



Troubleshooting Cisco MDS DMM

This chapter describes procedures used to troubleshoot the data migration feature in the Cisco MDS 9000 Series Multilayer Switches.

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DMM Overview

Cisco MDS DMM is an intelligent software application that runs on the MSM-18/4 module or MDS 9222i switch. With Cisco MDS DMM, no rewiring or reconfiguration is required for the server, the existing storage, or the SAN fabric. The MSM-18/4 module or MDS 9222i switch can be located anywhere in the fabric, as Cisco MDS DMM operates across the SAN. Data migrations are enabled and disabled by software control from the Cisco Fabric Manager.

Cisco MDS DMM provides a graphical user interface (GUI) (integrated into Fabric Manager) for configuring and executing data migrations. Cisco MDS DMM also provides CLI commands for configuring data migrations and displaying information about data migration jobs.

Best Practices

You can avoid possible problems when using DMM if you follow these best practices:

- Use the SLD tool.

The DMM feature includes the Array-Specific Library (ASL), which is a database of information about specific storage array products. DMM uses ASL to automatically correlate LUN maps between multipath port pairs.

Use the SLD CLI or GUI output to ensure that your storage devices are ASL classified.

For migration jobs involving active-passive arrays, use the SLD output to verify the mapping of active and passive LUNs to ports. Only ports with active LUNs should be included in migration jobs.

For more information about the SLD tool, refer to the [Checking the Storage ASL Status](#).

- Create a migration plan.

Cisco MDS DMM is designed to minimize the dependency on multiple organizations, and is designed to minimize service disruption. However, even with Cisco MDS DMM, data migration is a fairly complex activity. We recommend that you create a plan to ensure a smooth data migration.

- Configure enclosures.

Before creating a migration job with the DMM GUI, you need to ensure that server and storage ports are included in enclosures. You need to create enclosures for server ports. If the server has multiple single-port HBAs, all of these ports need to be included in one enclosure. Enclosures for existing and new storage ports are typically created automatically.

- Follow the topology guidelines.

Restrictions and recommendations for DMM topology are described in the [DMM Topology Guidelines](#).

- Ensure all required ports are included in the migration job.

When creating a data migration job, you must include all possible server HBA ports that access the LUNs being migrated. This is 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](#).

License Requirements

Each MSM-18/4 module or MDS 9222i switch with Cisco MDS DMM enabled requires a DMM license.

DMM licenses are described in the [Using DMM Software Licenses](#).

Initial Troubleshooting Checklist

Begin troubleshooting DMM issues by checking the troubleshooting checklist in the following table.

Table 1: Initial Troubleshooting Checklist

Checklist
Verify that an MSM-18/4 module or MDS 9222i switch is installed on each fabric and that DMM is enabled on the MSM-18/4 module or MDS 9222i switch.
Verify that your DMM licenses are valid.
Verify that DMM is the only intelligent application running on the MSM-18/4 module or MDS 9222i switch.
Verify that the existing and new storage devices are connected to a switch that supports FC-Redirect.

Checklist
Verify that SAN OS 3.2(1) or NX-OS 4.1(1b) or later is running on the switches hosting the MSM-18/4 module or MDS 9222i switch and the storage.
Verify that IP connectivity exists between peer MSM-18/4 modules or MDS 9222i switches by using the ping command.
Verify that the default zone policy in the VSAN with FCR configuration is set to 'DENY'.

Common Troubleshooting Tools

MSM-18/4 module or MDS 9222i switch. The following CLI commands on the MSM-18/4 module or MDS 9222i switch may be useful in troubleshooting DMM issues:

- **show dmm job**
- **show dmm job job-id job-id details**
- **show dmm job job-id job-id session**



Note You need to connect to the MSM-18/4 module or MDS 9222i switch using the **attach module** command prior to using the **show dmm** commands.

Troubleshooting Connectivity Issues

Cannot Connect to the MSM-18/4 Module or MDS 9222i Switch

Problems connecting the MSM-18/4 module or MDS 9222i switch can be caused by SSH, zoning, or routing configuration issues. [Table 2: Cannot Connect to the MSM-18/4 Module or MDS 9222i Switch](#) lists possible solutions.

Table 2: Cannot Connect to the MSM-18/4 Module or MDS 9222i Switch

Symptom	Possible Cause	Solution
Cannot connect to the MSM-18/4 module or MDS 9222i switch.	SSH not enabled on the supervisor module.	Enable SSH on the switch that hosts the MSM-18/4 module or MDS 9222i switch. See Configuring SSH on the Switch .
	Zoning configuration error.	If VSAN 1 default zoning is denied, ensure that the VSAN 1 interface (supervisor module) and the CPP IP/FC interface have the same zoning. See Configuring IP Connectivity .
	IP routing not enabled.	Ensure that IPv4 routing is enabled. Use the ip routing command in configuration mode.
	IP default gateway.	Configure the default gateway for the CPP IPFC interface to be the VSAN 1 IP address. See Configuring IP Connectivity .

No Peer-to-Peer Communication

[Table 3: No Peer-to-Peer Communication](#) lists possible solutions to problems connecting to the peer MSM-18/4 module or MDS 9222i switch.

Table 3: No Peer-to-Peer Communication

Symptom	Possible Cause	Solution
Cannot ping the peer MSM-18/4 module or MDS 9222i switch.	No route to the peer MSM-18/4 module or MDS 9222i switch.	Configure a static route to the peer MSM-18/4 module or MDS 9222i switch. See Configuring IP Connectivity .

Connection Timeouts

If the DMM SSH connection is generating too many timeout errors, you can change the SSL and SSH timeout values. These properties are stored in the Fabric Manager Server properties file (Cisco Systems/MDS 9000/conf/server.properties). You can edit this file with a text editor, or you can set the properties through the Fabric Manager Web Services GUI, under the Admin tab.

The following server properties are related to DMM:

- **dmm.read.timeout**—Read timeout for job creation. The default value is 60 seconds. The value is displayed in milliseconds.
- **dmm.read.ini.timeout**—Read timeout for a job or session query. The default value is 5 seconds. The value is displayed in milliseconds.
- **dmm.connect.timeout**—SSH connection attempt timeout. The default value is 6 seconds. The value is displayed in milliseconds.
- **dmm.connection.retry**—If set to true, DMM will retry if the first connection attempt fails. By default, set to true.

Troubleshooting General Issues

If you need assistance with troubleshooting an issue, save the output from the relevant **show** commands.

You must connect to the MSM-18/4 module or MDS 9222i switch to execute DMM **show** commands. Use the **attach module slot** command to connect to the MSM-18/4 module or MDS 9222i switch.

The **show dmm job** command provides useful information for troubleshooting DMM issues.

Always save the output of the **show dmm tech-support** command into a file when reporting a DMM problem to the technical support organization.

Capture the output of the **show tech-support fc-redirect** command on all switches with FC-Redirect entries and save the output into a file.

Troubleshooting Scenarios

This section describes the following troubleshooting scenarios:

- **DMM storage based zone causes the active server-based job to fail.**

The Method 2 job that is in progress goes to the failed state if any zone changes are made to the zone entries comprising the NS storage port in the active zone set.

The workaround is to place the optional DMM zone for the particular host and NS into the active zone set before making changes.

- **If a DMM job is configured and running in a dual fabric, a switch reboot will place the configured DMM job in reset mode and indicate one MSM-18/4 module or MDS 9222i switch as missing in Cisco Fabric Manager.**

Even if the switch comes back up, the DMM job will continue to indicate that one MSM-18/4 module or MDS 9222i switch is missing because the switch does not have the information on the DMM job. The DMM job cannot be deleted from Fabric Manager at this point in time.

You have to go to the CLI and explicitly enter the destroy command for that particular job ID to delete the job.

The exception to this rule is if the switch that was rebooted has the information on the DMM job. In such a scenario, Fabric Manager will function normally.

- **The DMM feature cannot be disabled from the MSM-18/4 module or MDS 9222i switch once the grace period has expired.**

Use the poweroff module command and purge the information.

```
switch# configure terminal
switch(config)# poweroff module 1
switch(config)# purge module 1 running-config
```

Troubleshooting Job Creation Issues

The DMM GUI displays error messages to help you troubleshoot basic configuration mistakes when using the job creation wizards. A list of potential configuration errors is included after the last step in the task.

Failures During Job Creation

If you make a configuration mistake while creating a job, the job creation wizard displays an error message to help you troubleshoot the problem. You need to correct your input before the wizard allows you to proceed.

[Table 4: Failures During Job Creation](#) lists types of failures that may occur during job creation.

Table 4: Failures During Job Creation

Symptom	Possible Cause	Solution
Create Job failures.	No MSM-18/4 module or MDS 9222i switch available.	Ensure that the fabric has an MSM-18/4 module or MDS 9222i switch with DMM enabled and a valid DMM license.
	Job infrastructure setup error. Possible causes are incorrect selection of server/storage port pairs, the server and existing storage ports are not zoned, or IP connectivity between the MSM-18/4 modules or MDS 9222i switches is not configured correctly.	The exact error is displayed in the job activity log. See Opening the Job Error Log .
	LUN discovery failures.	Use the SLD command in the CLI to check that the LUNs are being discovered properly.

Opening the Job Error Log

To open the job activity log, follow these steps:

Procedure

-
- Step 1** Drag the wizard window to expose the Data Migration Status command bar.
 - Step 2** Click the **refresh** button.
 - Step 3** Select the job that you are troubleshooting from the list of jobs.
 - Step 4** Click the **Log** command to retrieve the job error log.
- Note** You must retrieve the job activity log before deleting the job.
- Step 5** The job information and error strings (if any) for each MSM-18/4 module or MDS 9222i switch are displayed.
 - Step 6** Click **Cancel** in the Wizard to delete the job.
-

DMM License Expires

If a time-bound license expires, note the following behavior:

- All jobs currently in progress will continue to execute until they are finished.
- Jobs which are configured but not scheduled will run when the schedule starts.
- Jobs which are stopped or in a failure state can also be started and executed.
- If the MSM-18/4 module or the MDS 9222i switch performs a restart, the existing jobs cannot be restarted until the switch has a valid DMM license.
- To resolve issues related to an expired license, install a valid DMM license on the switch.

Scheduled Job is Reset

If the MSM-18/4 module or MDS 9222i switch or the switch performs a restart, all scheduled DMM jobs are placed in the Reset state. Use the **Modify** command to restore jobs to the Scheduled state.

To restore each job to the Scheduled state, follow these steps:

Procedure

- Step 1** Select the job to be verified from the job list in the Data Migration Status pane.
- Step 2** Click the **Modify** button in the Data Migration Status tool bar.
- You see the Reschedule Job pop-up window.
- Step 3** The originally configured values for migration rate and schedule are displayed. Modify the values if required.
- Step 4** Click **OK**.
- The job is automatically validated. If validation is successful, the job transitions into the scheduled state. If you selected the Now radio button, the job starts immediately.
-

Failures When Creating a Session

This section helps you troubleshoot an error when the new storage is smaller in size than the existing storage. the DMM configuration wizard allows you to configure sessions for the data migration job. The wizard displays a default session configuration. If any session is marked in red it implies that the session LUN in the new storage is smaller in size than the session LUN in the existing storage.

Failures During Sessions Creation Although the LUN values displayed in the wizard are identical, the displayed LUN value in Gigabytes (GB) is rounded off to the third decimal.

The actual size of the LUNs can be verified using the **show** commands on the SSM CLI. To verify the size of the size of the LUNs, follow these steps:

Procedure

- Step 1** Note the host pWWN, existing storage pWWN and the new storage pWWN as displayed on the wizard screen.
- Host: 21:00:00:e0:8b:92:fc:dc
 - Existing storage: 44:51:00:06:2b:02:00:00
 - New storage: 44:f1:00:06:2b:04:00:00
- Step 2** Note the MSM-18/4 module or the MDS 9222i switch information displayed on the wizard screen.
- Step 3** From the switch console, enter the **attach module command** to attach to the MSM-18/4 module or MDS 9222i switch console.
- ```
switch# attach module 2
```
- Step 4** Enter the show dmm job command from the SSM CLI to display the job information. The following example shows the job information:

```
module-2# show dmm job
```

```
=====
Data Mobility Manager Job Information
=====
Num Job Identifier Name Type Mode Method DMM GUI IP Peer SSM switch DPP Session Status

1 1205521523 admin_2008/03/14-12:05 SRVR ONL METHOD-1 10.1.1.5 NOT_APPL 5 CREATED

Number of Jobs :1
```

**Step 5** Enter the **show dmm job job-id details** command to display the job details.

```
module-2# show dmm job job-id 1205521523 detail
```

**Step 6** Look for server information in the output and note the VI pWWN corresponding to the host port. The following example shows server information:

```

Server Port List (Num Ports :1)

Num VSAN Server pWWN Virtual Initiator pWWN

1 4 21:00:00:e0:8b:92:fc:dc 26:72:00:0d:ec:4a:63:82
```

**Step 7** Using the storage pWWN and the VI pWWN, enter the **show dmm job job-id storage tgt-pww vi-pwwn** command to get the LUN information for the existing and new storage. The following example shows the output of the existing storage. Note the Max LBA and Size values.

```
module-2# show dmm job job-id 1205521523 storage tgt-pwwn 44:51:00:06:2b:02:00:00 vi-pwwn
26:72:00:0d:ec:4a:63:82

show dmm job job-id 1205521523 storage tgt-pwwn 0x445100062b020000 vi-pwwn 0x2672000dec4a6382

Data Mobility Manager LUN Information
StoragePort: 00:00:02:2b:06:00:51:44 VI : 82:63:4a:ec:0d:00:72:26

LUN Number: 0x0
VendorID : SANBlaze
ProductID : VLUN FC RAMDisk
SerialNum : 2fff00062b0e445100000000
ID Len : 32
ID : 600062b0000e44510000000000000000
Block Len : 512
Max LBA : 20973567
Size : 10.000977 GB
```

The following example shows the output of the new storage. Note that the LBA and Size values are smaller than the comparable values in the existing storage.

```
module-2# show dmm job job-id 1205521523 storage tgt-pwwn 44:f1:00:06:2b:04:00:00 vi-pwwn
26:72:00:0d:ec:4a:63:82

show dmm job job-id 1205521523 storage tgt-pwwn 0x44f100062b040000 vi-pwwn 0x2672000dec4a6382

Data Mobility Manager LUN Information
StoragePort: 00:00:04:2b:06:00:f1:44 VI : 82:63:4a:ec:0d:00:72:26

```



```
LUN Number: 0x0
VendorID : SANBlaze
ProductID : VLUN FC RAMDisk
SerialNum : 2fff00062b0e44f100000000
ID Len : 32
ID : 600062b0000e44f10000000000000000
Block Len : 512
Max LBA : 20971519
Size : 10.000000 GB
```

- Step 8** Correct the LUN size of the new storage so that it matches the LUN size of the existing storage, and then reconfigure the job.
- 

## Failure When Destroying a Job

This section helps you troubleshoot an error when the job destroy command displays an error.

The following example shows the failure that may occur during job destruction:

```
switch(config)# dmm module 1 job 1 start
switch(config)# dmm module 1 job 2 stop
switch(config)# dmm module 1 job 2 destroy
```

```
DMM Config Destroy error
```

If the job destroy command displays an error, there is a possibility that the job is still in progress and has not stopped. You can enter the job destroy command again to destroy the job completely.

## Troubleshooting Job Execution Issues

If a failure occurs during the execution of a data migration job, DMM halts the migration job and the job is placed in the Failed or Reset state.

The data migration job needs to be validated before restarting it. If the DMM job is in the Reset state, FC-Redirect entries are removed. In the DMM GUI, validation occurs automatically when you restart the job. In the CLI, you must be in the Reset state to validate the job. You cannot validate the job in a failed state.



**Note** If a new port becomes active in the same zone where a migration job is in progress, DMM generates a warning message in the system logs.

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## DMM Jobs in Fail State

If DMM encounters an SSM I/O error to the storage, the job is placed in the Failed state. [Table 5: DMM Jobs in the Failed State](#) lists possible solutions for jobs in the Failed state.

Table 5: DMM Jobs in the Failed State

| Symptom                   | Possible Cause                              | Solution                                                                                                                                                                                        |
|---------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM job status is Failed. | MSM-18/4 module or MDS 9222i switch failure | If the MSM-18/4 module or MDS 9222i switch has performed a reload, you must restart or reschedule all failed jobs when the MSM-18/4 module or MDS 9222i switch returns to an operational state. |
|                           | Server HBA port offline                     | Check the server status and server port status. When the server port is available, restart the migration.                                                                                       |
|                           | New storage port offline                    | Use Cisco Fabric Manager to determine why the storage port is no longer online. When the storage port is available, restart the migration.                                                      |
|                           | Server I/O failure                          | Check the DMM Job log for server I/O failures.                                                                                                                                                  |
|                           | Migration I/O failure                       | Check the DMM Job log for migration I/O failures.                                                                                                                                               |
|                           | Internal processing failure                 | Check the DMM Job log for internal processing errors.                                                                                                                                           |

## DMM Jobs in Reset State

Table 6: DMM Jobs in Reset State lists possible causes and solutions for jobs in the Reset state.

Table 6: DMM Jobs in Reset State

| Symptom                                                     | Possible Cause                                                          | Solution                                                                                                                                                                                         |
|-------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM Job fails to complete and is placed in the Reset state. | Server HBA port offline                                                 | Check the server status and server port status. When the server port is available, restart the migration.                                                                                        |
|                                                             | Existing or new storage port offline                                    | Use Fabric Manager to determine why the storage port is no longer online. When the storage port is available, restart the migration.                                                             |
|                                                             | Server or storage port is moved out of the zone                         | Correct the zone configuration and restart the data migration job.                                                                                                                               |
|                                                             | Existing Storage port is moved out of the zone                          | Correct the zone configuration and restart the data migration job.                                                                                                                               |
|                                                             | New Storage port is moved out of the zone                               | Correct the zone configuration and restart the data migration job.                                                                                                                               |
|                                                             | Loss of IP connectivity to the peer MSM-18/4 module or MDS 9222i switch | Restart the data migration job when IP connectivity has been restored.                                                                                                                           |
|                                                             | MSM-18/4 module or MDS 9222i switch failure                             | If the MSM-18/4 module or MDS 9222i switch has performed a reload, you must restart or reschedule all failed jobs when the MSM-18/4 module or MDS 9222i switch returns to the operational state. |
|                                                             | FC-Redirect failure                                                     | Default zone policy must be set to 'DENY' in the server storage port.                                                                                                                            |

# DMM Error Reason Codes

If DMM encounters an error while running the job creation wizard, a popup window displays the error reason code. Error reason codes are also captured in the Job Activity Log. [Table 7: DMM Error Codes](#) provides a description of the error codes.

**Table 7: DMM Error Codes**

| Error Code                           | Description                                                                                                                                                                                                                                                          |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM_JOB_NOT_PRESENT                  | A job with specified job ID was not found on the MSM-18/4 module or MDS 9222i switch.                                                                                                                                                                                |
| DMM_JOB_ID_DUPLICATE                 | Job creation using a job ID that already exists on the MSM-18/4 module or MDS 9222i switch.                                                                                                                                                                          |
| DMM_JOB_ID_ZERO                      | Job ID 0 is a invalid job ID.                                                                                                                                                                                                                                        |
| DMM_JOB_VSAN_MISMATCH                | Server port VSAN number and corresponding storage port VSAN number is different.                                                                                                                                                                                     |
| DMM_JOB_TYPE_MISMATCH                | MSM-18/4 module or MDS 9222i switch received a storage job query for a server-based job.                                                                                                                                                                             |
| DMM_JOB_CREATION_ERROR               | MSM-18/4 module or MDS 9222i switch failed while creating the data structures for the job, which could be a memory allocation failure.                                                                                                                               |
| DMM_JOB_INTERNAL_ERROR               | MSM-18/4 module or MDS 9222i switch failed while creating the data structures for the job, which could be a memory allocation failure.                                                                                                                               |
| DMM_JOB_SESSION_EXEC                 | Attempting to delete a job while one or more sessions are in progress. Stop the job first before trying to delete it.                                                                                                                                                |
| DMM_JOB_DPP_ALLOC_FAILURE            | No DPP available to create a job. The maximum number of allowed jobs on a DPP exceeded.                                                                                                                                                                              |
| DMM_JOB_INFRA_SETUP_ERROR            | Failed to set up infrastructure for a job. Possible causes are incorrect selection of server/storage port pairs, the server and existing storage ports are not zoned, or IP connectivity between MSM-18/4 modules or MDS 9222i switches is not configured correctly. |
| DMM_JOB_INFRA_REMOTE_LMAP_ERR_TCP_DN | Failure to establish connection with the peer MSM-18/4 module or MDS 9222i switch during job creation.                                                                                                                                                               |
| DMM_JOB_INFRA_FC_REDIRECT_SETUP_ERR  | Failed to install FC-Redirect entries for one or more server-storage pairs in the job.                                                                                                                                                                               |

| Error Code                         | Description                                                                                                                                                                                                                                                                       |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM_JOB_INFRA_DPP_DIED             | The DPP assigned to the job failed during job creation.                                                                                                                                                                                                                           |
| DMM_JOB_INFRA_NOT_ALLOWED          | The MSM-18/4 module or MDS 9222i switch was unable to create the job. Retry the job creation.                                                                                                                                                                                     |
| DMM_JOB_SRC_LUN_INFO_NOT_PRESENT   | A source LUN specified in the session was not discovered by the MSM-18/4 module or MDS 9222i switch. This error can occur when trying to restart or reschedule a job in the Reset state. A possible cause is a change in LUN inventory or LUN mapping on the storage device.      |
| DMM_JOB_DST_LUN_INFO_NOT_PRESENT   | A destination LUN specified in the session was not discovered by the MSM-18/4 module or MDS 9222i switch. This error can occur when trying to restart or reschedule a job in the Reset state. A possible cause is a change in LUN inventory or LUN mapping on the storage device. |
| DMM_VT_VSAN_DOWN                   | The storage VSAN is not operational or was suspended during job creation.                                                                                                                                                                                                         |
| DMM_VT_ISAPI_CREATION_FAILED       | Failed to create a virtual target corresponding to the storage port.                                                                                                                                                                                                              |
| DMM_FC_RDRT_NO_DNS_ENTRY           | FC-Redirect configuration failure. Storage/Server port not visible in Fibre Channel name Server on the MSM-18/4 module or MDS 9222i switch.                                                                                                                                       |
| DMM_FC_RDRT_NO_ZS_ENTRY            | <p>FC-Redirect configuration failure. The server and existing storage port are not zoned together.</p> <p>Delete the old zones involving any of the storage/host ports being used in the current migration job. Recreate the job.</p>                                             |
| DMM_FC_RDRT_INSTALL_ERROR          | FC-Redirect configuration could not be installed in the fabric. A possible cause is that Cisco Fabric Services is not enabled to distribute the FC-Redirect configuration.                                                                                                        |
| DMM_FC_RDRT_LUXOR_ACL_ERROR        | FC-Redirect failed to program a rewrite entry in the local MSM-18/4 module or MDS 9222i switch.                                                                                                                                                                                   |
| DMM_SRVR_VT_LOGIN_SRVR_LOGIN_ERROR | MSM-18/4 module or MDS 9222i switch failed to log or discover LUNs from the storage on behalf of the server. This can occur if the new storage access list is not programmed with the server pWWN, or there is no LUN mapping on the storage for the selected server.             |

| Error Code                        | Description                                                                                                                                                                                                                                                 |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM_SRVR_VT_LOGIN_VI_LOGIN_ERROR  | MSM-18/4 module or MDS 9222i switch Failed to log discover LUNs from the storage on behalf of the storage-based job VI. This can occur if the storage access list is not programmed with the VI pWWN, or there is no LUN mapping on the storage for the VI. |
| DMM_SRVR_VT_NO_PRLI_SRVR          | No PRLI was received from the server after a PLOGI from the server to the storage was accepted.                                                                                                                                                             |
| DMM_PREVIOUS_REQ_INPROGRESS       | The MSM-18/4 module or MDS 9222i switch cannot process a request because a previous operation on the job has not yet completed.                                                                                                                             |
| DMM_ITL_NOT_FOUND                 | This error may be generated when the user is performing manual correlation of the paths to a LUN from the DMM GUI. It is generated if a specified path (ITL) in the manual correlation has not be discovered by the MSM-18/4 module or MDS 9222i switch.    |
| DMM_ITL_NOT_FOUND_IN_NON_ASL_LIST | Attempt to resolve a LUN path that has not been classified as NON ASL.                                                                                                                                                                                      |
| DMM_ILLEGAL_REQ                   | The selected command cannot be performed in the current job state.                                                                                                                                                                                          |
| DMM_INIT_NOT_FOUND                | Failed to create a session because the server port is invalid.                                                                                                                                                                                              |
| DMM_SRC_TGT_NOT_FOUND             | Failed to create a session because the existing storage port is invalid.                                                                                                                                                                                    |
| DMM_DST_TGT_NOT_FOUND             | Failed to create a session because the new storage port is invalid.                                                                                                                                                                                         |
| DMM_ITL_NOT_FOUND_IN_GUI_ASL_LIST | Attempt to update a LUN path that has not been classified as GUI ASL.                                                                                                                                                                                       |
| DMM_ITL_FOUND_IN_AUTO_ASL_LIST    | Attempt to resolve a LUN path that has already been classified as AUTO ASL.                                                                                                                                                                                 |
| DMM_SRC_LUN_GREATER_THAN_DST      | Session creation failed because the source LUN has a greater size than the destination LUN.                                                                                                                                                                 |
| DMM_TGT_NOT_REACHABLE             | The storage port is offline.                                                                                                                                                                                                                                |
| DMM_SRC_TGT_NOT_ASL_CLASSIFIED    | Failure returned when trying to create a session with an source LUN that has not been classified as AUTO ASL or GUI ASL. Manual correlation is required to resolve multipathing for the LUN.                                                                |

| Error Code                         | Description                                                                                                                                                                                               |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM_DST_TGT_NOT_ASL_CLASSIFIED     | Failure returned when trying to create a session with an destination LUN that has not been classified as AUTO ASL or GUI ASL. Manual correlation is required to resolve multipathing for the LUN.         |
| DMM_SRC_LUN_ALREADY_EXISTS         | Failure returned when trying to create a session with an source LUN that has already been used in another session in the job.                                                                             |
| DMM_DST_LUN_ALREADY_EXISTS         | Failure returned when trying to create a session with an destination LUN that has already been used in another session in the job.                                                                        |
| DMM_VT_FC_REDIRECT_GET_CFG_ERR     | The MSM-18/4 module or MDS 9222i switch failed to retrieve the existing configuration from FC-Redirect. The FC-Redirect process may no longer be running on the supervisor module.                        |
| DMM_NO_LICENSE                     | No active DMM license is available on the MSM-18/4 module or MDS 9222i switch where the job is being created.                                                                                             |
| DMM_VI_NOT_SEEING_ANY_LUNS         | The storage job VI cannot see any LUNs from the existing and new storage ports. Possible causes – no access for VI pWWN on the storage ports or no LUN mapping for the VI on the storage ports.           |
| DMM_VI_NOT_SEEING_ES_LUNS          | The storage job VI cannot see any LUNs from the existing storage ports. Possible causes – no access for VI pWWN on the existing storage ports or no LUN Mapping for the VI on the existing storage ports. |
| DMM_VI_NOT_SEEING_NS_LUNS          | The storage job VI cannot see any LUNs from the new storage ports. Possible causes – no access for VI pWWN on the new storage ports or no LUN mapping for the VI on the new storage ports.                |
| DMM_NO_RESOURCES_TRY_LATER         | Failure returned for the verify operation if the shared MSM-18/4 module or MDS 9222i switch resources to verify are already being used by another job.                                                    |
| DMM_IT_PAIR_PRESENT_IN_ANOTHER_JOB | Failure returned for job create if the same server-storage port pair(s) is being used by an existing job.                                                                                                 |
| DMM_JOB_NO_OFFLINE_FOR_ASYNC       | Method-2 data migration does not support offline mode.                                                                                                                                                    |

| Error Code                                              | Description                                                                                                                                                                                              |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMM_PEER_IP_CONNECT_FAILURE                             | Failure to establish IP connection with peer MSM-18/4 module or MDS 9222i switch. Check IP configuration on both MSM-18/4 modules or MDS 9222i switches.                                                 |
| DMM_VPORT_IN_EXISTING_ZONE:Remove old Storage Job Zones | A zone created for a old storage type DMM job still exists. Once a storage job is deleted, the corresponding zone needs to be removed from the zone set. Delete zones for DMM jobs that no longer exist. |

