

DELL™ POWERSVULT™ MD1000



Modular disk storage expansion enclosure for PowerEdge™ servers

VERSATILE STORAGE EXPANSION

The Dell PowerVault MD1000, MD3000, and MD3000i are modular disk storage expansion enclosures for PowerEdge servers. The PowerVault MD1000 is capable of housing up to 15 3.5-inch disk drives in a single 3U rackable chassis. The direct-attached storage enclosure supports both Serial Attached SCSI (SAS) and Serial ATA (SATA) disk drives to give customers extensive configuration and optimization flexibility.

MODULAR EXPANSION FLEXIBILITY

When used in combination with a host-based Dell PowerEdge RAID controller (PERC) or a PowerVault internal RAID array, the modular enclosure can be daisy chained for scaling disk performance and capacity. The PERC 6/E enables up to three 15-drive SAS disk enclosures—a total of 45 drives—to be daisy chained to a single host connection, delivering an extended total capacity of 45TB when using 1TB SATA disk drives. Alternatively, the enclosure's disk drives can be split between two servers with up to eight drives assigned to one server and up to seven drives assigned to a second server. Furthermore, the enclosure's disk drives, power supplies and cooling modules are hot-pluggable so they can be replaced while the system stays up-and-running.

MIX DRIVE TYPES IN AN ENCLOSURE

The PowerVault MD Family enables organizations to mix SAS and SATA drives in a single enclosure delivering additional flexibility to optimize drive speed and capacity while maximizing storage spend and footprint.

SAS for Performance—SAS is used for a variety of enterprise applications because of its high performance and excellent reliability. When configured with SAS disk drives, the expansion enclosure can satisfy the storage requirements of mainstream and demanding e-mail, database, OLTP (online transaction processing), data warehousing and other I/O-intensive applications running on a single server.

The serial architecture of SAS offers key bandwidth improvements over parallel SCSI and SAS ports can be aggregated to deliver bandwidth capacity up to nearly four-times (4X) that of a SCSI bus.

SATA for Capacity—SATA disk drives are well-suited for bandwidth-intensive applications with long continuous data transfers, including audio/video streaming or disk backup and restore. In addition, SATA II drives have a low cost-per-Gigabyte, making them ideal for affordable storage of large amounts of infrequently accessed information, such as fixed content, file archives, reference material, and the like.

POWEREDGE SERVER COMMONALITY

PowerVault disk storage products are designed and engineered for PowerEdge servers, optimized for performance and reliability, then tested and validated to help simplify deployment and management. To help improve serviceability of disk drives, the PowerVault MD1000 is equipped with a common drive carrier that can be used on select Dell servers.

The PERC RAID controller—found in the Dell PowerEdge server—includes Dell OpenManage™ Server Administrator Storage Manager. This management software package provides a complete set of disk configuration and administrative utilities for both internal and external server-resident disk drives.

Dell Services are available to help streamline the installation and ongoing operations of your disk expansion enclosure. These services include Dell Enterprise Support Services, Professional Installation Services and Disk Expansion Training.

FEATURES	DESCRIPTION
Drives and Capacity	
Hard Disk Drives	Up to fifteen (15) 3.5-inch SAS or SATA hot-pluggable hard disk drives
Drive Performance and Capacities	15,000 RPM SAS drives available in 73GB, 146GB, 300GB or 450GB 10,000 RPM SAS drives available in 300GB or 400GB 7,200 RPM SATA II drives available in 250GB, 500GB, 750GB or 1TB
Minimum Capacity Per Enclosure	1.1TB using fifteen (15) 73GB 15K SAS disk drives
Maximum Capacity Per Enclosure	15TB using fifteen (15) 1TB 7.2K SATA disk drives
Maximum Capacity Per RAID Connection	45TB using forty-five (45) 1TB 7.2K SATA disk drive with 3 enclosures
Host Connectivity	
Unified Mode	Direct connectivity to 15 disk drives and beyond
Split Mode – Dual Host access	Connectivity to drives 0 through 6 to one host; A separate connectivity to drives 7 through 14 to the second host.
Enclosure Management Modules and RAID Levels	
Enclosure Management Modules (EMMs)	1 or 2 hot-pluggable management modules
RAID Levels	PERC 5/E Supports RAID levels 0, 1, 5, 10, 50 PERC 6/E Supports RAID levels 0, 1, 5, 6, 10, 50, 60 Up to 30 physical disks per group Up to 256 virtual disks
Back-Panel Connectors (per EMM)	
Host Connectivity	One x4 3GB SAS (SFF 8470)
Expansion Connectivity	One x4 3GB SAS (SFF 8470)
Service Management	One 6-pin UART mini-DIN connector
LED Indicators	
Front Panel	1 Two-color LED indicator for system status, 2 single-color LED indicators for power and split mod
Hard Drive Carrier	1 single-color activity LED, 1 two-color LED status indicator per drive
EMM	3 two-color LED status indicators: one for each of the EMM SAS ports and one for the EMM status
Power Supply/ Cooling Fan Module	3 LED status indicators for power supply status, power/supply/fan fault and AC status
Power Supplies (per supply)	
Wattage	478W (Maximum continuous); 550W (peak)
Maximum Heat Dissipation	1430 BTU/hour (maximum)
Input Voltage Range	100-240V rated (actual 90-26V)
Frequency Range	47-63Hz
Amperage	7.2A at 100V, 3.6A at 200V
Available Hard Drive Power (per slot)	
Supported Continuous Consumption	Up to 1.3A +12V; Up to 1.5A at +5V
Physical	
Height x Width x Depth	13.11 cm (5.16 inches) x 44.63 cm (17.57 inches) x 48.01cm (18.90 inches)
Weight	35.37 km (78 lbs) (maximum configuration)
Environmental	
Temperature	Operating: 10° to 35°C (50° to 95°F), Storage : -40° to 65°C (-40° to 149°F)
Relative Humidity	Operating: 20% to 80% (non-condensing), Storage: 5% to 95% (non-condensing)
Altitude	Operating: -15 to 3048 m (-50 to 10,000 ft), Storage: -15 to 10,668 m (-50 to 35,000 ft)

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