



FLI migration

ONTAP FLI

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FLI migration

Discover foreign LUNs for FLI migration

After backend connectivity is configured, provision the source (foreign) LUN for ONTAP discovery by first unmapping and deprovisioning it from the host and then mapping and masking it to the ONTAP initiator identity on the foreign array (vendor host group and initiator record), ensuring it is not dual-presented.

Next, confirm the backend path is online end-to-end (FC zoning and masking in FC FLI, or healthy ONTAP to target iSCSI sessions in iSCSI FLI). Verify the foreign LUN is discovered in the ONTAP storage stack with the expected path redundancy and basic eligibility.

Provisioning of the foreign array LUN to the NetApp initiator, in this step the LUN identified for import is already safely deprovisioned from the host OS. Now this LUN must be mapped to the host group that has the NetApp iSCSI initiators, the equivalent of an iGroup in ONTAP.

Example

In case of Pure Storage below are the commands that are used to map the LUN/Volume to the Initiator (in this case it will be NetApp Initiator).

```
purehost create <HOSTNAME>
purehost list
purehost list --all
purehgroup create <HGROUP>
purehgroup list
purehgroup list --connect
purevol connect --host <HOSTNAME> <VOLUME>
purevol connect --hgroup <HGROUP> <VOLUME>
```

Before you begin

Foreign LUN Import is supported through FC and iSCSI backend. You should configure your [FC](#) or [iSCSI](#) backend before beginning the FLI migration.

Steps

1. Set the privilege level to advanced:

```
set -privilege advanced
```

2. Confirm foreign LUN visibility:

```
storage disk show
```

3. Mark as foreign:

```
storage disk set-foreign-lun -disk <FOREIGN_DISK_ID> -is-foreign-lun
true
```

4. Get foreign serial (used for destination LUN creation):

```
storage disk show -disk <FOREIGN_DISK_ID> -fields serial-number
```

5. Mark the discovered foreign disk as foreign:

```
storage disk set-foreign-lun -disk <FOREIGN_DISK_ID> -is-foreign-lun
true
```

6. Capture foreign disk serial (used for LUN creation):

```
storage disk show -disk <FOREIGN_DISK_ID> -fields serial-number
```

Example

```
C1_Cluster::*> storage disk show -disk *NET*
          Usable      Disk      Container      Container
Disk      Size Shelf Bay Type      Type      Name      Owner
-----
NET-1.1      -      -      - LUN      foreign      -      -
C1_Cluster::*>
C1_Cluster::*> storage disk show -disk NET-1.1 -fields serial-number
disk      serial-number
-----
NET-1.1 wtJfv?ZnvjXa
```

Create the ONTAP FLI LUN import relationship

After the foreign LUN is discovered and marked as foreign, you can create the LUN import relationship to pair the foreign LUN with a destination ONTAP LUN. The destination ONTAP LUN is created using the foreign disk identifier so that it is automatically sized to match the source. The destination LUN is mapped to the appropriate initiator group based on the intended front end protocol and cutover plan, and then taken offline as a safety step prior to the import setup.

Use the `lun create` and `lun import create` commands as outlined to do the following:

- Create the destination ONTAP LUN using the foreign disk identifier so the destination is automatically sized to match the source.
- Prepare host access by defining the appropriate igroup based on the intended front end protocol and mapping the destination LUN as required by the cutover plan.
- Take the destination LUN offline as a safety step prior to the import setup.
- Create the LUN import relationship that persistently pairs the foreign disk with the destination ONTAP LUN and readies it for the subsequent data copy operation.

About this task

Beginning with ONTAP 9.17.1, data migration of foreign LUNs using FLI offline migration is supported with ASA r2 systems. ASA r2 systems vary from other ONTAP systems (ASA, AFF, and FAS) in the implementation of its storage layer. In ASA r2 systems, volumes are automatically created when a storage unit (LUN or namespace) is created. Each volume contains only one storage unit. Therefore, for ASA r2 systems, you do not need to include the volume name in the `-path` option when creating the LUN; you should include the storage unit path instead.

Steps

1. Create destination NetApp LUN sized to match the foreign disk:

This will ensure the NetApp LUN and Foreign LUN is of same size.

```
lun create -vserver <SVM> -path /vol/<VOL>/<lun_name> -ostype <ostype>
-foreign-disk <foreign_serial>
```

2. Create igroup and map the destination LUN (protocol depends on frontend plan):

```
igroup create -vserver <SVM> -igroup <igroup> -protocol
<iscsi|fc|mixed> -ostype <ostype> -initiator <host_initiator>
```

3. Map the NetApp storage array LUN to the host:

```
lun map -vserver <SVM> -path /vol/<VOL>/<LUN_NAME> -igroup <igroup>
```

4. Keep the LUN offline before import create (best practice):

```
lun offline -vserver <SVM> -path /vol/<VOL>/<LUN_NAME>
```

5. Create the import relationship:

```
lun import create -vserver <SVM> -foreign-disk <foreign_serial> -path
/vol/<VOL>/<lun_name>
```

6. Confirm the import relationship exists:

```
lun import show -vserver <svm_name>
```

If the LUN is not brought online in this step, the workflow will be considered as offline FLI and the NetApp storage array LUN will not be seen by the host to perform any I/O operation.



- Offline FLI means the host stays offline for the entire import window. ONTAP performs the block copy from the foreign LUN to the NetApp LUN while applications are stopped, and host remediation and cutover activities happen only after the import and validation completes.
- Online FLI means you cut over the host once, then the import continues in the background. There is typically only a short outage during cutover, and host remediation and cutover activities happen before the import completes, while ONTAP continues copying data.

From an ONTAP workflow perspective, the core import commands are the same in both modes (`lun import create/start/show/verify/delete`). The practical behavioral distinction is LUN state and timing: in offline FLI the destination LUN is typically kept offline until you are ready to complete and present, while in online FLI the destination LUN can be brought online and presented earlier to enable host access during the background copy.

7. For online FLI, bring the LUN to an online state:

```
lun online -vserver <SVM> -path /vol/<VOL>/<lun_name>
```

After the LUN is brought online, discover the LUN on the host, and perform any subsequent host-specific remediations and then you can start the workloads on the LUN.

Execute and monitor the FLI LUN import

After the import relationship is created, you use `lun import start` to begin the background import data from the foreign LUN into the destination ONTAP LUN, and you track progress with `lun import show`, which reports the current operation (such as import or verify), administrative and operational states, and percent complete so you can monitor the job to completion.

In online scenarios where host I/O and the import compete for the same backend resources, you can temporarily `lun import pause` to stop the copy stream without losing checkpoints, then `lun import resume` to continue from the last checkpoint when the load and latency stabilizes; this is a recommended control knob for regulating active copy streams while keeping application response times stable.

About this task

Beginning with ONTAP 9.17.1, data migration of foreign LUNs using FLI offline migration is supported with ASA r2 systems. ASA r2 systems vary from other ONTAP systems (ASA, AFF, and FAS) in the implementation of its storage layer. In ASA r2 systems, volumes are automatically created when a storage unit (LUN or namespace) is created. Each volume contains only one storage unit. Therefore, for ASA r2 systems, you do not need to include the volume name in the `-path` option when creating the LUN; you should include the storage unit path instead.

Steps

1. Set the privilege level to advance:

```
set -privilege advanced
```

2. Start the LUN import:

```
lun import start -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

3. Monitor the import progress:

Command	Description
Show all imports on an SVM	<pre>lun import show -vserver <SVM_NAME></pre>
Show a specific LUN import	<pre>lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME></pre>
Detailed view (includes more fields)	<pre>lun import show -instance</pre>

4. If host latency is impacted (common online control), pause/resume:

Command	Description
Pause the import (keeps checkpoints)	<pre>lun import pause -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME></pre>
Confirm it is paused	<pre>lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME></pre>

Command	Description
Resume the import from last checkpoint	<pre>lun import resume -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME></pre>
Confirm it is running again	<pre>lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME></pre>

Verify and delete the FLI LUN import relationship

After the import copy has completed and the import state is complete, you can finalize the migration by removing the import pairing with `lun import delete`, which safely deletes the import relationship after the source LUN is no longer in use and the destination LUN is now the active copy for host I/O. In an offline FLI workflow, you typically bring the destination LUN online after the import and any validation so the host can rediscover and resume access to the migrated LUN.

If you require a data-integrity confirmation before deleting the relationship, you can run `lun import verify`, which performs a block-by-block compare but is disruptive because verification must be performed offline (meaning the LUN must be taken offline and inaccessible to hosts for the duration of verify). Post migration operations, such as host remediation, zoning and initiator cleanup, documentation, and operational validation, are handled in the post migration phase, and are intentionally out of scope for this section.

About this task

Beginning with ONTAP 9.17.1, data migration of foreign LUNs using FLI offline migration is supported with ASA r2 systems. ASA r2 systems vary from other ONTAP systems (ASA, AFF, and FAS) in the implementation of its storage layer. In ASA r2 systems, volumes are automatically created when a storage unit (LUN or namespace) is created. Each volume contains only one storage unit. Therefore, for ASA r2 systems, you do not need to include the volume name in the `-path` option when creating the LUN; you should include the storage unit path instead.

Steps

1. Set the privilege level to advance:

```
set -privilege advanced
```

2. Confirm import state (must be completed or stopped before delete):

```
lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

3. If import is still in progress state and completed % 100:

```
lun import stop -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

4. Delete the import relationship (finalize):

```
lun import delete -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

5. Verify the relationship is removed:

```
lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

6. Confirm the import is not actively running (should be stopped or completed):

```
lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

7. Take the LUN offline (verification must be done offline):

```
lun offline -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

8. Start block-by-block verification (optional but recommended):

```
lun import verify start -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

9. Monitor verification progress:

```
lun import show -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

10. Stop verification (required before bringing the LUN online):

```
lun import verify stop -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

11. Bring the LUN online (disruption window ends here):

```
lun online -vserver <SVM_NAME> -path /vol/<VOL>/<LUN_NAME>
```

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