Implementation basics for data migration

ONTAP FLI

NetApp
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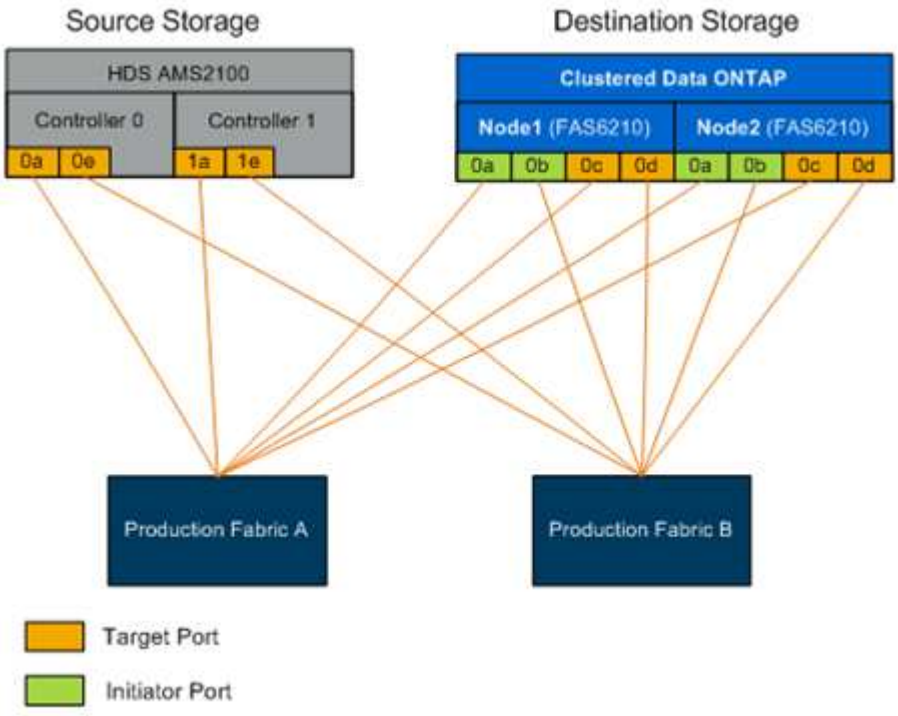
A Foreign LUN Import (FLI) implementation includes the steps for physical wiring, zoning, and initiator record creation. The initial configuration of the NetApp storage initiator ports and source storage prepares the environment for migration.

The examples in this section use a Hitachi Data Systems (HDS) AMS array, and therefore the foreign array commands will differ depending on the third-party array from which you are migrating.

Physical wiring requirements for FLI

The storage arrays used during migration must have a primary path from each controller (in use) present in both fabrics. This means that the source array and the destination array nodes being migrated to must be in a common zone on both fabrics. It is not necessary to add other controllers in the NetApp cluster, only those actually importing/migrating LUNs. While you could use indirect paths for the migration, the best practice is to use active/optimized paths between the source and destination arrays. The following figure shows both the HDS AMS2100 and NetApp ONTAP storage having a primary (active) path present in both fabrics.

This figure is an example of storage wiring for dual fabrics.



Follow these wiring best practices:

- ONTAP storage requires free initiator ports to connect to fabric. Configure initiator ports if free ports do not

exist.

Configure FC adapters for initiator mode

Initiator mode is used to connect the ports to tape drives, tape libraries, or third-party storage with Foreign LUN Import (FLI). You need to convert your FC target adapter to initiator mode to use it for FLI.

Before you begin

- LIFs on the adapter must be removed from any port sets of which they are members.
- All LIF's from every storage virtual machine (SVM) using the physical port to be modified must be migrated or destroyed before changing the personality of the physical port from target to initiator.

Steps

1. Remove all LIFs from the adapter:

```
network interface delete -vserver <SVM_name> -lif <lif_name>,<lif_name>
```

2. Take your adapter offline:

```
network fcp adapter modify -node <node_name> -adapter <adapter_port>
-status-admin down
```

   If the adapter does not go offline, you can also remove the cable from the appropriate adapter port on the system.

3. Change the adapter from target to initiator:

```
system hardware unified-connect modify -t initiator <adapter_port>
```

4. Reboot the node hosting the adapter you changed.
5. Verify that the FC ports are configured in the correct state for your configuration:

```
system hardware unified-connect show
```

6. Bring the adapter back online:

```
node run -node _node_name_ storage enable adapter <adapter_port>
```

What's next?

Zone the target ports of the foreign array with initiator ports of of your ONTAP storage.

Target and initiator port zoning for ONTAP FLI migrations

FLI migration requires the foreign array source LUNs to be accessed by NetApp storage. This is achieved by zoning target ports of source storage with initiator ports of NetApp destination storage.

The existing source storage-to-host zones are not modified and are deactivated post-migration. Host-to-destination storage zones are created to enable access of migrated LUNs from destination storage by the host.

A standard migration scenario using FLI requires four distinct zones:

- Zone 1: Source storage to destination storage (production fabric A)
- Zone 2: Source storage to destination storage (production fabric B)
- Zone 3: Host to destination storage (production fabric A)
- Zone 4: Host to destination storage (production fabric B)

Follow these zoning best practices:

- Do not mix source storage target ports and destination storage target ports in the same zone.
- Do not mix destination storage initiator ports and host ports in the same zone.
- Do not mix destination storage target and initiator ports in the same zone.
- Zone with at least two ports from each controller for redundancy.
- NetApp recommends single initiator and single target zoning.

After zoning the source storage target ports with the destination storage initiator ports, source storage will be visible in destination storage using the storage array show command.When the storage array is discovered for the first time, the NetApp controllers might not show the array automatically. Fix this by resetting the switch port where ONTAP initiator ports are connected.

A standard migration scenario using FLI requires four distinct zones. You should include specific ports in each zone.

- Zone 1: Source storage to destination storage (production fabric A)

  Zone 1 should contain all destination storage initiators on all the nodes and all the source storage target ports in fabric A. Zone members include:

  - ONTAP — Node1 — 0a
  - ONTAP — Node2 — 0a
  - AMS2100 — Ctrl0 — 0a
  - AMS2100 — Ctrl1 — 1a
- Zone 2: Source storage to destination storage (production fabric B)

  Zone 2 should contain all destination storage initiator ports on all the nodes and all the source storage target ports in fabric B. Zone 2 members include:

  - ONTAP — Node1 — 0b
  - ONTAP — Node2 — 0b

    - AMS2100 — Ctrl0 — 0e
    - AMS2100 — Ctrl1 — 1e
- Zone 3: Host to destination storage (production fabric A)

  Zone 3 should contain the host bus adapter (HBA) port 1 and the destination controller ports in production Fabric A. Zone 3 members include:

    - ONTAP — lif1
    - ONTAP — lif3
    - Host — HBA0
- Zone 4: Host to destination storage (production fabric B)

  Zone 4 should contain the HBA port 2 and the destination controller ports in production fabric B. Zone 4 members include:

    - ONTAP — lif2
    - ONTAP — lif4
    - Host — HBA1

Initiator group configuration

Proper LUN masking configuration is critical for correct operation. All initiator ports (on both nodes) in ONTAP storage must reside in the same igroup.

FLI migration requires source storage LUNs to be accessed by NetApp storage. To enable access apart from zoning, creating initiator groups on the source storage using the worldwide port name (WWPN) of the initiator ports of the destination storage is required.

> The examples in this section use a Hitachi Data Systems (HDS) AMS array, and therefore the foreign array commands will differ depending on the third-party array from which you are migrating.

Always enable Asymmetric Logical Unit Access (ALUA) on initiator groups for NetApp arrays.

Initiator groups go by different names depending upon the vendor and product. For example:

- Hitachi Data Systems (HDS) uses “host group.”
- NetApp E-Series uses “host entry.”
- EMC uses “initiator record” or “storage group.”
- NetApp uses “igroup.”

Regardless of nomenclature, the purpose of an initiator group is to identify initiators by WWPNs that share the same LUN mappings.

To define initiator groups, review your array documentation for how to set up LUN masking (igroups/host groups/storage groups, and so on).

Reasons to perform test migrations

NetApp recommends that all configurations be tested in a customer test environment before migration of production data.

You should perform a series of test migrations of different sizes before you perform your production migration. Performing test migrations before production migrations allows you to:

- Verify proper storage and fabric configuration.
- Estimate the duration and performance of the migration.

  Using test migration results, you can estimate how long your production migration may take and the throughput that can be expected. Otherwise, the number of variables that can factor into how long migrations will take will make it difficult to accurately estimate.

The test migration should be performed a minimum of one week prior to beginning the production data migrations. This will allow enough time to resolve possible issues such as access, storage connectivity, and licensing.

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