DELL PowerVault MD3200i/MD3220i Series of Storage Arrays

A Dell Transition Guide
Version 1.0

June 2010

Contents

Introduction

Dell™ worldwide introduction of the next generation PowerVault™ MD3200i and MD3220i iSCSI SAN arrays is on June 15, 2010. This document is intended as guidance for a product transition from Dell's MD3000i to the new MD3200i and/or MD3220i.

Dell PowerVault MD3200i and MD3220i iSCSI SAN arrays provide improved performance, capability and increased flexibility and scalability to the PowerVault array family.

What's New?

The PowerVault™ MD3200i and MD3220i offer the following new features:

- **2X performance improvements over MD3000i**

    o Up to 800MB/s RAID5 sequential reads

    o Up to 30K RAID5 random disk reads

- **Four models to choose from:**

    o A cost effective, high capacity model (MD3200i): Single controller with 2GB of battery backed cache and four 1Gb Ethernet host ports housed in a 6Gb SAS 2U, 12 drive 3.5" HDD enclosure. (directly connect up to 4 non –HA physical servers or up to 32 non-HA physical servers with an Ethernet switch)

    o A highly available, high capacity model (MD3200i): Dual active/active controllers with a total of 4GB mirrored battery backed cache and a total of eight 1Gb Ethernet ports housed in a 6Gb SAS 2U, 12 drive 3.5" HDD enclosure. (directly connect up to 8 non-HA physical servers or 4 HA physical servers or up to 32 HA physical servers with Ethernet switches)

    o A cost effective, high performance model (MD3220i): Single controller with 2GB of battery backed cache and four 1Gb Ethernet host ports housed in a 6Gb SAS 2U, 24 drive 2.5" HDD enclosure. (directly connect up to 4 non –HA physical servers or up to 32 non-HA physical servers with an Ethernet switch)

    o A highly available, high performance model (MD3220i): Dual active/active controllers with a total of 4GB mirrored battery backed cache and a total of eight 1Gb Ethernet ports housed in a 6Gb SAS 2U, 24 drive 2.5" HDD enclosure. (directly connect up to 8 non-HA physical servers or 4 HA physical servers or up to 32 HA physical servers with Ethernet switches)

- **Support for SAS, near-line SAS and Solid state disk drives**

    o 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**

    o Additional expansion using MD1200 and/or MD1220 6Gb SAS enclosures for a maximum of 96 hard disk drives.

    o 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**

    o Provides security for data at rest via encryption at the HDD level

- **Turbo performance premium feature key**

    o Increases random IO operations up to 33% over base models.

Comparison of MD3200i and MD3220i to the previous MD3000i

Feature	MD3200i	MD3220i	MD3000i
Number of controllers	Single or Dual	Single or Dual	Single or Dual
Host ports/controller	4	4	2
Maximum servers	32	32	16
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
Turbo Performance	Premium Feature	Premium Feature	N/A

Product Positioning

As the next generation of PowerVault SAN storage, the MD3200i series replaces the MD3000i in the product portfolio. The MD3200i series is positioned above the MD3200 series because of the network connectivity and the increased number of hosts supported by the products. Because the MD3200i and MD3200 shares a common controller architecture, both products are similar when it comes to features and functions with the main difference being the MD3200i products are purpose-built IP SAN arrays.

The MD3200i series is positioned as an entry-level SAN array targeted at small and medium sized businesses, public education and local governments that have a need for networked storage but lack the financial resources to invest in a Fibre Channel SAN. The MD3200i series can also be an ideal storage solution for larger organizations that require a lower cost networked storage solution that can be deployed in remote/departmental locations or as a second tier SAN in a more centralized location to provide storage for servers whose application value doesn't justify the higher cost of connecting to a Fibre Channel SAN.

The MD3200i series is mostly a PowerEdge-centric storage solution although it can support heterogeneous x86 servers. The MD3200i series enjoys 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
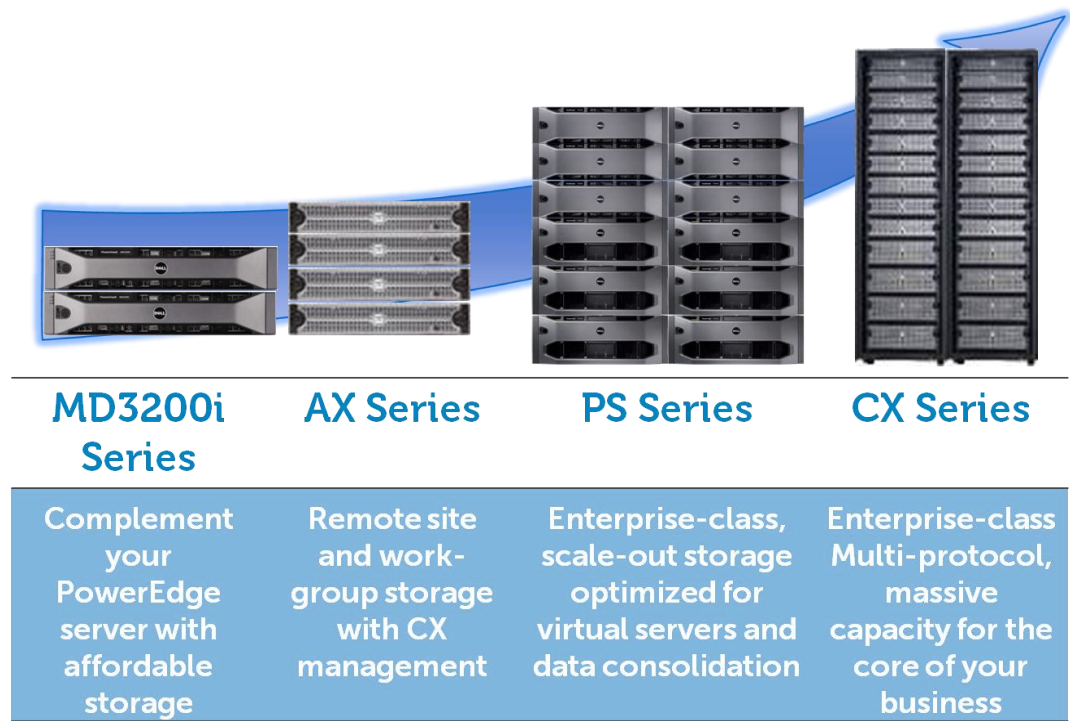
PowerVault™ MD3200i and MD3220i Features and Descriptions

| Feature	MD3200i	MD3220i
Rack Height	2U	2U
Host interface technology	1Gb Ethernet	1Gb Ethernet
Disk interface technology	6Gb SAS	6Gb SAS
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
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	MD3200i	MD3220i
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
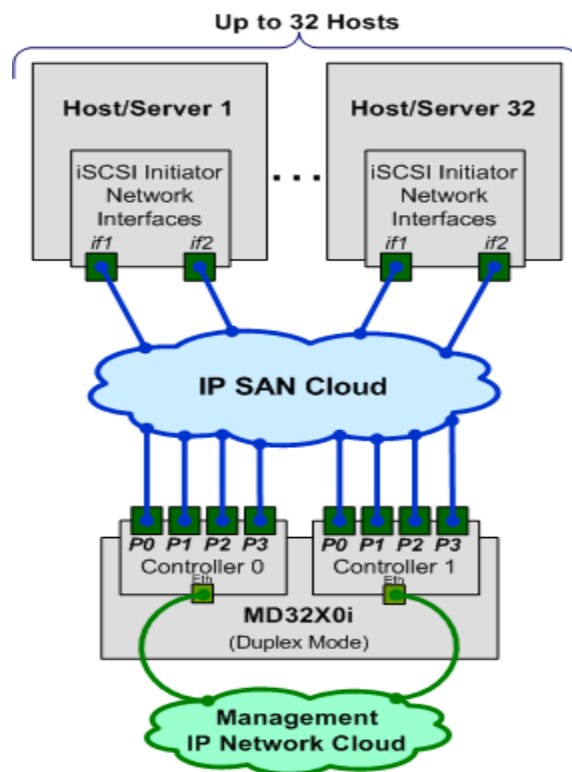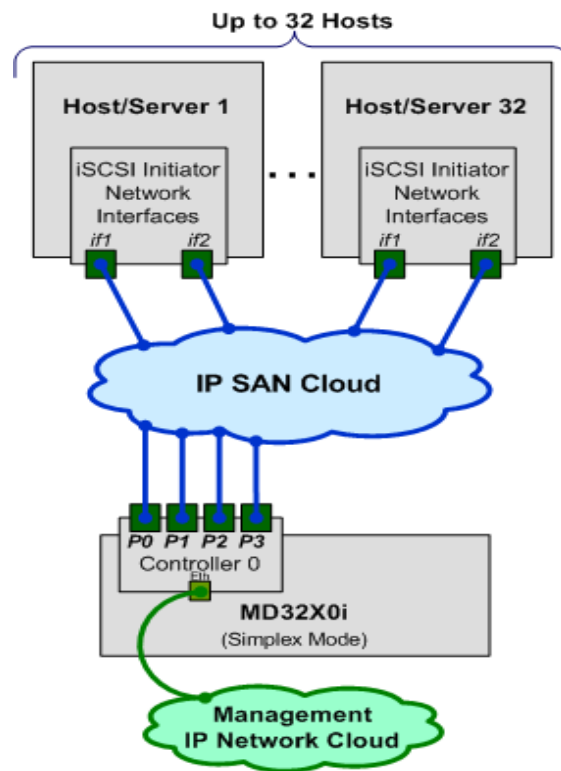
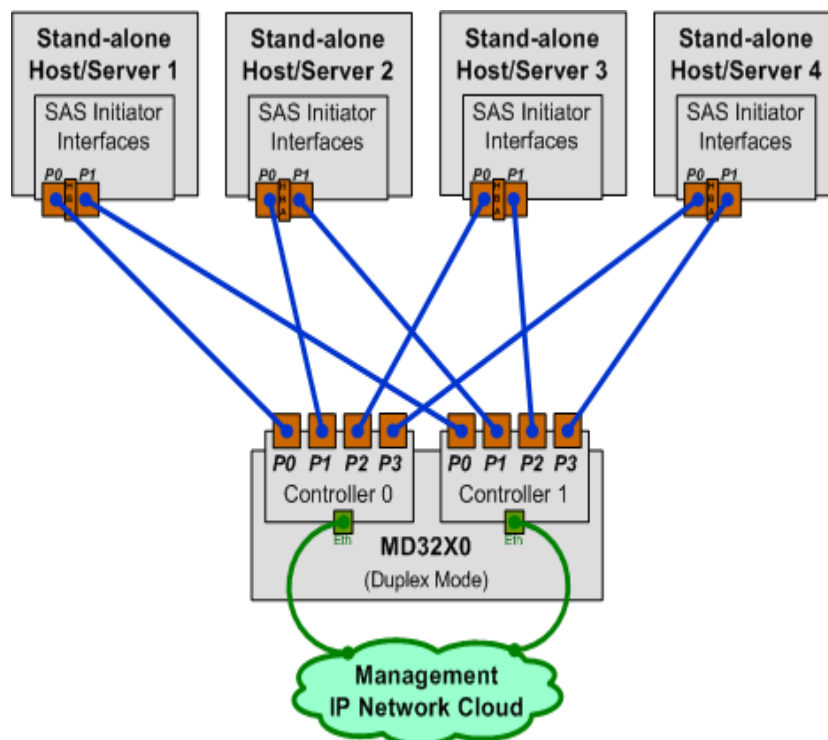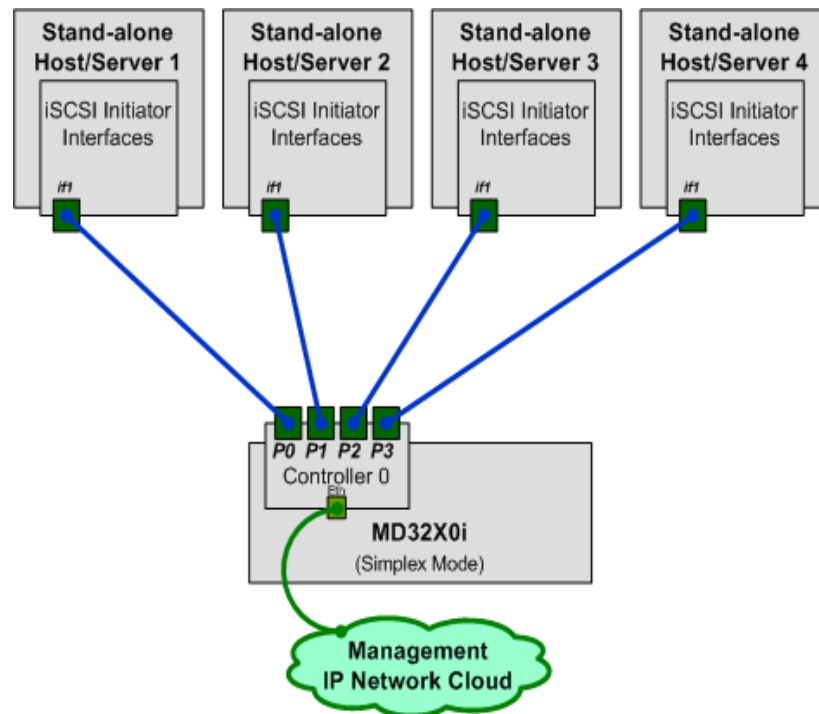## MD3200i and MD3220i Front View

MD3200i and MD3220i Back View

RAID Controller Module 0   RAID Controller Module 1

Power Supply / Cooling Fan Modules
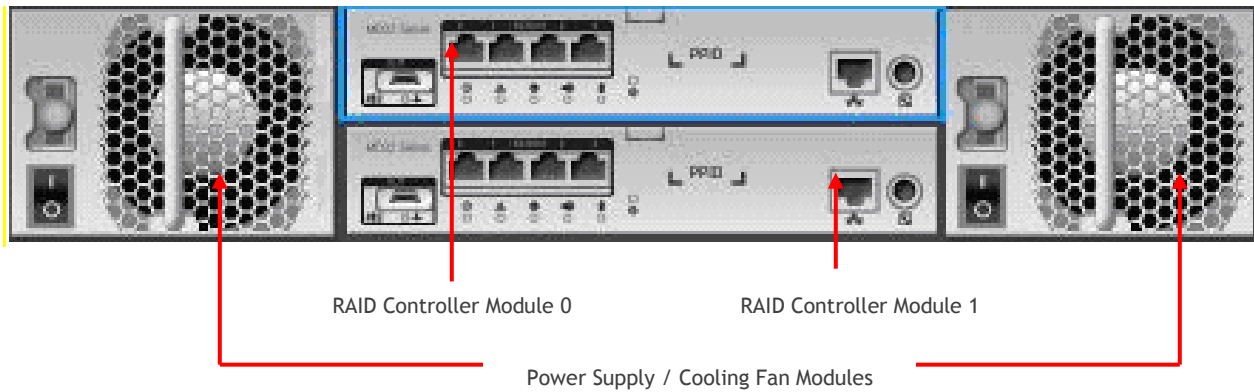
Solution Configurations

Networked Configurations:

Direct Connected Configurations:

Connecting Expansion and Enclosures

Dell™ PowerVault™ MD3200i and MD3220i 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™ MD3000i.

Mini-SAS Cable Transition

SAS to SAS	Mini-SAS to Mini-SAS
3Gb Cable	6Gb Cable
MD3000 / MD3000i	MD32X0 / MD32X0i
MD1000 / MD1120	MD1200 / MD1220

- Connectors on both ends of the SAS cable are universally keyed. Either end of the cable can be connected to the MD32X0i or MD1200/MD1220 expansion enclosures.

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

Product Support

Ethernet Components

The MD3200i series of storage arrays is compatible all industry-standard GbE switches and NICs. The MD3200i series of arrays do not support 10/100 directly connected to the array with the exception being the management port.

The free initiators that ship with the Windows and Linux operating systems are the preferred connectivity choice for the arrays. These initiators provide ample performance for this class of array.

Server Compatibility

The MD3200i series of storage arrays is compatible with all industry standard x86 servers.

Management Software Support

The Dell™ PowerVault™ MD3200i and MD3220i 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 MD3000i 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 MD3200i and MD3220i RAID arrays will support at initial product launch. Please visit the MD3200i web page for the most up to date list of supported operating systems.

Microsoft	Linux	Virtualization
Windows 2008 R1 & R2 • Standard & Core • Enterprise Editions & Core • Data Center & Core • Foundation & Core • Small Business Server • Essential Business Server	Red Hat 5.4 & 5.5	VMware • ESX 4.0 • ESX 4.0 U1 • ESX 4.1
Windows Storage Server 2008 R1 & R2	SuSE Enterprise Server 10 with SP3	Windows 2008 w/Hyper-V
Windows 2008 HPC Server R1 & R2	SuSE Enterprise Server 11 & 11 U1	Hyper-V Server 2008 & 2008 with R2
Windows Unified Data Storage Server 2008 R1 & R2 (SAS Only)		Citrix Xen Server 5.5 U2
Windows 2008 Web		Citrix Xen Server 5.6
Windows 2003 Standard, Enterprise &		

Small Business with SP2 and R2		
Windows 2003 Standard & Enterprise x64 with SP2 & R2		
Windows Storage Server 2003 R2 & SP2		

Drive Support

Dell™ PowerVault™ MD3200i and MD3220i RAID arrays support SAS hot-pluggable HDDs (hard-disk drives) and SSD (solid-state drives). Refer to Table below for Drive Support details.

MD3200i and MD3220i 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 GB

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

Accessing a MD32X0i and MD3000i from the Same Server

It is possible to have a single server accessing both an MD32X0iand an MD3000i running certain operating systems. The following limitations apply to co-existence.

- Requires the MD3000i to be at RC2 firmware version

- 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.