

Sun Storage 2500-M2 Arrays

Hardware Release Notes, Release 6.10



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Sun Storage 2500-M2 Arrays Hardware Release Notes

This document contains important release information about Oracle's Sun Storage 2500-M2 arrays managed by Sun Storage Common Array Manager (CAM), Version 6.10. Read this document so that you are aware of issues or requirements that can affect the installation and operation of the array.

The release notes consist of the following sections:

- "What's New in This Release" on page 1
- "Product Overview" on page 2
- "About the Management Software" on page 2
- "System Requirements" on page 3
- "Expansion Tray Specifications" on page 9
- "ALUA/TPGS Multipathing with VMware" on page 10
- "Restrictions and Known Issues" on page 12
- "Related Documentation" on page 28
- "Documentation, Support, and Training" on page 28

What's New in This Release

Array controller firmware version 07.84.53.10 is delivered with the CAM 6.10. It provides Sun Storage Common Array Manager enhancements and bug fixes as described in the *Sun Storage Common Array Manager Software Release Notes*.

Note – It is recommended that you avoid using disk drives with different spindle speeds in the same volume group. Doing so will impact system performance.

Product Overview

The Sun Storage 2500-M2 arrays are a family of storage products that provide high-capacity, high-reliability storage in a compact configuration. The controller tray, with two controller modules, provides the interface between a data host and the disk drives. Two array models and one expansion tray are offered:

- The Sun Storage 2540-M2 array provides a Fibre Channel (FC) connection between the data host and the controller tray at 8 Gbit/sec.
- The Sun Storage 2530-M2 array provides a Serial Attached SCSI (SAS) connection between the data host and the controller tray at 6 Gbit/sec.
- The Sun Storage 2501-M2 array expansion tray provides additional storage via SAS interface at 6 Gbit/sec. It is connected to either of the above controller tray models.

The Sun Storage 2500-M2 arrays are modular and rack-mountable in industry-standard cabinets. The arrays are scalable from a single controller tray configuration to a maximum configuration of one controller tray and seven expansion trays. The maximum configuration creates a storage array with a total of 96 drives connected to 2530-M2 or 2540-M2 controllers or a total of 192 drives connected to 4GB 2540-M2 controllers (available as an upgrade or with new 2540-M2 controllers).

Use the latest version of Sun Storage Common Array Manager to manage the arrays. See [“About the Management Software”](#) on page 2 for more information.

About the Management Software

Oracle’s Sun Storage Common Array Manager (CAM) software is a key component for the initial configuration, operation, and monitoring of Sun Storage 2500-M2 arrays hardware. It is installed on a management host cabled to the array via out-of-band Ethernet. **Note:** In-band management is also supported.

After downloading CAM, review the latest *Sun Storage Common Array Manager Quick Start Guide* and *Sun Storage Common Array Manager Installation and Setup Guide* to begin installation for Solaris OS hosts. For Linux and Windows host installation, refer to the *Sun Storage Common Array Manager Release Notes, Version 6.10*. CAM documentation can be found here:

<http://www.oracle.com/technetwork/documentation/disk-device-194280.html>

System Requirements

The software and hardware products that have been tested and qualified to work with Sun Storage 2500-M2 arrays are described in the following sections.

- “Firmware Requirements” on page 3
- “Supported Disk Drives and Tray Capacity” on page 4
- “Array Expansion Module Support” on page 4
- “Data Host Requirements” on page 4

Firmware Requirements

The Sun Storage 2500-M2 arrays firmware version 07.84.53.10 is delivered with Sun Storage Common Array Manager (CAM), Version 6.10. The firmware is bundled with the CAM software download package. Download the latest version of CAM as described in the *Sun Storage Common Array Manager Release Notes, Version 6.10*.

Before you perform an online controller firmware upgrade, read the article “Recommended Settings for the `fcplib_offline_delay` Variable When Upgrading a Sun Storage 6000, 2500, or 2500-M2 Controller Firmware” (Doc ID 1569976.1) located on MOS. This article describes how to modify fibre channel timeout values for Solaris SPARC and x86 hosts.

Note – Each array should be managed by one CAM management host only. Installing the management software on more than one host to manage the same array can cause discrepancies in the information reported by CAM.

Supported Disk Drives and Tray Capacity

See Hardware Specifications in the *Oracle System Handbook* for the latest disk drive information:

https://support.oracle.com/handbook_private/Systems/2530_M2/2530_M2.html

https://support.oracle.com/handbook_private/Systems/2540_M2/2540_M2.html

Array Expansion Module Support

The Sun Storage 2530-M2 and 2540-M2 arrays can be expanded by adding Sun Storage 2501-M2 array expansion trays. To add capacity to an array, refer to the following Service Advisor procedures:

- Adding Expansion Trays
- Upgrade Firmware



Caution – To add trays with existing stored data, contact My Oracle Support for assistance to avoid data loss.

TABLE 1 IOM Code for Sun Storage 2501-M2 Expansion Tray

Array Controller	Firmware	Supported Expansion Tray	IOM Code
Sun Storage 2500-M2	07.84.53.10	2501-M2*	0366

* Only 2501-M2 expansion trays are supported with a 2500-M2 controller tray

Data Host Requirements

- “Multipathing Software” on page 5
- “Supported Host Bus Adaptors (HBAs)” on page 6
- “Supported FC and Multilayer Switches” on page 8

Multipathing Software

You must install multipathing software on each data host that communicates with the Sun Storage 2500-M2 arrays.

- Download the latest RDAC/MPP or MPIO failover driver from MOS. You can link to the failover drivers and get additional multipathing information from the following documents:
 - *Sun Storage 2540-M2 Multipath Software Compatibility Matrix* (Doc ID 1508701.1)
<https://support.oracle.com/epmos/faces/DocContentDisplay?id=1508701.1>
 - *Sun Storage 2530-M2 Multipath Software Compatibility Matrix* (Doc ID 1509474.1)
<https://support.oracle.com/epmos/faces/DocContentDisplay?id=1509474.1>
- MPxIO driver is included with the Solaris OS

Note – Single path data connections are not recommended. For more information, see [“Single Path Data Connections”](#) on page 13.

TABLE 2 Supported Data Host OS and Multipathing Software

Operating System	Multipathing Software
Solaris 11 (initial)	MPxIO
Solaris 11 ALUA/TPGS	MPxIO (TPGS)
Solaris 10u5 (minimum*)	MPxIO
Oracle Linux 6.5, 6.4, 6.3, 6.2, 6.1, 6.0	RDAC or DMMP
Oracle Linux 5.9, 5.8, 5.7, 5.6, 5.5	RDAC
Oracle Unbreakable Linux	DMMP
Oracle Unbreakable Linux 2	
Oracle VM 3.1.1	DMMP
Oracle VM 2.2.2	RDAC
RHEL 6.5, 6.4, 6.3, 6.2, 6.1, 6.0	RDAC or DMMP
RHEL 5.9, 5.8, 5.8, 5.7, 5.6, 5.5	RDAC
SLES 10.4, 10.3, 10.2, 10.1, 10.0	RDAC or MPP
SLES 11.3, 11.2, 11.1, 11.0	RDAC or DMMP
VMware ESXi 4.1 update 1 and 5.0	Native Multipathing (NMP)

TABLE 2 Supported Data Host OS and Multipathing Software (*Continued*)

Operating System	Multipathing Software
Windows 2003 SP2 R2 Non-clustered	MPIO
Windows 2003/2008 MSCS Cluster	MPIO
Windows 2008 SP1 R2 (64-bit only)	MPIO

* Oracle recommends installing the latest Solaris update.

Supported Host Bus Adaptors (HBAs)

- HBAs must be ordered separately from Oracle or its respective manufacturers.
- To obtain the latest HBA firmware:
 - For Fibre Channel HBAs, download firmware from My Oracle Support using keyword "HBA".
 - For SAS HBAs, go to <http://www.lsi.com/sep/Pages/oracle/index.aspx>

TABLE 3 Supported Fibre Channel HBAs for Solaris Data Host Platforms

Oracle 2-Gbit HBAs	Oracle 4-Gbit HBAs	Oracle 8-Gbit HBAs
SG-XPCI1FC-QL2 (6767A)	SG-XPCIE1FC-QF4	SG-XPCIE1FC-QF8-Z
SG-XPCI2FC-QF2-Z (6768A)	SG-XPCIE2FC-QF4	SG-XPCIE2FC-QF8-Z
SG-XPCI1FC-EM2	SG-XPCIE1FC-EM4	SG-XPCIE1FC-EM8-Z
SG-XPCI2FC-EM2	SG-XPCIE2FC-EM4	SG-XPCIE2FC-EM8-Z
	SG-XPCI1FC-QF4	SG-XPCIEFCGBE-Q8
	SG-XPCI2FC-QF4	SG-XPCIEFCGBE-E8
	SG-XPCI1FC-EM4	
	SG-XPCI2FC-EM4	
	SG-XPCIE2FCGBE-Q-Z	
	SG-XPCIE2FCGBE-E-Z	

TABLE 4 Supported Fibre Channel HBAs for Linux Data Host Platforms

Generic HBAs	Oracle 2-Gbit HBAs	Oracle 4-Gbit HBAs	Oracle 8-Gbit HBAs
QLogic:	SG-XPCI1FC-EM2	SG-XPCIE1FC-QF4	SG-XPCIE1FC-QF8-Z
QLE 256x	SG-XPCI2FC-EM2	SG-XPCIE2FC-QF4	SG-XPCIE2FC-QF8-Z
QLE 246x	SG-XPCI1FC-QL2	SG-XPCIE1FC-EM4	SG-XPCIE1FC-EM8-Z
QLA 246x	SG-XPCI2FC-QF2-Z	SG-XPCIE2FC-EM4	SG-XPCIE2FC-EM8-Z
QLA 234x		SG-XPCI1FC-QF4	SG-XPCIEFCGBE-Q8
QLA 2310F		SG-XPCI2FC-QF4	SG-XPCIEFCGBE-E8
Emulex:		SG-XPCI1FC-EM4-Z	
LP982/LP9802/ 9802DC		SG-XPCI2FC-EM4-Z	
LP9002/LP9002DC /LP952		SG-XPCIE2FCGBE-Q-Z	
LP10000/10000DC/ LP1050		SG-XPCIE2FCGBE-E-Z	
Lpe11000/LPe11002 /LPe1150			
Lpe12000/LPe12002 /LPe1250			

TABLE 5 Supported Fibre Channel HBAs for Windows Data Host Platforms

Generic HBAs*	Sun 2-Gb HBAs	Sun 4-Gb HBAs	Sun 8-Gb HBAs
QLogic:	SG-XPCI1FC-EM2	SG-XPCIE1FC-QF4	SG-XPCIE1FC-QF8-Z
QLE 256x	SG-XPCI2FC-EM2	SG-XPCIE2FC-QF4	SG-XPCIE2FC-QF8-Z
QLE 246x	SG-XPCI1FC-QL2	SG-XPCIE1FC-EM4	SG-XPCIE1FC-EM8-Z
QLA 246x	SG-XPCI2FC-QF2-Z	SG-XPCIE2FC-EM4	SG-XPCIE2FC-EM8-Z
QLA 234x		SG-XPCI1FC-QF4	SG-XPCIEFCGBE-Q8
QLA 2310F		SG-XPCI2FC-QF4	SG-XPCIEFCGBE-E8
Emulex:		SG-XPCI1FC-EM4	
LPe12000/LPe12002/ LPe1250		SG-XPCI2FC-EM4	
Lpe11000/LPe11002/ LPe1150		SG-XPCIE2FCGBE-Q-Z	

TABLE 5 Supported Fibre Channel HBAs for Windows Data Host Platforms (*Continued*)

Generic HBAs*	Sun 2-Gb HBAs	Sun 4-Gb HBAs	Sun 8-Gb HBAs
LP11000/LP11002/L P1150		SG-XPCIE2FCGBE-E-Z	
LP9802/9802DC/982			
LP952/LP9002/LP90 02DC			
10000/10000DC/LP1 050			

* For generic HBA support, contact the HBA manufacturer.

TABLE 6 Supported SAS HBAs for Solaris and Linux Data Host Platforms

Oracle 3-Gbit HBAs (SAS-1)	Oracle 6-Gbit HBAs (SAS-2)*
SG-XPCIE8SAS-E-Z	SG(X)-SAS6-EXT-Z
SG-XPCIE8SAS-EB-Z	SG(X)-SAS6-EM-Z

* See "Restrictions" on page 13.

TABLE 7 Supported SAS HBAs for Microsoft Windows Data Host Platforms

Oracle 3-Gbit HBAs (SAS-1)	Oracle 6-Gbit HBAs (SAS-2)
SG-XPCIE8SAS-E-Z	SG(X)-SAS6-EXT-Z
	SG(X)-SAS6-EM-Z

Supported FC and Multilayer Switches

The following FC fabric and multilayer switches are compatible for connecting data hosts and the Sun Storage 2540-M2 array. See the release notes for your switch hardware for firmware support information.

- Brocade SilkWorm 200E/300/4100/4900/5000/5100/5300/7500/48000/DCX
- Cisco 9124/9134/9216/9216i/9222i/9506/9509/9513
- QLogic SANBox 5602/9000

Expansion Tray Specifications

The following information updates the specifications published in the *Sun Storage 2500-M2 Arrays Site Preparation Guide*.

TABLE 8 Physical Specifications

Expansion Tray	Height	Width	Depth	Weight—Maximum
2501-M2	3.4" (8.64 cm)	19" (48.26 cm)	21.75" (55.25 cm)	59.52 lb (27 kg)

TABLE 9 Maximum Power and Cooling Expansion Tray Specifications

Expansion Tray	KVA	Watts (AC)	BTU/Hr
2501-M2	0.276	276	945

ALUA/TPGS Multipathing with VMware

The following procedures describe how to enable ALUA/TPGS multipathing with VMware support to an array. Starting with firmware 07.84.44.10, multipathing to ALUA/TPGS-enabled arrays is provided by the VMW_SATP_ALUA plug-in. Arrays with firmware *previous* to 07.84.44.10 use the VMW_SATP_LSI plug-in.

Prerequisites:

- Array controller has firmware version *previous* to 07.84.44.10
- Array currently uses the standard VMW_SATP_LSI plug-in
- CAM management host is available
- All I/O to the array is stopped

Note – The path policy supported is Round-Robin (RR) or Most Recently Used (MRU).

Procedure for ESX4.1U2 and ESXi5.0

VMware versions ESX4.1u1/u2 and ESXi5.0 (and earlier) do not automatically enable ALUA/TPGS multipathing for arrays that offer this feature. You must manually enable multipathing as described below.

VID/PID values:

- 2540-M2 array—SUN/LCSM100_F
- 2530-M2 array—SUN/LCSM100_S

1. Install CAM software with firmware version 07.84.44.10 (minimum) on the management host.

2. To enable ALUA/TPGS multipathing support for ESX 4.1Ux or ESX 5.0:

- For ESX 4,1, open a terminal to the ESX host and run the commands:

```
# esxcli nmp satp deleterule -s VMW_SATP_LSI -V SUN -M  
LCSM100_F
```

```
# esxcli nmp satp addrule -s VMW_SATP_LSI -V SUN -M LCSM100_F  
-c tpgs_off
```

Reboot the ESX host.

- For ESXi 5.0, open a terminal to the ESX host and run the following command:
esxcli storage nmp satp rule add -s VMW_SATP_ALUA -V SUN
-M LCSM100_F -c tpgs_on
Reboot the ESX host.

3. Verify the claim rule is added in ESX.

For ESX 4.1:

- a. Show a list of all the claim rules:

```
# esxcli nmp satp listrules
```

- b. List only the claim rules for the VMW_SATP_LSI:

```
# esxcli nmp satp listrules -s VMW_SATP_LSI
```

- c. Verify the VID/PID is SUN/LCSM100_F for 2540-M2 (or SUN/LCSM100_S for 2530-M2) and the Claim Options flag tpgs_off is set.

For ESXi 5.0:

- a. Show a list of all the claim rules:

```
# esxcli storage nmp satp rule list
```

- b. List only the claim rules for the VMW_SATP_ALUA:

```
# esxcli storage nmp satp rule list -s VMW_SATP_ALUA
```

- c. Verify the VID/PID for VMW_SATP_ALUA is SUN/LCSM100_F for 2540-M2 (or SUN/LCSM100_S for 2530-M2) and the Claim Options flag tpgs_on is set.

4. Upgrade the controller firmware to 07.84.44.10 (minimum) and its corresponding NVSRAM version via the management host. The controller firmware and NVSRAM are part of the CAM baseline.

5. Using CAM, verify the VM host initiator host type is set to VMWARE. Starting with firmware 07.84.44.10, the VMWARE host type defaults to ALUA/TPGS multipathing.

6. On the ESX host, perform a manual re-scan.

7. Verify the 7.84 ALUA-enabled arrays have the VMW_SATP_ALUA plug-in, as follows.

- For ESX 4.1, run the command:

```
# esxcli nmp device list
```

- For ESXi 5.0, run the command:

```
# esxcli storage nmp device list
```

For LUNs from arrays with firmware version 07.84.44.10 (and later), the value is VMW_SATP_ALUA. For LUNs from arrays with firmware version *previous* to 07.84.44.10, the value is VMW_SATP_LSI.

Procedure for ESX4.1U3 and ESXi5.0U1

Starting with ESX4.1U3 and ESXi5.0 U1, VMware automatically enables the VMW_SATP_ALUA plug-in for arrays that offer ALUA/TPGS multipathing.

1. Install CAM software with firmware version 07.84.44.10 (minimum) on the management host.
2. Upgrade the controller firmware to 07.84.44.10 (minimum) and its corresponding NVSRAM version via the management host. The controller firmware and NVSRAM are part of the CAM baseline.
3. Using CAM, verify the VM host initiator host type is set to VMWARE. Starting with firmware 07.84.44.10, the VMWARE host type defaults to ALUA/TPGS multipathing.
4. On the ESX host, perform a manual re-scan.
5. Verify the VMW_SATP_ALUA plug-in is enabled.
 - For ESX 4.1, run the command:

```
# esxcli nmp device list
```
 - For ESXi 5.0, run the command:

```
# esxcli storage nmp device list
```

For LUNs from arrays with firmware version 07.84.44.10 (and later), the value is VMW_SATP_ALUA. For LUNs from arrays with firmware version *previous* to 07.84.44.10, the value is VMW_SATP_LSI.

Restrictions and Known Issues

The following are restrictions and known issues applicable to this product release.

- [“Restrictions” on page 13](#)
- [“Controller Issues” on page 13](#)
- [“Documentation Bugs” on page 27](#)

Restrictions

Single Path Data Connections

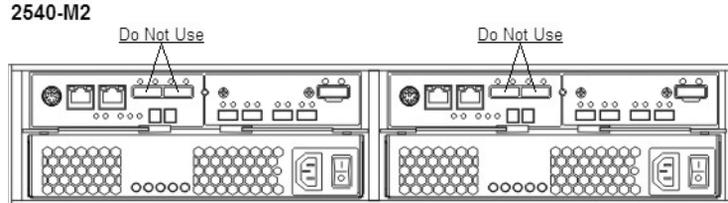
In a single path data connection, a group of heterogeneous servers is connected to an array through a single connection. Although this connection is technically possible, there is no redundancy, and a connection failure will result in loss of access to the array.



Caution – Because of the single point of failure, single path data connections are not recommended.

SAS Host Ports on the Sun Storage 2540-M2

Although SAS host ports are physically present on the Sun Storage 2540-M2 array controller tray, they are not for use, not supported, and are capped at the factory. The following figure shows the location of these ports. The Sun Storage 2540-M2 only supports Fibre Channel host connectivity.



Controller Issues

Log Events With smartd Monitoring Enabled

Bug 15693183 (7014293) – When volumes are mapped to a Linux host with smartd monitoring enabled, on either a Sun Storage 2500-M2 or 6780 array, it is possible to receive “IO FAILURE” and “Illegal Request ASC/ASCQ” log events. This bug has been observed on SLES 11.1, but occurs also on other Linux platforms and versions.

Workaround – Either disable smartd monitoring or disregard the messages. This is an issue with the host OS.

After Re-Installing the Oracle Virtual Machine (OVM) Manager, International Standards Organizations (ISO) Files Are Listed by Universally Unique Identifier (UUID) Rather Than by Friendly Name

Operating System

- Oracle OVM 3.0.3

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you re-install the OVM manager on the host using the same ID as the previous installation. ISO file systems that were imported with the previous OVM manager are now renamed with their UUIDs rather than their friendly names. This makes it difficult to identify the ISO file systems.

Workaround

None.

After Un-Mapping a Volume from an Oracle Virtual Machine (OVM) Server, the Volume Continues to Appear in the Storage Database on the Server

Operating System

- Oracle OVM 3.0.3 with the generic SCSI plug-in

Hardware/Software/Firmware

- All controllers

Problem or Restriction

This problem occurs when you un-map a volume on an OVM server. The OVM manager continues to show the volume along with those that are still mapped to the server. When you try to assign one of the affected volumes to a virtual machine, you see this error message:

```
disk doesn't exist
```

Workaround

After you un-map the volumes, use the OVM manager to remove those volumes from the storage database on the server.

In the Oracle Virtual Machine (OVM) Manager User Interface, Only One Drive at a Time Can Be Selected for Deletion

Operating System

- Oracle OVM 3.0.3 with the generic SCSI plug-in

Hardware/Software/Firmware

- All controllers

Problem or Restriction

In the OVM user interface, only one drive at a time can be selected for deletion.

Workaround

None.

Kernel Panics During Controller Firmware (CFW) Download

Operating System

- Oracle Linux 5.7 with UEK kernel release 2.6.32-200.13.1.el5uek

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you upgrade CFW. The kernel panics on an attached host when downloading the CFW and shows the following message:

```
Kernel panic - not syncing: Fatal exceptionBUG: unable to
handle kernel NULL pointer dereference at 0000000000000180IP:
[<ffffffff8123450a>] kref_get+0xc/0x2aPGD 3c275067 PUD 3c161067
PMD 00ops: 0000 [#1] SMPlast sysfs file: /sys/block/sdc/dev
```

Workaround

To avoid this problem, do not perform a CFW upgrade on a storage array that is attached to hosts running the affected operating system version. If the problems occurs, power cycle the host.

BCM Driver Fails to Load

Operating System

- Windows Server 2012 build 9200

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you attempt to install the BCM driver on a server. The driver installs, but the component reports one of the following errors:

This device is not configured correctly. (Code1)The system cannot find the file specified.

or

The drivers for this device are not installed. (Code 28)The system cannot find the file specified.

Workaround

None.

Kernel Panics During Controller Firmware Download

Operating System

- Oracle Linux 5.8 with UEK kernel release 2.6.32-300.10.1.el5uek
- Oracle Linux 6.2 with UEK kernel release 2.6.32-300.3.1.el6uek
- Device Mapper MultiPath release 0.4.9-23.0.9.el5 and release 0.4.9-46.0.1.el6

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you upgrade controller firmware. A host with the affected kernel with UEK support experiences a devloss error for one of the world-wide port numbers (WWPNs) followed by a kernel panic.

Workaround

To avoid this problem, upgrade the host kernel to release 2.6.32-300.23.1.

If the problems occurs, power cycle the host.

Network Interface on Device eth0 Fails to Come Online When Booting a Host

Operating System

- Oracle Linux 5.8 with UEK kernel release 2.6.32-300.10.1.el5uek

Hardware/Software/Firmware

- Controller firmware release 7.84

Problem or Restriction

This problem occurs during a host boot process when a large number (112+) of volumes are mapped to the host. At the point in the boot process where the network interface should be brought online, the host displays the following message:

```
Bringing up interface eth0: Device eth0 has different MAC  
address than expected. [FAILED]
```

The network interface does not come online during the boot process, and cannot subsequently be brought online.

Workaround

To avoid this problem, reduce the number of volumes mapped to host with the affected version of Oracle Linux. You can map additional volumes to the host after it boots.

When Over 128 Volumes are Mapped to a Host, Paths to Only the First 128 Volumes are Restored after the Controller is Reset

Operating System

- Oracle Linux 5.8 with UEK kernel release 2.6.32-300.10.1.el5uek

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you have more than 128 volumes mapped to a host, both controllers reboot, and only one controller comes back online. Only the first 128 volumes mapped to the host are accessible to the host for input/output (I/O) operations after the reboot. During the controller reboot, there might be a delay before any of the volumes are accessible to the host. I/O timeouts occur when the host tries to communicate with the inaccessible volumes.

Workaround

You can avoid this problem by mapping no more than 128 volumes to a host with the affected operating system release. If the problem occurs, run the multipath command again after the controller comes back online.

Tasks Aborts Are Logged During a Controller Firmware Upgrade

Operating System

- Red Hat Linux 6.2
- SuSe Enterprise Linux 11.2

Hardware/Software/Firmware

- Hosts attached through a SAS switch
- Controller firmware release 7.84

Problem or Restriction

This problem occurs during a controller firmware upgrade. The operating system logs task abort messages similar to those shown below.

```
May 3 21:30:51 ictc-eats kernel: [118114.764601] sd 0:0:101:3:
task abort: SUCCESS scmd(ffff88012383c6c0)May 3 21:30:51 ictc-
eats kernel: [118114.764606] sd 0:0:101:1: attempting task
abort! scmd(ffff88022705c0c0)May 3 21:30:51 ictc-eats kernel:
[118114.764609] sd 0:0:101:1: CDB: Test Unit Ready: 00 00 00 00
00 00May 3 21:30:51 ictc-eats kernel: [118114.764617] scsi
target0:0:101: handle(0x000c), sas_address(0x50080e51b0bae000),
phy(4)May 3 21:30:51 ictc-eats kernel: [118114.764620] scsi
target0:0:101: enclosure_logical_id(0x500062b10000a8ff), slot(4)
May 3 21:30:51 ictc-eats kernel: [118114.767084] sd 0:0:101:1:
task abort: SUCCESS scmd(ffff88022705c0c0)
```

You might experience input/output (I/O) timeouts or read/write errors after the upgrade.

Workaround

If this problem occurs, restart input/output operations. The affected resources will come back online without further intervention.

Unable to Add More Than 117 Volumes to the Oracle Virtual Machine (OVM) Manager Database

Operating System

- Oracle VM 3.0.3

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you attempt to add more than 117 volumes to the database of the OVM manager. When the OVM manager scans for the additional volumes, it returns the following error:

```
OSCPlugin.OperationFailedEx:'Unable to query ocfs2 devices'
```

Workaround

You can avoid this problem by deleting volumes from the OVM manager database when those volumes are no longer mapped to the OVM server.

Write-Back Cache is Disabled after Controllers Reboot with Multiple Failed Volumes in a Storage Array

Operating System

- All

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when power is turned off and then back on to a controller-drive tray while there are failed volumes in the storage array. When the controllers reboot after the power cycle, they attempt to flush restored cache data to disk. If the controllers are unable to flush the cache data because of failed volumes, all of the volumes in the storage array remain in write-through mode after the controllers reboot. This will cause a substantial reduction in performance on input/output operations.

Workaround

None.

During Multiple Node Failover/Failback Events, Input/Output (I/O) Operations Time Out Because a Resource is Not Available to a Cluster

Operating System

- Red Hat Enterprise Linux 6.2 with DMMP and SteelEye LifeKeeper Clustering application

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when a cluster loses access to a file system resource. A message similar to the following appears in the cluster log:

```
Device /dev/mapper/mpathaa not found. Will retry wait to see if
it appears.The device node /dev/mapper/mpathaa was not found or
did not appear in the udev create time limit of 60 secondsFri
Apr 27 18:45:08 CDT 2012 restore: END restore of file system
/home/smashmnt11 (err=1)ERROR: restore action failed for
resource /home/smashmnt11/opt/LifeKeeper/bin/lcdmachfail:
restore in parallel of resource "dmmp19021"has failed; will re-
try seriallyEND vertical parallel recovery with return code -1
```

You might experience I/O timeouts.

Workaround

If this problem occurs, restart I/O operations on the storage array.

After an NVSRAM Download, a Controller Reboots a Second Time when the NVSRAM is Activated

Operating System

- All

Hardware/Software/Firmware

- All controllers
- Controller firmware releases 7.80 through 7.84

Problem or Restriction

This problem occurs when a controller detects corruption in the signature of the NVSRAM loaded on the controller. The controller restores the NSVRAM from the physical drive, and then reboots.

Workaround

The controller recovers and continues normal operations.

When a Controller is Not Set Offline Before Being Replaced, an Exception Occurs when the Replacement Controller is Brought Online

Operating System

- All

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you fail to follow standard procedures when replacing a controller. If you do not set a controller offline before you replace it, and the replacement controller has a difference firmware level from the remaining controller, the firmware mismatch is not properly detected.

Workaround

You can avoid this problem by following the standard procedure for replacing a controller. If this problem occurs, the replacement controller reboots after the exception and the storage array returns to normal operations.

Input/Output (I/O) Errors Occur when Disconnection of Devices from a SAS Switch Is Not Detected

Operating System

- All

Hardware/Software/Firmware

- Controllers attached to hosts through SAS switches
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when there is a heavy load of I/O operations between hosts and storage arrays that are connected through a SAS switch. The switch fails to notify the host when a volume is no longer available. A host experiences I/O errors or application timeouts.

Workaround

To avoid this problem, reduce some or all of the following factors:

- The number of ports on the switch that are used or zoned
- The number of volumes mapped to hosts through the switch
- The throughput of I/O operations

A Path Failure and Premature Failover Occur when a Cable is Disconnected between a Host and a Controller

Operating System

- Red Hat Enterprise Linux operating systems with Device Mapper Multipath (DMMP)

Hardware/Software/Firmware

- Controller-drive trays with SAS host connections
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you disconnect a SAS cable between a controller and a host. Even if you reconnect the cable before the normal failover timeout, the path fails and the controller fails over to the alternate.

Workaround

If this problem occurs, reconnect the cable. The path will be restored.

Input/Output (I/O) Errors Occur when a Cable is Disconnected between a Host and a Controller, and the Alternate Controller is Unavailable

Operating System

- Red Hat Enterprise Linux operating systems with Device Mapper Multipath (DMMP)

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when the maximum number of volumes (256) is mapped to a host. If you disconnect the cable between a controller and a host, and then reconnect the cable, I/O errors occur if the alternate controller becomes unavailable before the host can rediscover all of the volumes on the connection.

Workaround

After some delay, the host will rediscover all of the volumes and normal operations will resume.

With 3 Gb/s SAS Host Bus Adapters (HBAs) and Heavy Input/Output (I/O), I/O Timeouts Occur During a Controller Firmware Upgrade

Operating System

- Red Hat Enterprise Linux operating systems with Device Mapper Multipath (DMMP)

Hardware/Software/Firmware

- Hosts with 3 Gb/s SAS host bus adapters
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when you upgrade controller firmware during a heavy load of I/O operations. The host experiences I/O timeouts during firmware activation.

Workaround

Do not perform an online controller firmware upgrade while the system is under heavy I/O load. If this problem occurs, restart I/O operations on the host.

Host Operating System Logs "Hung Task" During a Path Failure

Operating System

- Red Hat Enterprise Linux 5.0 and later with multipath proxy (MPP) driver

Hardware/Software/Firmware

- Hosts with SAS host bus adapters
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when there is a path failure through a host connection. The operating system logs a "Hung Task" message in `/var/log/messages` before the MPP driver marks the path failed and fails over to the alternate path.

Workaround

The logging of this message does not affect normal operation. You can disable the log message by entering the following command on the host command line:

```
echo 0 > /proc/sys/kernel/hung_task_timeout_secs
```

Backup Failure or I/O Errors with Snapshot Creation or Mounting Failure During Backup of Cluster Shared Volumes (CSV)

Operating System

- Windows 2008 R2 Server (all editions) running Hyper-V cluster with CSV

Problem or Restriction

This problem occurs when a backup operation of CSVs begins. The backup application talks to the VSS provider and initiates the backup operation. The creation of a snapshot volume or mounting of a snapshot volume fails. The backup application then tries to backup the CSVs instead of a snapshot of the CSVs. If the Retry option is set with lock, the application hosted on the CSVs or data written to or read from these volumes might throw an error. If the Retry option is set without lock, the backup skips files. This error occurs because the backup application and the application hosted on the CSVs or data being written to or read from the CSVs tries to "lock" the volume or file, which results in a conflict.

Users encounter this issue whenever there is a resource conflict between the backup operation and the application trying to perform write or read operations to the volume undergoing a backup operation.

Depending on the option the customers choose, the backup operation reports one of these conditions:

- Skipped files
- Application reports errors
- Write or read operation to the volume under backup reports errors

Workaround

Run the backup operation at a time when the application is not doing write or read intensive work on the CSV undergoing backup.

Also, when using the option "Without Lock," files will be skipped and the user can then create another backup operation with the skipped files. For more information, see <http://www.symantec.com/docs/TECH195868>

With Multiple SAS Hosts Using Single-PHY, a Host Cable Pull During Input/Output (I/O) Operations Causes a Controller Reboot

Operating System

- All

Hardware/Software/Firmware

- Controllers with SAS host connections
- Controller firmware release 7.84

Problem or Restriction

This problem rarely occurs when multiple hosts are connected by a quadfurcated cable to a single wide port on the controller. If the cable is disconnected, the controller reboots.

Workaround

The controller reboots and return to normal operations when the cable is reconnected.

Data is Misread when a Physical Drive Has an Unreadable Sector

Operating System

- Red Hat Enterprise Linux 6.x

Hardware/Software/Firmware

- All controllers
- Controller firmware release 7.84

Problem or Restriction

This problem occurs when issuing a read to a location where the length of the read includes an unreadable sector. The host operating system assumes that data up to the unreadable sector was read correctly, but this might not be the case. A bug has been opened with Red Hat: http://bugzilla.redhat.com/show_bug.cgi?id=845135

Workaround

Replace any drives that have media errors.

Solaris 10 Guest in Fault Tolerant Mode Is Unable to Relocate Secondary Virtual Machine (VM) Upon Host Failure

Operating System

- Solaris 10 VM

Hardware/Software/Firmware

- ESXi 5.1 hosts in HA cluster configuration configured in fault tolerant mode with heavy I/O

Problem or Restriction

This problem occurs when the host fails while the host was running a secondary VM for a Solaris 10 (u10) guest. The message in the event log for that VM that reads as follows:

```
No compatible host for the Fault Tolerant secondary VM
```

When this problem occurs, the secondary VM for the guest is stuck in an Unknown status and cannot re-enable Fault Tolerance for this VM. An attempt to disable and then re-enable Fault Tolerance fails because it cannot relocate the secondary VM from a host that is not responding. Also Fault Tolerance cannot be completely turned off on the VM for the same reason.

The main problem is that the HA service reports that there are not enough resources available to restart the secondary VM. However, even after reducing all used resources in the cluster to a level so that there is an overabundance of resources, the

HA service still reports that there are not enough and therefore no available host in the cluster on which to run the secondary VM. After the VM fails completely, however, the VM can be restarted and put into Fault Tolerance mode again.

The shutdown of the VM is something that always happens if a Fault Tolerance enabled VM is running unprotected without a linked secondary VM and the host on which the primary VM is running fails for any reason. The failure of the secondary VM in a node failure scenario for Solaris 10 guests can be regularly reproduced.

When a node failure happens, the customer sees that Solaris 10 guests can have issues restoring a secondary VM for Fault Tolerance enabled VMs. This is seen by reviewing the vSphere client in the cluster VM view as well as in the event log for the VM.

Workaround

In most cases, the customer can correct the problem by performing one of the following actions in the order shown. Perform one action and if that does not work, proceed to the next until the problem is resolved.

1. Disable and re-enable fault tolerance on the affected VM.
2. Turn off fault tolerance for the VM altogether and turn it back on.
3. Attempt to live vMotion the VM and try action 1 and action 2 again.

It is possible that either the host CPU model is not compatible with turning Fault Tolerance off and on for running VMs, or that, even after performing the previous action, a secondary VM still does not start. If the secondary VM does not start, the customer needs to briefly shut down the affected VM, perform action 2, and then restart the VM.

Documentation Bugs

Hardware Installation Guide

Page 38 of the *Sun Storage 2500-M2 Arrays Hardware Installation Guide* mistakenly refers to AIX and HP-UX as supported data host platforms. Disregard HP-UX and AIX referenced in the following note:

"The data host multipathing software for Red Hat Linux, HP-UX, AIX, and Windows platforms is Sun Redundant Dual Array Controller (RDAC), also known as MPP."

Related Documentation

Product documentation for Sun Storage 2500-M2 arrays is available at:

<http://www.oracle.com/technetwork/documentation/oracle-unified-ss-193371.html>

Product documentation for Sun Storage Common Array Manager is available at:<http://www.oracle.com/technetwork/documentation/disk-device-194280.html>

TABLE 10 Related Documentation

Topic	Title
Review safety information	<i>Sun Storage 2500-M2 Arrays Safety and Compliance Manual Important Safety Information for Sun Hardware Systems</i>
Review known issues and workarounds	<i>Sun Storage Common Array Manager Release Notes</i>
Prepare the site	<i>Sun Storage 2500-M2 Arrays Site Preparation Guide</i>
Install the support rails	<i>Sun Storage 2500-M2 Arrays Support Rail Installation Guide</i>
Install the array	<i>Sun Storage 2500-M2 Arrays Hardware Installation Guide</i>
Get started with the management software	<i>Sun Storage Common Array Manager Quick Start Guide</i>
Install the management software	<i>Sun Storage Common Array Manager Installation and Setup Guide</i>
Manage the array	<i>Sun Storage Common Array Manager Array Administration Guide Sun Storage Common Array Manager CLI Guide</i>
Install and configure Multipath failover drivers	<i>Sun StorageTek MPIO Device Specific Module Installation Guide For Microsoft Windows OS Sun StorageTek RDAC Multipath Failover Driver Installation Guide For Linux OS</i>

Documentation, Support, and Training

These web sites provide additional resources:

- Documentation

<http://www.oracle.com/technetwork/indexes/documentation/\tindex.html>

- Support

<https://support.oracle.com>

- Training

<https://education.oracle.com>

