Dell PowerVault MD3000
Modular Disk Storage Array

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.

*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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**DRIVES AND CAPACITY**

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

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

**STORAGE CONTROLLERS AND RAID LEVELS**

- **Storage controllers**: Dual storage controllers provide redundant enclosure management with failover capabilities
- **RAID levels**: 512MB of battery-backed cache (72 hours) per controller
- **Supported continuous consumption**: up to four snapshots per virtual disk and 128 snapshots per system
- **Virtual disk copy (optional)**: up to eight simultaneous virtual disk copies

**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

**BACK-PANEL CONNECTORS**

- **SINGLE PORT OPTION**
  - SAS connectors (per storage controller): 1 x 3.0Gb/s SAS (SFF 8470) “IN” connector for connection to the host
  - 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 x 3.0Gb/s SAS (SFF 8470) “IN” connector for connection to the host
  - 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 activity LED, 2 one-color controller fault and controller power LEDs, 2 one-color LEDs for Ethernet link and speed

**POWER SUPPLIES (PER SUPPLY)**

- **Power supply/cooling fan module**: 3 LED status indicators for power supply status, power supply/fan fault and AC status
- **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 98V, 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**

- **Height**: 13.11 cm (5.16 inches)
- **Width**: 44.83 cm (17.57 inches)
- **Depth**: 48.01 cm (18.9 inches)
- **Weight**: 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 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 written permission of Dell Inc. is strictly forbidden. For more information, please contact Dell Inc. October 2006 F9C/DELLCOMM000008.