DELL PowerVault MD3200/MD3220 Series of Storage Arrays

A Dell Transition Guide
Version 1.0

THIS TRANSITION GUIDE IS FOR INFORMATIONAL PURPOSES ONLY, AND MAY CONTAIN TYPOGRAPHICAL ERRORS AND TECHNICAL INACCURACIES. THE CONTENT IS PROVIDED AS IS, WITHOUT EXPRESS OR IMPLIED WARRANTIES OF ANY KIND.

© 2010 Dell Inc. All rights reserved. Reproduction of this material in any manner whatsoever without the express written permission of Dell Inc. is strictly forbidden. For more information, contact Dell.

Dell, the *DELL* logo, and the *DELL* badge, *PowerConnect*, and *PowerVault* are trademarks of Dell Inc. *Microsoft*, *Windows*, *Windows Server* and Hyper-V are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

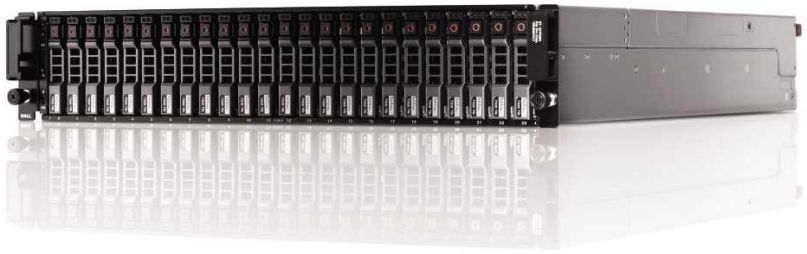
June 2010

Contents

What's New?....4
Comparison of MD3200 and MD3220 to the previous MD3000....5
Product Positioning....5
Dell SAN Portfolio....6
Dell NAS Portfolion....6
PowerVault™ MD3200 and MD3220 Product Features Summary....7
Product Overview....8
MD3200 and MD3220 Front View....8
Back View....9
Solution Configurations....9
Dual Controller Configurations:....11
Connecting Hosts and Enclosures....12
Mini-SAS Cable Transition....12
Product Support....12
Host Bus Adapter (HBA)....12
Server Support....13
Management Software Support....13
Operating System Support....14
Drive Support....14
MD3200 and MD3220 Drive Support....14
Accessing a MD3200/MD3220 and MD3000 from the Same Server....15

Dell™ worldwide introduction of the next generation PowerVault™ MD3200 and MD3220 External RAID arrays is on June 15, 2010. This document is intended as guidance for a product transition from Dell's MD3000 to the new MD3200 and/or MD3220.

Dell PowerVault MD3200 and MD3220 RAID arrays provide 6Gb/s SAS (SAS 2.0) performance capability and increased flexibility and scalability to the PowerVault array family. These arrays will connect to supported PowerEdge™ servers using the 6Gb SAS HBA.



What's New?

The PowerVault™ MD3200 and MD3220 series arrays offer the following new features:

- **2X performance improvements over MD3000**
    - Up to 2,000MB/s RAID5 sequential reads
    - Up to 30K RAID5 random disk reads
- **Four models to choose from:**
    - A cost effective, high capacity model (MD3200): Single controller with 2GB of battery backed cache and four 6Gb SAS host ports housed in a 2U, 12 drive 3.5" HDD enclosure. (directly connect up to 4 non –HA servers)
    - A highly available, high capacity model (MD3200): Dual active/active controllers with a total of 4GB mirrored battery backed cache and a total of eight 6Gb SAS ports housed in a 2U, 12 drive 3.5" HDD enclosure. (directly connect up to 8 non-HA servers or 4 HA servers)
    - A cost effective, high performance model (MD3220): Single controller with 2GB of battery backed cache and four 6Gb SAS host ports housed in a 2U, 24 drive 2.5" HDD enclosure. (directly connect up to 4 non –HA servers)
    - A highly available, high performance model (MD3220): Dual active/active controllers with a total of 4GB mirrored battery backed cache and a total of eight 6Gb SAS ports housed in a 2U, 24 drive 2.5" HDD enclosure. (directly connect up to 8 non-HA servers or 4 HA servers)
- **Support for SAS, near-line SAS and Solid state disk drives**
    - The ability to mix SAS, near-line SAS and SSD drives within the same enclosure supports a user's ability to blend drives to best suit their applications' storage needs across three tiers of performance offerings
- **Expansion to 96 HDD**
    - Additional expansion using MD1200 and/or MD1220 6Gb SAS enclosures for a maximum of 96 hard disk drives.
    - Enclosures can be mixed behind base models to achieve the highest level of drive tiering
- **Support for self-encrypting drives (SED) for securing data at rest**
    - Provides security for data at rest via encryption at the HDD level
- **Turbo performance premium feature key**
    - Increases throughput up to 2X and random IO operations up to 33% over base models.

Comparison of MD3200 and MD3220 to the previous MD3000

Feature	MD3200	MD3220	MD3000
Number of controllers	Single or Dual	Single or Dual	Dual Only
Host ports/controller	4	4	2
Maximum hosts in a dual cntrl system	4 - HA 8 - non HA	4 - HA 8 - non HA	2 - HA 4 - non HA
Cache/controller	2GB	2GB	512MB
Drives/enclosure	12, 3.5" in 2U	24, 2.5" in 2U	15, 3.5" in 3U
Maximum HDD count	96	96	45
Expansion enclosures	MD1200 and MD1220	MD1200 and MD1220	MD1000
Enclosure mixing	Yes	Yes	N/A
HDD supported	SSD, SAS, NL-SAS	SSD, SAS, NL-SAS	SAS & SATA
HDD mixing in enclosures	Yes	Yes	Yes
HDD carriers	11G server design	11G server design	9G/10G server design
SAS cables	8088 mini - SAS connectors	8088 mini - SAS connectors	8047 SAS connectors
HBA support	6Gb SAS HBA	6Gb SAS HBA	SAS 5/E HBA
Turbo Performance	Premium Feature	Premium Feature	N/A

Product Positioning

As the next generation of PowerVault non-networked shared storage systems, the MD3200 series replaces the MD3000 in the product portfolio. When looking at Dell's portfolio of external RAID storage products, the MD3200 series is positioned below the MD3200i series because of its lack of network connectivity and

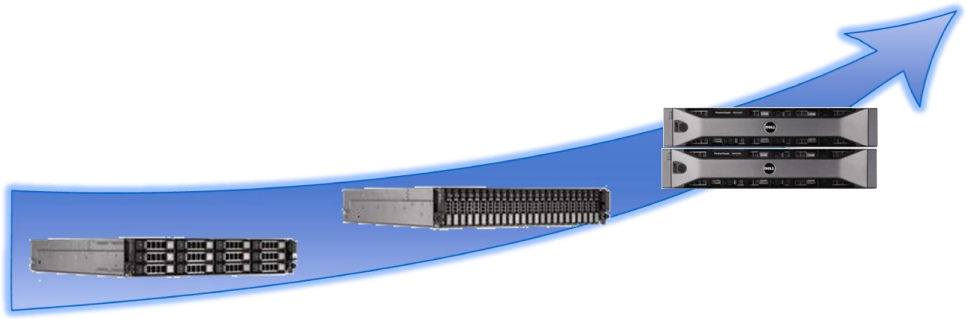
the limited number of hosts supported by the products. Because the MD3200 and MD3200i series of products share a common controller architecture, both products have similar features and functions with the main difference being the number of servers that can connect to the systems and the throughput performance differences resulting from the different host connection technologies. When positioned against Dell's enclosure portfolio, the MD3200 series of products is positioned above the JBOD offerings because of its ability to offer true high availability with no single point of failure and be shared across a greater number of servers.

The MD3200 series of products is a PowerEdge-centric storage solution that shares common hard disk drives with the servers and capacity expansion via the MD1200 and MD1220 drive enclosures.

Dell SAN Portfolio

MD3200i Series	AX Series	PS Series	CX Series
Complement your PowerEdge server with affordable storage	Remote site and work-group storage with CX management	Enterprise-class, scale-out storage optimized for virtual servers and data consolidation	Enterprise-class Multi-protocol, massive capacity for the core of your business

Dell NAS Portfolion



MD1200	MD1220	MD3200 Series
High capacity server & storage expansion	High performance server & storage expansion	Storage array for low cost clustering & virtualization

PowerVault™ MD3200 and MD3220 Product Features Summary

Feature	MD3200	MD3220
Rack Height	2U	2U
Host interface technology	6Gb/s SAS (SAS 2.0)	6Gb/s SAS (SAS 2.0)
Controllers per system	Single or Dual	Single or Dual
Host ports per controller	4	4
Cache per controller	2GB	2GB
Number of Drive bays	12 – 3.5”	24 – 2.5”
Expandability	96 HDD Expand with MD1200 or MD1220 enclosures Enclosures can be mix for expansion	96 HDD Expand with MD1200 or MD1220 enclosures Enclosures can be mix for expansion
Manageability	2nd generation MDSM	2nd generation MDSM
Drive Support	SAS, NL-SAS and SAS SSD	SAS, NL-SAS and SAS SSD
Host Bus Adapter	6Gb SAS HBA	6Gb SAS HBA
Cluster Support	Yes	Yes
Rack or Stand alone Tower	Rack Only	Rack Only
Drive Hot Plug support	Yes	Yes
Snap Shot	8/LUN, 128/system	8/LUN, 128/system
Virtual Disk Copy	8 simultaneous, 255/system	8 simultaneous, 255/system
Turbo Performance Key	Yes	Yes

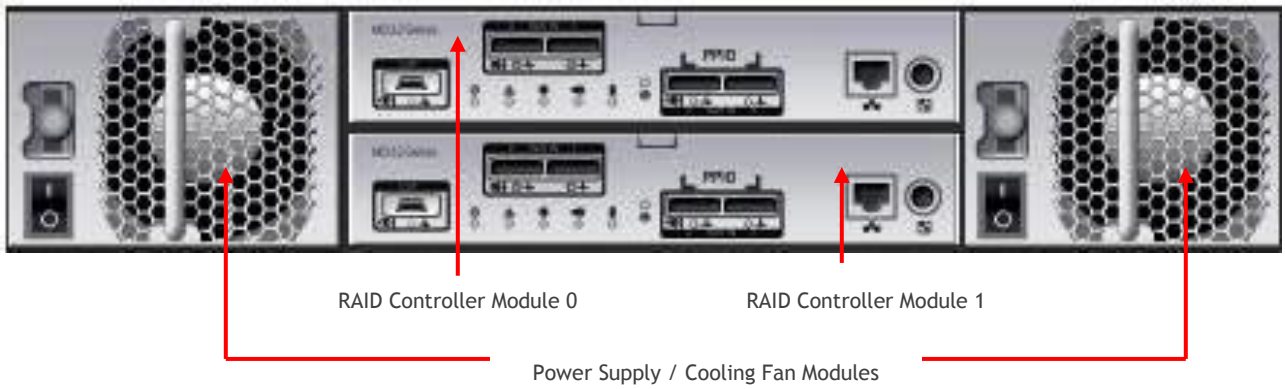
Feature	MD3200	MD3220
Hot Plug Fans/blowers	Yes – Dual combined fan/power supply module	Yes – Dual combined fan/power supply module
Hot Plug Power supplies	Yes – Dual combined fan/power supply module	Yes – Dual combined fan/power supply module
Power Supply configurations	Redundant Auto-Sensing	Redundant Auto-Sensing
Fans/blowers	Redundant	Redundant
Chassis Dimensions	Height 8.68 cm (3.41 inches) Width 44.63 cm (17.57 inches) Depth 60.20 cm (23.70 inches)	Height 8.68 cm (3.41 inches) Width 44.63 cm (17.57 inches) Depth 54.90 cm (21.61 inches)
Weight	Weight (max config) 29.3 kg (64.6 lb) Weight (empty) 8.84 kg (19.5 lb)	Weight (max config) 24.2 kg (53.4 lb) Weight (empty) 8.61 kg (19 lb)

Product Overview

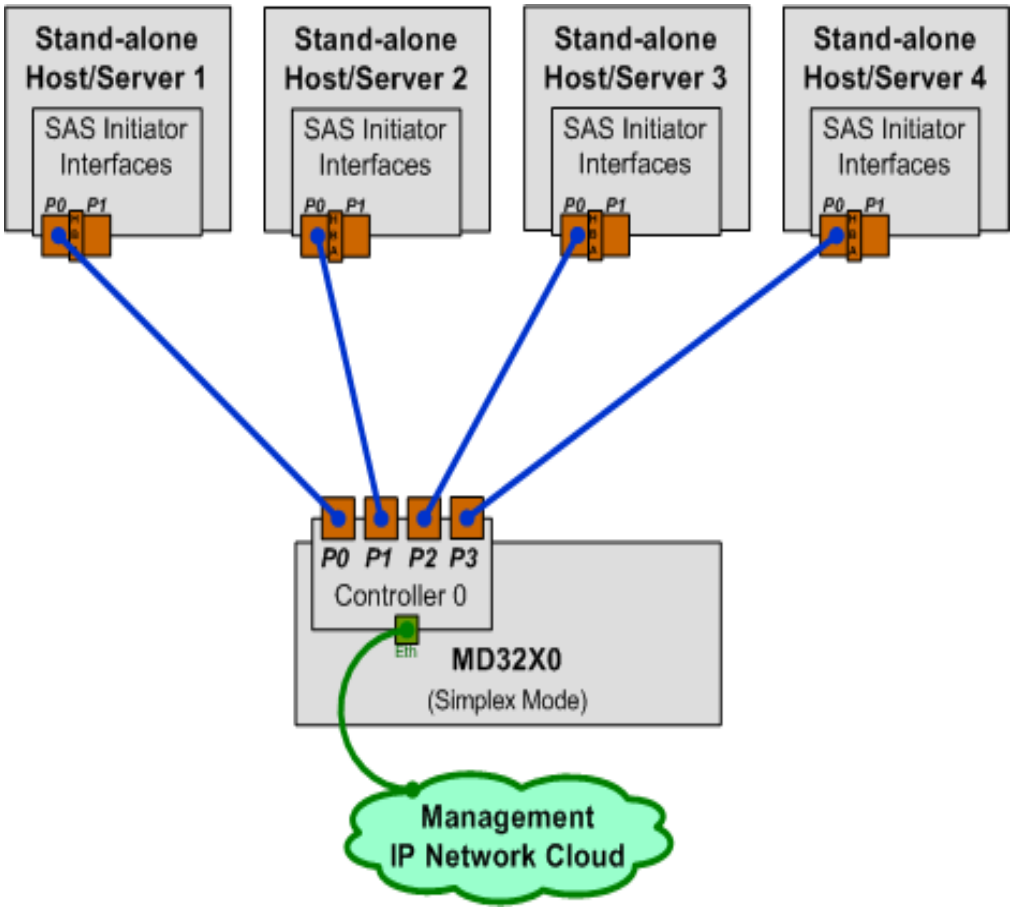
MD3200 and MD3220 Front View

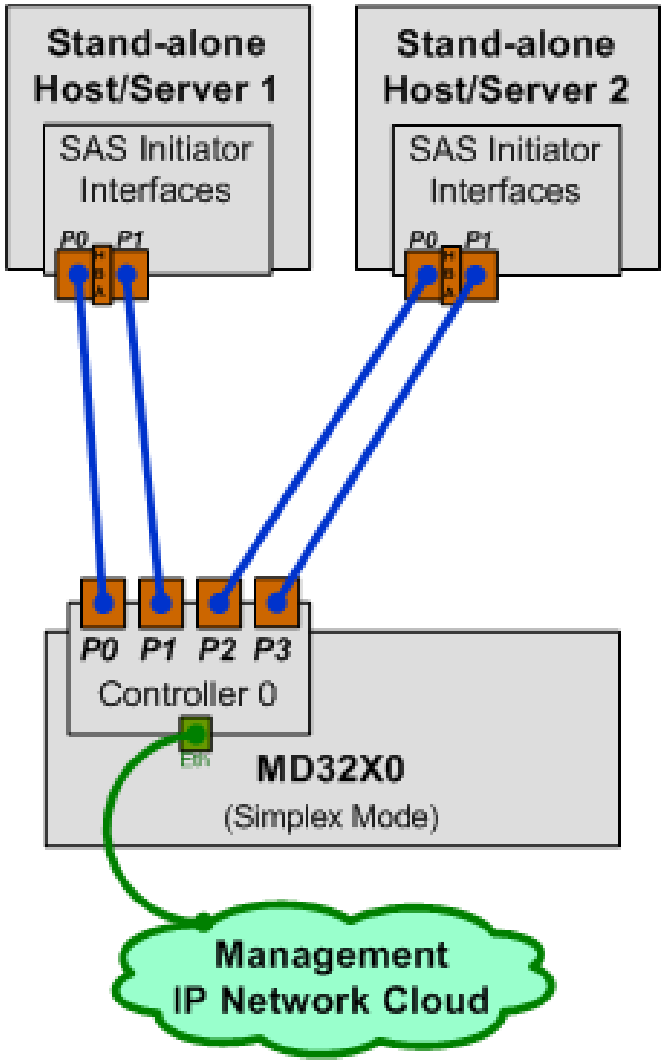
Back View

MD3200 and MD3220 Back View

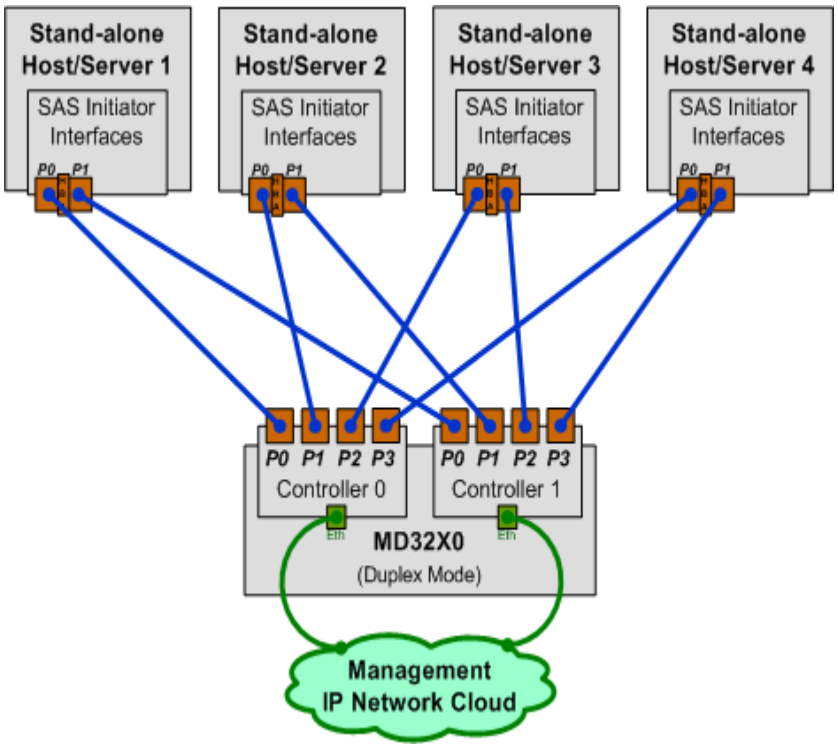


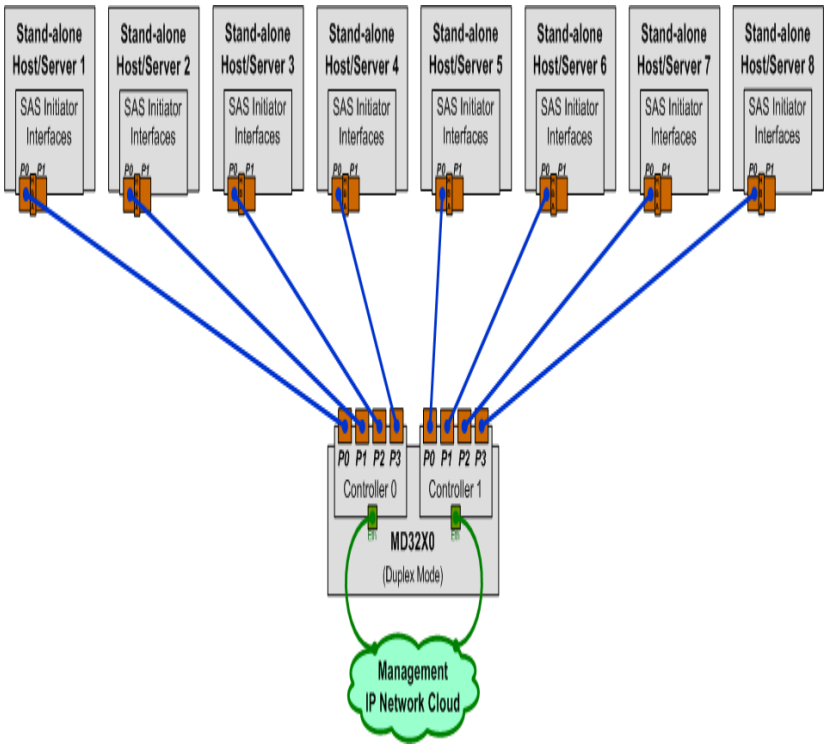
Solution Configurations




Stand-alone Host/Server 1
SAS Initiator Interfaces
P0
P1
Stand-alone Host/Server 2
SAS Initiator Interfaces
P0
P1
P0 P1 P2 P3
Controller 0
MD32X0
(Simplex Mode)
Management IP Network Cloud

Dual Controller Configurations:





Connecting Hosts and Enclosures

Dell™ PowerVault™ MD3200 and MD3220 arrays standardize on the 6Gb/s (SAS 2.0) Mini-SAS cable (SFF 8088). The Mini-SAS cable is unique from the SAS cable used with the previous generation Dell™ PowerVault™ MD3000.

Mini-SAS Cable Transition

SAS to SAS
3Gb Cable
MD3000 / MD3000i
MD1000 / MD1120

Mini-SAS to Mini-SAS
6Gb Cable
MD32X0 / MD32X0i
MD1200 / MD1220

- Connectors on both ends of the SAS cable are universally keyed. Either end of the cable can be connected to the 6Gb SAS HBA, MD32X0 array or MD1200/MD1220 expansion enclosures.

- To remove the SAS cable, pull the pull-tab to release the cable from the SAS connector.

Product Support

Host Bus Adapter (HBA)

The PowerVault™ MD3200 and MD3220 require the 6Gb SAS HBA for server connectivity. The 3Gb SAS 5/E HBA is not support with the MD3200 and MD3220 RAID arrays.

Server Support

Refer to the Table below for PowerEdge™ Servers that support the 6Gb SAS HBA. For the latest server support matrix, visit the MD3200 web page.

R910	R410
R905	R210
R900	PE2970
R815	PE2950 III
R810	PE1950 III
R805	T710
R715	T610
R710	T410
R610	T310
R510	PE2900 III

Management Software Support

The Dell™ PowerVault™ MD3200 and MD3220 arrays are managed via the 2nd generation MD Storage Manager software provided on the Resource DVD that shipped with the product. This software is backwards with earlier version of the MD3000 allowing a single pane view to monitor all of your MD External RAID Array systems.

Operating System Support

Below is the list of operating systems the MD3200 and MD3220 RAID arrays will support at initial product launch. Please visit the MD3200 web page for the most up to date list of supported operating systems.

Operating System
Microsoft Windows 2008 R1 and R2 (Windows 7)
Microsoft Windows Essential Business Server 64 bit
Microsoft Windows 2003 SP2 and R2
Microsoft Windows Storage Server 2008
Microsoft Windows Storage Server 2003 R2 and SP2
Windows Vista for management station only
Windows 7 for management station only
Windows XP Professional SP3 for management station only
Red Hat Enterprise Linux 5.4
Red Hat Enterprise Linux 5.5
SuSE Linux Enterprise Server 10.3
SusE Linux Enterprise Server 11 and update 1
VMware ESX 4.1
Microsoft Windows 2008 Hyper-V Server
XenServer 5.5 U2 Enterprise Edition
XenServer Express Edition

Drive Support

Dell™ PowerVault™ MD3200 and MD3220 RAID arrays support SAS hot-pluggable HDDs (hard-disk drives) and SSD (solid-state drives). Refer to Table below for Drive Support details.

MD3200 and MD3220 Drive Support

Form Factor	Speed (rpm)	Capacity (GB)
2.5" SAS HDDs up to 6Gb/s SSDs up to 3Gb/s	7,200	500 GB
	10,000	146 GB 300 GB 600GB (post RTS)
	15,000	73 GB 146 GB
	SSD	150 GB
3.5" SAS HDDs up to 6Gb/s	7,200	500 GB 1 TB 2 TB
	15,000	300 GB 450 GB 600

- SATA interface drives are not supported with the PowerVault™ MD3200 and MD3220 enclosures.

Accessing a MD3200/MD3220 and MD3000 from the Same Server

It is possible to have a single server accessing both an MD3200 and an MD3000 running certain operating systems. The following limitations apply to co-existence.

- Requires the MD3000 to be at RC2 firmware version
- Requires both arrays to be connected to a 6Gb SAS HBA. (i.e. no mixing of 6Gb SAS HBAs and SAS 5/E HBAs in a server)
- Requires the operating system to be support on both platforms
- Linux operating systems are limited to the versions of Linux that use Device Mapper (DM) and the multi-pathing driver.
    - RHEL 5.4 and 5.5
    - SLES 10 SP3 and 11 with update 1.