hosts.

```
Update-HostStorageCache
```

2. Identify the drives that are listed and online the disks.

```
Get-Disk | Where-Object IsOffline -eq $true  
Set-Disk -Number <DiskNumber> -IsOffline $false
```

3. Verify if all the filesystem disks are available and working.

```
Get-Volume | Format-Table DriveLetter, FileSystemLabel, Size, SizeRemaining
```

4. Start the required applications.

```
Start-Service -Name <ServiceName>
```

Physical drives (no filesystem)

Steps

1. Rescan the storage on all the mapped hosts.

Update-HostStorageCache

2. Add the physical disk to the required application and start.

Application-specific configuration

WSFC

Steps

1. Rescan the storage on all the mapped hosts.

Update-HostStorageCache

2. Identify the drives that are listed and online the disks.

```
Get-Disk | Where-Object IsOffline -eq $true  
Set-Disk -Number <DiskNumber> -IsOffline $false
```

3. Verify if all the mapped hosts has the drives available and online.

Get-ClusterResource | Where-Object ResourceType -eq "Physical Disk"

4. Start the WSFC cluster application and configure the required clustered resources.

```
Start-Cluster -Name <ClusterName>  
Start-ClusterResource -Name <ResourceName>
```

Hyper V

Steps

1. Rescan the disk management, All the Disks Should connect.

Update-HostStorageCache

2. Select the disks and bring them online, all Should come ONLINE and should get original name and disk letter.

```
Get-Disk | Where-Object IsOffline -eq $true  
Set-Disk -Number <DiskNumber> -IsOffline $false
```

3. Try to power-on Virtual Machines, Virtual Machine should come online without issue.

Start-VM -Name <VM_Name>

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