

# Dell PowerVault MD3000 Modular Disk Storage Array



**The high-performance,  
direct-attached storage array  
built for high data availability.**

## The Evolution of Direct-Attached Storage

Introducing Dell's new take on direct-attached storage – designed around simplicity, performance, and availability. The Dell™ PowerVault™ MD3000 is a high-performance storage array built for critical applications running on one, two, or a pair of clustered PowerEdge™ servers. Additionally, the storage array can support up to four servers in environments where redundant host connections are not required.

## High Performance SAS

The PowerVault MD3000 is a modular array capable of housing up to fifteen 3.5-inch SAS disk drives\* in a single rack enclosure that consumes only three units (3U) of rack space. SAS – the latest advancement in proven SCSI technology – offers key performance enhancements, including dedicated drive bandwidth and the ability to aggregate links to form a wide port.

SAS drives are typically used to store active and frequently changing data, particularly with random database-type transactions such as email, databases, OLTP (online transaction processing), and other I/O-intensive applications running on a single server.

## Designed for Availability

When access to data is critical, the PowerVault MD3000 delivers. The architecture of the storage array is designed with redundant components and connections to help mitigate risks of downtime, whether due to hardware failures, broken cable connections, firmware upgrades, and more.

Fully qualified for two-node clustering applications, the array includes dual active/active RAID controllers with mirrored cache and multi-path I/O management to help ensure that storage processing continues without disruption. Other high-availability features include hot-pluggable, redundant power supplies, cooling modules and disk drives, active disk scrubbing, and non-disruptive firmware upgrades.

## Simplified Management

At any time, one or more storage arrays can be administered – thanks to the Modular Disk Storage Manager. This intuitive, task-based management console greatly simplifies the user experience by significantly reducing the complexity of installation, configuration, management, and diagnostic tasks.

Should a problem arise, the Recovery Guru tool is on hand for valuable troubleshooting assistance. The recovery tool diagnoses system problems and helps to determine an appropriate procedure for recovery. To enhance availability, optional data protection features are available, such as snapshot and virtual disk copy.

## PowerEdge Server Commonality

The PowerVault MD series uses a common 3.5-inch disk drive carrier which enables customers to keep a single type of spare drive ready for rapid replacement where needed. This can be used in select 9th-generation PowerEdge servers to reduce spare parts inventory and simplify the ordering and stocking of drives. LEDs, displays, and other operational functions are also common to both PowerEdge and PowerVault products.

Clearly, the high performance, availability, ease of management and component commonality the new PowerVault MD3000 offers makes it the next evolutionary step forward in direct-attached storage.



Dell PowerVault MD3000

**\*Note:** Support for enclosure expandability is planned to be available in the first half of 2007. Please check with your sales representative for availability.





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## DELL IT INFRASTRUCTURE SERVICES

Dell brings pure execution to IT Services. The planning, implementation and maintenance of your IT infrastructure deserves nothing less. Variability in execution can compromise your productivity, IT resources and ultimately your reputation. By leveraging our heritage of process-driven excellence, Dell Services can deliver a smarter way.

We don't claim to do everything. We focus on IT infrastructure services. And we take a customer-led approach, grounded in the philosophy that you know your business better than anyone. That's why Dell does not try to take key business decisions out of your hands, or lock you in to more than you need. Instead, we apply our world-class process management and "no excuses" culture to deliver what organizations need most today – flexibility and repeatable quality. That's pure execution. That's Pure Dell.

### Enterprise Support Services

With Dell, you can get maximum performance and availability out of your Dell server and storage systems. Our Enterprise Support Services offer proactive maintenance to help prevent problems as well as rapid response and resolution of problems when they do occur. We have built a robust global infrastructure that offers multiple levels of enterprise support for systems throughout your infrastructure.

### Deployment Services

System deployment is a necessary evil that plagues nearly every organization. You must deploy new systems to help improve performance and meet user demand. With Dell's deployment services, we help simplify and speed up the deployment and utilization of new systems to maximize uptime throughout your IT environment.

### Asset Recovery and Recycling Services

Proper disposal, reselling and donation of computer equipment is a time-consuming task that typically falls to the bottom of many IT to-do lists. Dell helps simplify the end-of-life processes for IT equipment in a way that can maximize value for your organization.

### Training Services

Arm your employees with the knowledge and skills they need to be as productive as possible. Dell offers comprehensive training services which include hardware and software training, as well as PC skills and professional development classes. With Dell training you can help improve system reliability, maximize productivity and reduce end-user requests and downtime.

### Assessment, Design and Implementation Services

IT departments are continually challenged to evaluate and implement new technologies. By utilizing our technical expertise and exceptional project management, you can plan, build and manage an IT infrastructure that takes full advantage of industry standards – and realize the benefits that come along with them. Simplified operations. Improved ROI. Increased utilization. Optimized performance. More control. Less chaos.

To help you get the most from your Dell systems, visit [www.dell.com/services](http://www.dell.com/services).

Services vary by region.

## DRIVES AND CAPACITY

<b>Hard disk drives*</b>	Up to fifteen (15) 3.5-inch SAS hot-pluggable hard disk drives
<b>Drive performance and capacities*</b>	15K SAS drives available in 36GB, 73GB, 146GB or 300GB 10K SAS drives available in 73GB, 146GB, or 300GB
<b>Minimum capacity (per enclosure)</b>	72GB using two 36GB 15K SAS disk drives
<b>Maximum capacity (per enclosure)</b>	4,500GB using fifteen 300GB SAS disk drives

## CONNECTIVITY

Support for either up to two Highly Available (HA) hosts with redundant data paths or up to four non-HA hosts with a single data path to a SAS 5/E HBA

## STORAGE CONTROLLERS AND RAID LEVELS

<b>Storage controllers</b>	<ul style="list-style-type: none"> <li>Dual storage controllers provide redundant enclosure management with failover capabilities</li> <li>512MB of battery-backed cache (72 hours) per controller</li> </ul>
<b>RAID levels</b>	<ul style="list-style-type: none"> <li>Support for RAID levels 0, 1, 5 and 10</li> <li>Up to 30 physical disks per disk group</li> <li>Up to 256 virtual disks</li> </ul>

## ARRAY MANAGEMENT AND OPTIONAL SOFTWARE

- Modular Disk Storage Manager, Java-based task-oriented user interface
- Multi-path software provides failover management of redundant data paths between the host server and storage array
- Virtual disk snapshots (optional): up to four snapshots per virtual disk and 128 snapshots per system
- Virtual disk copy (optional): up to eight simultaneous virtual disk copies

## BACK-PANEL CONNECTORS

### SINGLE PORT OPTION

**SAS connectors (per storage controller)** 1 x4 3.0Gbps SAS (SFF 8470) "IN" connector for connection to the host  
1 x4 3.0Gbps SAS (SFF 8470) "OUT" connector for future expansion capability\*

**Management port (per storage controller)** 1 10/100 Ethernet connection (RJ45) for "out-of-band" enclosure management capability

**Serial connector (per storage controller)** 1 6-pin UART mini-DIN connector (for service technician use only)

### DUAL-PORT OPTION

**SAS connectors (per storage controller)** 1 x4 3.0Gbps SAS (SFF 8470) "IN" connector for connection to the host  
1 x4 3.0Gbps SAS (SFF 8470) "IN" connector for redundant connection to host  
1 x4 3.0Gbps SAS (SFF 8470) "OUT" connector for future expansion capability\*

**Management port (per storage controller)** 1 10/100 Ethernet connection (RJ45) for "out-of-band" enclosure management capability

**Serial connector (per storage controller)** 1 6-pin UART mini-DIN connector (for service technician use only)

## LED INDICATORS

**Front panel** 1 two-color LED indicator for system status, 1 single-color LED indicator for power, 1 LED unused in this system

**Hard-drive carrier** 1 single-color activity LED, 1 two-color LED status indicator per drive

**Storage controller** 1 two-color LED status indicator per SAS IN/OUT port (total 3 on dual-port option, 2 on single-port option), 1 one-color battery fault LED for battery-backed cache, 1 one-color cache activity LED, 2 one-color controller fault and controller power LEDs, 2 one-color LEDs for Ethernet link and speed

**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 90-264V)

**Frequency range** 47-63Hz

**Maximum input current at rated power** 7.93A at 90V; 3.96A at 180V

## AVAILABLE HARD DRIVE POWER (PER SLOT)

**Supported continuous consumption** Up to 1.3A at +12V; Up to 1.5A at +5V

## PHYSICAL

<b>Height</b>	13.11 cm (5.16 inches)
<b>Width</b>	44.63 cm (17.57 inches)
<b>Depth</b>	48.01 cm (18.9 inches)
<b>Weight</b>	35.37 kg (78 lb) (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)

Drives: The solution will support 15 drives when it initially ships with drive expansion capability expected in the first half of 2007. Trademarks: Dell, the Dell logo, PowerEdge and PowerVault are trademarks of Dell Inc. Other trademarks and trade names may be used in this piece to refer to either the entities claiming the marks and names or their products. Dell disclaims any proprietary interest in trademarks and names other than its own. © 2006 Dell Inc. All rights reserved. Reproduction in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden. For more information, please contact Dell Inc. October 2006 FKM DELLCOM60080

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