About DMM CLI Commands

The DMM feature includes CLI commands to configure and perform data migration jobs. Job and session configuration commands are entered at the switch CLI prompt.

A DMM job can be active on more than one switch. For example, in a dual-fabric topology with multipath configurations, the DMM job runs on a switch in each fabric. To configure the job, you enter DMM CLI commands on both switches.

The DMM feature runs on an SSM, MSM-18/4 module, or MDS 9222i switch in the switch. Each session runs on only one SSM, MSM-18/4 module, or MDS 9222i switch. Enter the session configuration commands on the MDS switch that will perform the session migration.

The DMM show commands are accessed directly from the SSM, MSM-18/4 module, or MDS 9222i switch. From the command prompt in the switch, you must attach to the SSM, MSM-18/4 module, or MDS 9222i switch before entering these commands.

When using the DMM CLI commands, note the following guidelines:

- In DMM job configuration mode, the job configuration is not saved until you enter the commit command. If you exit DMM configuration mode without issuing the commit command, all job configuration changes are discarded. You only need to enter the commit command when configuring a new job.

- For a storage-based migration, all servers that use the selected storage enclosure must use the same operating system (for example, all AIX or all Solaris).

- If the MDS switch (hosting the storage or the server) performs a restart after the migration but before the job is destroyed, you must restart the data migration from the beginning.
Selecting Ports for Server-Based Jobs

When creating a server-based migration job, you must include all possible paths from the server HBA ports to the LUNs being migrated because all writes to a migrated LUN need to be mirrored to the new storage until the cutover occurs, so that no data writes are lost.

For additional information about selecting ports for server-based jobs, see the “Ports in a Server-Based Job” section on page 3-12.

Configuring Data Migration Using the CLI

When you enter the command to create a data migration job, the CLI enters DMM job configuration submode. This submode provides commands to configure the server HBA ports, storage ports, and job attributes. The job is only created on the SSM, MSM-18/4 module, or MDS 9222i switch when you enter the commit command.

In a dual-fabric topology with redundant paths, the data migration job runs on an SSM, MSM-18/4 module, or MDS 9222i switch in each fabric. You need to configure the job on both SSMs, MSM-18/4 modules, or MDS 9222i switches.

In this chapter, the examples and command descriptions use the following terminology (see Figure 7-1):

- The dual fabric configuration includes Fabric 1 and Fabric 2.
- Switch A (on Fabric 1) contains the SSM, MSM-18/4 module, or MDS 9222i switch for data migration jobs.
- Switch B (on Fabric 2) contains the SSM, MSM-18/4 module, or MDS 9222i switch for data migration jobs.
- H1 and H2 are the server HBA ports to each fabric.
- ES1 and ES2 are the existing storage ports.
- NS1 and NS2 are the new storage ports.
The steps to configure a data migration job are described in the following sections:

- Configuring the Virtual Initiator (Storage-Based Migration), page 7-3
- Creating the Data Migration Job, page 7-5
- Configuring the Job, page 7-5
- Committing the Job, page 7-6
- Configuring the Peer SSM, MSM-18/4 module, or MDS 9222i switch, page 7-6
- Configuring Sessions, page 7-7
- Server-Based Migration Example, page 7-9
- Storage-Based Migration Example, page 7-11

### Configuring the Virtual Initiator (Storage-Based Migration)

**Note**  
This step is not required for a server-based data migration job.

Prior to creating a storage-based data migration job, you must retrieve the virtual initiator (VI) port world wide name (pWWN) and create a new zone containing the pWWNs of the VI and the storage ports. To use the new zone, add the new zone to a zone set and activate the zone set.
To configure the VI in Fabric 1, follow these steps:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>switchA# config t</td>
</tr>
<tr>
<td>Step 2</td>
<td>switchA(config)# dmm module module-id job job-id get-vi vsan 0-4093</td>
</tr>
<tr>
<td>Step 3</td>
<td>switchA(config)# zone name name vsan 0-4093</td>
</tr>
<tr>
<td>Step 4</td>
<td>switchA(config-zone)# member pwwn value</td>
</tr>
<tr>
<td>Step 5</td>
<td>switchA(config-zone)# exit</td>
</tr>
<tr>
<td>Step 6</td>
<td>switchA(config)# zoneset name name vsan 0-4093</td>
</tr>
<tr>
<td>Step 7</td>
<td>switchA(config-zoneset)# member name</td>
</tr>
<tr>
<td>Step 8</td>
<td>switchA(config-zoneset)# exit</td>
</tr>
<tr>
<td>Step 9</td>
<td>switchA(config)# zoneset activate name name vsan 0-4093</td>
</tr>
</tbody>
</table>

Prior to creating the data migration job, you must complete the following configuration tasks on the storage devices:

1. Configure the existing storage to give the VI pWWN access to LUNs that need to be migrated.
2. Configure the new storage to give the VI pWWN access to LUNs that need to be migrated.

**Note**

For a dual-fabric topology, you must repeat the same set of configuration steps on switch B. Retrieve the VI information and create a new zone on switch B and configure the storage to allow the VI to access the LUNs exposed in fabric B. For an example configuration, see the “Storage-Based Migration Example” section on page 7-11.
Creating the Data Migration Job

To configure a data migration job, first create the job on Switch A. After creating the job, the CLI enters DMM job configuration mode, where you enter the commands for configuring the job.

To create the data migration job, follow these steps:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong>&lt;br&gt;switchA# config t</td>
<td>Enters configuration mode.</td>
</tr>
<tr>
<td><strong>Step 2</strong>&lt;br&gt;switchA(config)# dmm module module-id job job-id create</td>
<td>Creates a migration job on the specified SSM, MSM-18/4 module, or MDS 9222i switch and enters DMM job configuration mode. Specify a unique job identifier. For a storage-based job, use the same job identifier that you specified when retrieving the VI information (in the previous task).</td>
</tr>
</tbody>
</table>

**Configuring the Job**

Use the commands in DMM job configuration mode to add the server and storage ports to the job.

*Note* To prevent data corruption, the job must contain all the server HBA ports that can access the set of LUNs being migrated, and all storage ports that expose these LUNs:

- Add all server HBA ports in this fabric that can access the LUNs being migrated.
- Add all storage ports in the fabric that expose the set of LUNs being migrated.

For additional information, see the “Checking the Storage ASL Status” section on page 4-3.

In a dual-fabric topology, configure the IP address of the peer SSM, MSM-18/4 module, or MDS 9222i switch (the DMM peers communicate using the management IP network).

To configure the data migration job, use the following steps:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong>&lt;br&gt;switchA(config-dmm-job)# server vsan 0-4093 pwwn pWWN</td>
<td>Specifies the VSAN and pWWN of the server HBA port to include in the migration.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>All server HBA ports (in fabric 1) that can access the LUNs to be migrated need to be added to this job.</td>
</tr>
<tr>
<td><strong>Step 2</strong>&lt;br&gt;switchA(config-dmm-job)# storage vsan 0-4093 pwwn pWWN existing</td>
<td>Specifies the VSAN and pWWN of the existing storage port.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>All existing storage ports (in fabric 1) that expose the LUNs to be migrated need to be added to this job.</td>
</tr>
<tr>
<td><strong>Step 3</strong>&lt;br&gt;switchA(config-dmm-job)# storage vsan 0-4093 pwwn pWWN new</td>
<td>Specifies the VSAN and pWWN of the new storage port.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>All new storage ports (in fabric 1) that expose the new LUNs need to be added to this job.</td>
</tr>
</tbody>
</table>
Configuring Data Migration Using the CLI

Chapter 7 Using the DMM CLI for Data Migration

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## Configuring Data Migration Using the CLI

### Committing the Job

The next step is to commit the data migration job on switch A. To commit the job, use the `commit` command.

When you enter the `commit` command, the switch sends the job configuration to the SSM, MSM-18/4 module, or MDS 9222i switch.

The DMM feature sends configuration information to other switches in the fabric as required, so that all traffic between the server HBA port and the existing storage is redirected to the SSM, MSM-18/4 module, or MDS 9222i switch.

The SSM, MSM-18/4 module, or MDS 9222i switch performs discovery of all existing and new storage LUNs visible to the server HBA ports/VIs in this job.

### Configuring the Peer SSM, MSM-18/4 module, or MDS 9222i switch

The next step is to configure the data migration job on the peer SSM, MSM-18/4 module, or MDS 9222i switch.

```text
switchA(config-dmm-job)# attributes
job_type (1 | 2) job_mode (1 | 2)
job_rate (1 | 2 | 3 | 4) job_method (1|2|3)
```

Specifies the job type, job mode, and job rate:

- **job_type**: Enter 1 for server-based migration or 2 for storage-based migration.
- **job_mode**: Enter 1 for online or 2 for offline migration.
- **job_rate**: Enter 1 for best effort, 2 for slow, 3 for medium, and 4 for fast data migration.
- **job_method**: Enter 1 for Method 1, 2 for Method 2, and 3 for Method 3.

For additional information about data migration rate, see the “Configuring Migration Rate” section on page 2-9.

```text
switchA(config-dmm-job)# peer
IP_address
```

Configures the IP address of the SSM, MSM-18/4 module, or MDS 9222i switch on switch B.

For information about configuring SSM, MSM-18/4 module, or MDS 9222i switch IP addresses, see the “Configuring IP Connectivity” section on page 2-4.

### Committing the Job

The next step is to commit the data migration job on switch A. To commit the job, use the `commit` command.

When you enter the `commit` command, the switch sends the job configuration to the SSM, MSM-18/4 module, or MDS 9222i switch.

The DMM feature sends configuration information to other switches in the fabric as required, so that all traffic between the server HBA port and the existing storage is redirected to the SSM, MSM-18/4 module, or MDS 9222i switch.

The SSM, MSM-18/4 module, or MDS 9222i switch performs discovery of all existing and new storage LUNs visible to the server HBA ports/VIs in this job.

### Configuring the Peer SSM, MSM-18/4 module, or MDS 9222i switch

The next step is to configure the data migration job on the peer SSM, MSM-18/4 module, or MDS 9222i switch.

```text
switchA(config-dmm-job)# peer
IP_address
```

Configures the IP address of the SSM, MSM-18/4 module, or MDS 9222i switch on switch B.

For information about configuring SSM, MSM-18/4 module, or MDS 9222i switch IP addresses, see the “Configuring IP Connectivity” section on page 2-4.

---

**Note**

The `commit` command may require a noticeable amount of time to complete, depending on the number of LUNs to be discovered.
To configure the data migration job on the peer SSM, MSM-18/4 module, or MDS 9222i switch, follow these steps:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>switchB# configuration terminal</td>
<td>Enters configuration mode.</td>
</tr>
<tr>
<td>switchB(config)# dmm module module-id job job-id create</td>
<td>Creates a migration job on the specified SSM, MSM-18/4 module, or MDS 9222i switch and enters DMM job configuration mode.</td>
</tr>
<tr>
<td>switchB(config-dmm-job)# server vsan 0-4093 pwwn pWWN</td>
<td>Specifies the VSAN and pWWN of the server HBA port to include in the migration.</td>
</tr>
<tr>
<td>switchB(config-dmm-job)# storage vsan 0-4093 pwwn pWWN existing</td>
<td>Specifies the VSAN and pWWN of the existing storage port.</td>
</tr>
<tr>
<td>switchB(config-dmm-job)# storage vsan 0-4093 pwwn pWWN new</td>
<td>Specifies the VSAN and pWWN of the new storage port.</td>
</tr>
<tr>
<td>switchB(config-dmm-job)# attributes job_type {1</td>
<td>2} job_mode {1</td>
</tr>
<tr>
<td>switchB(config-dmm-job)# peer IP_address</td>
<td>Configures the IP address of the SSM, MSM-18/4 module, or MDS 9222i switch on switch A.</td>
</tr>
<tr>
<td>switchB(config-dmm-job)# commit</td>
<td>Commits the data migration job on switch B.</td>
</tr>
</tbody>
</table>

### Configuring Sessions

The next step is to configure sessions in the data migration job. For a server-based migration, configure all of the sessions on one SSM, MSM-18/4 module, or MDS 9222i switch.

For a storage-based migration, you can manually balance the load on the SSMs, MSM-18/4 modules, or MDS 9222i switches by configuring sessions on both SSMs, MSM-18/4 modules, or MDS 9222i switches.

**Note**

For a storage-based migration, use the pWWN of the VI as the server in the session configuration.

To verify that the SSM, MSM-18/4 module, or MDS 9222i switch has discovered the LUNs correctly, enter the `show dmm job job-id job id storage` command from the SSM CLI.
To configure sessions, follow these steps:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td><strong>Purpose</strong></td>
</tr>
<tr>
<td>switchA(config)# dmm module</td>
<td>Enters session configuration mode for the specified job on the specified SSM, MSM-18/4 module, or MDS 9222i switch.</td>
</tr>
<tr>
<td>module-id job job-id session</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Configures a session. The server HBA port, existing storage port, and new storage port must all belong to the same VSAN.</td>
</tr>
<tr>
<td>switchA(config-session)# server pWWN src_tgt pWWN src_lun num dst_tgt pWWN dst_lun num</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>server</strong> is the server pWWN (server-based job) or VI pWWN (storage-based job).</td>
</tr>
<tr>
<td></td>
<td>• <strong>src_tgt</strong> is the existing storage pWWN.</td>
</tr>
<tr>
<td></td>
<td>• <strong>src_lun</strong> is the LUN number in the existing storage. Enter this value in hexadecimal notation.</td>
</tr>
<tr>
<td></td>
<td>• <strong>dst_tgt</strong> num is the new storage pWWN.</td>
</tr>
<tr>
<td></td>
<td>• <strong>dst_lun</strong> is the LUN number in the new storage. Enter this value in hexadecimal notation.</td>
</tr>
</tbody>
</table>
Server-Based Migration Example

The topology for the example shown in Figure 7-2, is dual fabric with multipath ports defined in the server and redundant paths to the storage devices.

**Figure 7-2   Topology for the Example**

On both switches, the SSM, MSM-18/4 module, or MDS 9222i switch is located in slot 8. The pWWNs for the ports are listed here:

<table>
<thead>
<tr>
<th>Port</th>
<th>pWWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>21:00:00:e0:8b:0a:5d:e7</td>
</tr>
<tr>
<td>ES1</td>
<td>50:06:04:82:bf:cf:e0:43</td>
</tr>
<tr>
<td>NS1</td>
<td>50:06:0e:80:03:4e:95:13</td>
</tr>
<tr>
<td>H2</td>
<td>21:01:00:e0:8b:0a:5d:e7</td>
</tr>
<tr>
<td>ES2</td>
<td>50:06:04:82:bf:cf:e0:5d</td>
</tr>
<tr>
<td>NS2</td>
<td>50:06:0e:80:03:4e:95:03</td>
</tr>
</tbody>
</table>

The following example shows how to configure a data migration job on switch A:

```
switchA# configure terminal
switchA(config)# dmm module 8 job 2345 create
  Started New DMM Job Configuration.
  Do not exit sub-mode until configuration is complete and committed
switchA(config-dmm-job)# server vsan 100 pwwn 21:00:00:e0:8b:0a:5d:e7
switchA(config-dmm-job)# storage vsan 100 pwwn 50:06:04:82:bf:cf:e0:43 existing
switchA(config-dmm-job)# storage vsan 100 pwwn 50:06:0e:80:03:4e:95:13 new
switchA(config-dmm-job)# peer 10.10.2.4
switchA(config-dmm-job)# attributes job_type 1 job_mode 1 job-rate 1 job-method 1
switchA(config-dmm-job)# commit
switchA(config-dmm-job)# end
  Ending DMM Job Configuration.
  If the Job was not committed, it will be required to reconfigure the job.
```
Chapter 7      Using the DMM CLI for Data Migration

Configuring Data Migration Using the CLI

The following example shows how to configure a data migration job on switch B:

```
switchB# configure terminal
switchB(config)# dmm module 8 job 2345 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switchB(config-dmm-job)# server vsan 100 pwwn 21:00:00:e0:08:b0:a:5d:e7 existing
switchB(config-dmm-job)# storage vsan 100 pwwn 50:06:04:82:bf:cf:e0:5d new
switchB(config-dmm-job)# peer 10.10.1.8
switchB(config-dmm-job)# attributes job_type 1 job_mode 1 job-rate 1 job-method 1
switchB(config-dmm-job)# commit
switchB(config-dmm-job)# end
Ending DMM Job Configuration.
If the Job was not committed, it will be required to reconfigure the job.
switchB#
```

The following example shows how to configure data migration sessions on switch A:

```
switchA(config)# dmm module 4 job 2345 session
switchA(config-session)# server 21:00:00:e0:8b:0a:5d:e7 src_tgt 50:06:04:82:bf:cf:e0:43
  src_lun 0x5 dst_tgt 50:06:04:82:bf:cf:e0:13 dst_lun 0x0
switchA(config-session)# server 21:00:00:e0:8b:0a:5d:e7 src_tgt 50:06:04:82:bf:cf:e0:43
  src_lun 0x6 dst_tgt 50:06:04:82:bf:cf:e0:13 dst_lun 0x1
switchA(config-session)# exit
```

The following example shows how to start a data migration job on switch A:

```
switchA(config)# dmm module 8 job 2345 start
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switchA(config)# exit
```
**Storage-Based Migration Example**

The topology for the example shown in Figure 7-3, is dual fabric with multipath ports defined in the server and redundant paths to the storage devices.

*Figure 7-3  Storage-Based Migration Example*

On both switches, the SSM, MSM-18/4 module, or MDS 9222i switch is located in slot 8. The pWWNs for the ports are listed here:

<table>
<thead>
<tr>
<th>Port</th>
<th>pWWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host 1</td>
<td>21:00:00:e0:8b:0a:5d:e7</td>
</tr>
<tr>
<td>VI 1</td>
<td>21:0d:00:0d:ec:02:2d:82</td>
</tr>
<tr>
<td>ES1</td>
<td>50:06:04:82:bf:cf:e0:43</td>
</tr>
<tr>
<td>NS1</td>
<td>50:06:0e:80:03:4e:95:13</td>
</tr>
<tr>
<td>Host 2</td>
<td>21:01:00:e0:8b:0a:5d:e7</td>
</tr>
<tr>
<td>VI 2</td>
<td>21:0d:00:0d:0a:01:2b:82</td>
</tr>
<tr>
<td>ES2</td>
<td>50:06:04:82:bf:cf:e0:5d</td>
</tr>
<tr>
<td>NS2</td>
<td>50:06:0e:80:03:4e:95:03</td>
</tr>
</tbody>
</table>

The following example shows how to configure the VI on switch A:

```
switchA# configure terminal
switchA(config)# dmm module 8 job 2345 get-vi vsan 100
DMM Storage Job:0x929 assigned following VI -
VI NodeWWN: 21:0c:00:0d:ec:02:2d:82
VI PortWWN: 21:0d:00:0d:ec:02:2d:82
sjc7-9509-6(config)#
```
The following example shows how to configure the zone and zone set on switch A:

```
switchA(config)# zone name DMM1 vsan 100
switchA(config-zone)# member pwnn 21:0d:00:0d:ec:02:2d:82 vi
switchA(config-zone)# member pwnn 50:06:04:82:bf:cf:e0:43 es
switchA(config-zone)# member pwnn 50:06:0e:80:03:4e:95:13 ns
switchA(config-zone)# exit
switchA(config)# zoneset name DMM1 vsan 100
switchA(config-zoneset)# member DMM1
switchA(config-zoneset)# exit
```

The following example shows how to configure the data migration job on switch A:

```
switchA(config)# dmm module 8 job 2345 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switchA(config-dmm-job)# server vsan 100 pwnn 21:00:00:e0:8b:0a:5d:e7
switchA(config-dmm-job)# storage vsan 100 pwnn 50:06:04:82:bf:cf:e0:43 existing
switchA(config-dmm-job)# storage vsan 100 pwnn 50:06:0e:80:03:4e:95:13 new
switchA(config-dmm-job)# peer 10.10.2.4
switchA(config-dmm-job)# attributes job_type 2 job_mode 1 job_rate 1 job_method 1
switchA(config-dmm-job)# commit
switchA(config-dmm-job)# end
Ending DMM Job Configuration.
If the Job was not committed, it will be required to reconfigure the job.
```

The following example shows how to configure the VI on switch B:

```
switchB# configure terminal
switchB(config)# dmm module 8 job 2345 get-vi vsan 100
DMM Storage Job:0x929 assigned following VI -
VI NodeWWN: 21:0c:01:0e:ec:02:2d:82
VI PortWWN: 21:0d:00:0d:0a:01:2b:82
switchB(config)#
```

The following example shows how to configure the zone and zone set on switch B:

```
switchB(config)# zone name DMM1 vsan 100
switchB(config-zone)# member pwnn 21:0d:00:0d:0a:01:2b:82 vi
switchB(config-zone)# member pwnn 50:06:04:82:bf:cf:e0:5d es
switchB(config-zone)# member pwnn 50:06:0e:80:03:4e:95:03 ns
switchB(config-zone)# exit
switchB(config)# zoneset name DMM1 vsan 100
switchB(config-zoneset)# member DMM1
switchB(config-zoneset)# exit
```

The following example shows how to configure the data migration job on switch B:

```
switchB# configure terminal
switchB(config)# dmm module 8 job 2345 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switchB(config-dmm-job)# server vsan 100 pwnn 21:00:00:e0:8b:0a:5d:e7
switchB(config-dmm-job)# storage vsan 100 pwnn 50:06:04:82:bf:cf:e0:5d existing
switchB(config-dmm-job)# storage vsan 100 pwnn 50:06:0e:80:03:4e:95:03 new
switchB(config-dmm-job)# peer 10.10.1.8
switchB(config-dmm-job)# attributes job_type 2 job_mode 1 job_rate 1 job_method 1
switchB(config-dmm-job)# commit
switchB(config-dmm-job)# end
Ending DMM Job Configuration.
If the Job was not committed, it will be required to reconfigure the job.
```

switchB#
The following example shows how to configure the data migration sessions on switch A:

```
switchA(config)# dmm module 4 job 2345 session
switchA(config-session)# server 21:0d:00:0d:ec:02:2d:82 src_tgt 50:06:04:82:bf:cf:e0:43
src_lun 0x5 dst_tgt 50:06:0e:80:03:4e:95:13 dst_lun 0x0
```

```
switchA(config-session)# exit
```

The following example shows how to start the data migration job on switch A:

```
switchA(config)# dmm module 8 job 2345 start
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
```

```
switchA(config)# exit
```

The following example shows how to configure the data migration sessions on switch B:

```
switchB(config)# dmm module 4 job 2345 session
switchB(config-session)# server 21:0d:00:0d:0a:01:2b:82 src_tgt 50:06:04:82:bf:cf:e0:5d
src_lun 0x5 dst_tgt 50:06:0e:80:03:4e:95:03 dst_lun 0x0
```

```
switchB(config-session)# exit
```

The following example shows how to start the data migration job on switch B:

```
switchB(config)# dmm module 8 job 2345 start
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
```

```
switchB(config)# exit
```
DMM Method 3 Migration Example

The topology for the example is shown in Figure 7-4.

Figure 7-4  DMM Method 3 Migration Example

This section describes how to configure a data migration job using DMM method 3. The job needs to be configured on the SSM, MSM-18/4 module, or MDS 9222i switch in the migration fabric as well as the SSM(s), MSM-18/4 module(s), or MDS 9222i switch(es) in the production fabrics.

To configure the migration fabric, follow these steps:

**Step 1**  Select a VI from the VI list for the module.

```
migr-fab# show dmm module 2 vI-list
```

<table>
<thead>
<tr>
<th>DPP-Id</th>
<th>VI-pWWN</th>
<th>VI-nWWN</th>
<th>Outstanding jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22:93:00:0d:ec:4a:63:83</td>
<td>22:92:00:0d:ec:4a:63:83</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>22:8b:00:0d:ec:4a:63:83</td>
<td>22:8a:00:0d:ec:4a:63:83</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>22:8d:00:0d:ec:4a:63:83</td>
<td>22:8c:00:0d:ec:4a:63:83</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>22:95:00:0d:ec:4a:63:83</td>
<td>22:94:00:0d:ec:4a:63:83</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>22:97:00:0d:ec:4a:63:83</td>
<td>22:96:00:0d:ec:4a:63:83</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>22:8f:00:0d:ec:4a:63:83</td>
<td>22:8e:00:0d:ec:4a:63:83</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>22:91:00:0d:ec:4a:63:83</td>
<td>22:90:00:0d:ec:4a:63:83</td>
<td>0</td>
</tr>
</tbody>
</table>

**Step 2**  Create a zone of the selected VI with the ES and NS ports.

**Step 3**  To create the DMM job.
Cisco MDS 9000 Family Data Mobility Manager Configuration Guide

Chapter 7
Using the DMM CLI for Data Migration

Configuring Data Migration Using the CLI

migr-fab# config terminal
migr-fab(config)# dmm module 2 job 4 set-vi 22:93:00:0d:ec:4a:63:83
22:92:00:0d:ec:4a:63:83 vsan 3 (Use the VI selected above and Zoned with the existing storage and new storage ports)
migr-fab(config)# dmm module 2 job 4 create
migr-fab(config-dmm-job)# attributes job_type 1 job_mode 1 job_rate 1 job_method 3
migr-fab(config-dmm-job)# peer 10.1.2.3 (SSM/MSM in production fabric 1)
migr-fab(config-dmm-job)# peer 10.1.1.4 (SSM/MSM in production fabric 2)
migr-fab(config-dmm-job)# storage vsan 3 pwn 44:51:00:06:2b:02:00:00 existing
migr-fab(config-dmm-job)# storage vsan 3 pwn 44:f1:00:06:2b:04:00:00 new
migr-fab(config-dmm-job)# commit
migr-fab(config-dmm-job)# exit
migr-fab(config)# dmm module 2 job 4 session
migr-fab(config-dmm-session)# server 22:93:00:0d:ec:4a:63:83 src_tgt
44:51:00:06:2b:02:00:00 src_lun 0 dst_tgt 44:f1:00:06:2b:04:00:00 dst_lun 0
migr-fab(config-dmm-session)# end

The following example shows the configuration of production fabric 1:

prod-fab1(config)# dmm module 3 job 4 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
prod-fab1(config-dmm-job)# attributes job_type 1 job_mode 1 job_rate 1 job_method 3
prod-fab1(config-dmm-job)# peer 10.1.3.2 (only the migration fabric is configured as peer)
prod-fab1(config-dmm-job)# server vsan 100 pwn 21:01:00:e0:8b:28:5e:3e
prod-fab1(config-dmm-job)# storage vsan 100 pwn 44:f0:00:06:2b:03:00:00 existing
(only the existing storage is required for production fabric, no new storage is required)
prod-fab1(config-dmm-job)# commit
prod-fab1(config-dmm-job)# end

The following example shows the configuration of production fabric 2:

prod-fab2(config)# dmm module 4 job 4 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
prod-fab2(config-dmm-job)# attributes job_type 1 job_mode 1 job_rate 1 job_method 3
prod-fab2(config-dmm-job)# peer 10.1.3.2
prod-fab2(config-dmm-job)# server vsan 9 pwn 21:01:00:e0:8b:08:5e:3e
prod-fab2(config-dmm-job)# storage vsan 9 pwn 44:50:00:06:2b:01:00:00 existing
prod-fab2(config-dmm-job)# job_name name_job
prod-fab2(config-dmm-job)# commit
prod-fab2(config-dmm-job)# end
Controlling DMM Jobs

The DMM CLI provides a set of commands to control jobs that have been configured. The job state determines which commands are valid to run. Table 7-1 shows job state values.

<table>
<thead>
<tr>
<th>Job Status Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created</td>
<td>The job has been created but has not been scheduled.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>The job has been configured with a scheduled start time. It will automatically start at that time.</td>
</tr>
<tr>
<td>Complete</td>
<td>The job has been completed successfully.</td>
</tr>
<tr>
<td>Verify</td>
<td>The completed job is being verified.</td>
</tr>
<tr>
<td>Stopped</td>
<td>The job has been stopped manually by the user.</td>
</tr>
<tr>
<td>Failed</td>
<td>The job has been stopped because of failures. See Table 6-5 for details.</td>
</tr>
<tr>
<td>In_Progress</td>
<td>The job is currently running.</td>
</tr>
<tr>
<td>Reset</td>
<td>The job has been reinitialized because of failures. See Table 6-6 for details.</td>
</tr>
<tr>
<td>Finishing</td>
<td>The Method 2 job is in the final copy iteration.</td>
</tr>
<tr>
<td>Verify_Stopped</td>
<td>The job verification has been stopped.</td>
</tr>
<tr>
<td>Verify_Complete</td>
<td>The job verification has been completed.</td>
</tr>
<tr>
<td>Verify_Failure</td>
<td>The job verification is unsuccessful.</td>
</tr>
</tbody>
</table>

Table 7-2 describes the data migration commands.
Controlling DMM Jobs

You must enter these commands on the switch with sessions configured. If both SSMs, MSM-18/4, or MDS 9222i switches have sessions configured, enter the commands on both switches.

To control the data migration job, follow these steps:

**Table 7-2 Command Valid States**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Valid Job Status Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify</td>
<td>Performs offline verification of the selected job, and you are prompted to confirm the verification command.</td>
<td>Completed, InProgress, VerifyStopped, Verify_Failure</td>
</tr>
<tr>
<td>Destroy</td>
<td>Deletes the selected job (or jobs) and retrieves the job execution log from the SSM, MSM-18/4 module, or MDS 9222i switch, and you are prompted to confirm the delete command.</td>
<td>Stopped, Failed, Completed, Reset, VerifyStopped, Verify_Failure, Created, Scheduled</td>
</tr>
<tr>
<td>Stop</td>
<td>Stops the selected job.</td>
<td>InProgress</td>
</tr>
<tr>
<td>Start</td>
<td>Starts the selected job.</td>
<td>Created, Reset</td>
</tr>
<tr>
<td>Modify</td>
<td>Allows you to modify the job attributes or configure a start time for the selected job.</td>
<td>Created, Scheduled, Reset, Stopped</td>
</tr>
<tr>
<td>Schedule</td>
<td>Allows you to set up schedules.</td>
<td>Created, Scheduled, Stopped</td>
</tr>
<tr>
<td>Validate</td>
<td>Validates the stored configuration for a job in a Reset state.</td>
<td>Reset</td>
</tr>
<tr>
<td>Finish</td>
<td>Completes the selected job only in case of Method 2.</td>
<td>InProgress</td>
</tr>
<tr>
<td>Log</td>
<td>Opens the DMM log for the selected job.</td>
<td>All job status values</td>
</tr>
</tbody>
</table>

**Note**

You must enter these commands on the switch with sessions configured. If both SSMs, MSM-18/4, or MDS 9222i switches have sessions configured, enter the commands on both switches.

To control the data migration job, follow these steps:

**Step 1**

```
switchA(config)# dmm module module-id job job-id start
```

Starts a data migration job or restarts a job that was stopped.

**Note**

For a job in the reset state, enter the validate command on both switches before restarting the job.

The start command is ignored if the job is scheduled for a future time. Use the schedule now command to start a scheduled job.

**Step 2**

```
switchA(config)# dmm module module-id job job-id stop
```

Stops execution of the job.

**Note**

Job progress is not preserved. If you start the job again, the job restarts from the beginning.
Monitoring DMM Jobs

Use the `show dmm job` command in the SSM CLI to monitor the status of data migration jobs, and the current progress of jobs and sessions that are in progress.

To monitor data migration jobs, follow these steps:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>switch# attach module module-id</td>
</tr>
<tr>
<td></td>
<td>Enters CLI mode on the SSM, MSM-18/4 module, or MDS 9222i switch.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>module# show dmm job</td>
</tr>
<tr>
<td></td>
<td>Displays summary information about the data migration jobs configured on this SSM, MSM-18/4 module, or MDS 9222i switch.</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>module# show dmm job job-id job-id {detail</td>
</tr>
<tr>
<td></td>
<td>Displays information about the specified job. The <code>detail</code> command displays the job attributes, schedule, server HBA and storage ports, the job log, and job error log. The <code>session</code> command displays the sessions included in the job. The <code>storage</code> command displays the storage ports included in the job.</td>
</tr>
</tbody>
</table>

For additional information about monitoring and troubleshooting data migration jobs, see Chapter 6, “Troubleshooting Cisco MDS DMM.”
Completing DMM Jobs

When all of the sessions in a job have completed successfully, you can delete the job in coordination with other post-migration tasks, which are described in the following sections:

- (Optional) Verifying the Completed Job, page 7-19
- Post-Migration Activities, page 7-19
- Deleting the Job, page 7-20

(Optional) Verifying the Completed Job

When all of the sessions in a job have completed successfully, you can optionally perform verification of the data in the new storage location. The SSM, MSM-18/4 module, or MDS 9222i switch compares the data in the new storage with the data in the existing storage by reading each migration region from the existing and new storage, and then performing a comparison of the data.

To perform migration verification, follow these steps:

- **Step 1**
  
  ```
  switchA(config)# dmm module module-id job job-id verify
  ```
  
  Verifies the data migration by comparing the data in the new storage with the data in the existing storage. The `verify` command operates in offline mode.

- **Step 2**
  
  ```
  switch# show dmm job job-id session [session-id sess-id]
  ```
  
  Displays the verification progress while verification is performed on a job.

**Note**

Verification is performed in offline mode. Any service using the existing storage needs to be quiesced before you start verification.

**Caution**

Verification is recommended only for the test environment and is NOT recommended for the production environment because this process brings down all the existing applications.

Post-Migration Activities

After the data migration job has completed successfully, you need to reconfigure the server to use the new storage. The exact post-migration configuration steps vary depending on the operating system of the server.

To reconfigure the server, you might need to take the following steps:

- Perform a graceful shutdown on all server applications that use the migrated LUNs to ensure that there are no pending I/O operations on the existing storage.
- Unmount any file systems, existing LUNs, and the associated storage ports.
- Deport the volume groups or disk groups for the migrated storage for some of the volume managers.
- Use the DMM CLI to perform these tasks:
Completing DMM Jobs

For Method 1 — Delete the data migration job. DMM removes the FC-Redirect entries to the SMM. Server writes are no longer mirrored to the existing and new storage.

For Method 2 — Finish the data migration job. When the job moves to Completed state, delete the data migration job. See the “Finishing Jobs” section on page 5-51 for more details.

For Method 3 — Finish the data migration job. When the job moves to Completed state, delete the data migration job. See the “Finishing Jobs” section on page 5-51 for more details.

Use either of the following options to remove server access:

- Configure zoning to remove server access to the existing LUNs.
- Use an appropriate array tool to remove the masking or mapping access. Choose this option if an application that is being migrated requires access to the existing storage after the first migration is completed.

Before you configure a DMM job, ensure that the zoning is completed for any devices that require NS.

Configure zoning to add server access to the new LUNs.

From the server, scan for the new storage.

Import the volume group or disk groups from the new storage.

Mount the file system for the new storage.

From the server, restart the server applications to access data from the new storage.

Finishing the Job

To finish the data migration job, follow this step:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>switch# configuration terminal</td>
</tr>
<tr>
<td>Step 2</td>
<td>switch(config)# dmm module module-id job job-id finish</td>
</tr>
</tbody>
</table>

Deleting the Job

To delete the data migration job, follow this step:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>switch# configuration terminal</td>
</tr>
<tr>
<td>Step 2</td>
<td>switch(config)# dmm module module-id job job-id destroy switchA#</td>
</tr>
</tbody>
</table>