



# Dell PowerVault MD3600f/MD3620f Series

The Dell™ PowerVault™ MD3600f/MD3620f arrays is the introduction of 8Gb/s Fibre Channel in the MD series of arrays. The SAN solution is ideal for entry-level storage consolidation that require high availability, high performance and business continuity without sacrificing ease of use and reliability. Designed for flexibility, the MD3600f/MD3620f arrays support a range of drive types, enclosures, and RAID levels all within a single array.

## Proven Fibre Channel-based network storage

PowerVault MD3600f/MD3620f arrays offer exceptional performance, flexibility and scalability to meet your business demands. Now it's simple to improve storage utilization by combining storage resources while increasing availability with redundant hardware, and streamlining the backup process. By consolidating data and resources with a single array, management complexities are minimized.

## Consolidation = efficiency

Reduce the effort required to store and manage your data. MD3600f/MD3620f Series arrays can support up to 64 hosts when connected to one or more 4Gb/s or 8Gb/s Fibre Channel switches. Storage capacity, with a base of 120 hard disk drives, can be expanded by attaching additional PowerVault MD1200 and/or MD1220 expansion enclosures. For additional scalability there is a Premium Feature Key allowing up to 192 hard drives.

## Fibre Channel storage, ideal for data intensive applications

Implement your high performance network storage solution for less with MD3600f/MD3620f Series arrays while protecting your existing Fibre Channel investment.

Now you can effectively consolidate storage to support the value of your existing Fibre Channel environment with performance to meet both IOP-intensive, high bandwidth applications. MD3600f/MD3620f storage arrays are also fully qualified for use in virtualized application environments with VMware® ESX and Microsoft® Hyper-V™ software.

## Keep pace with ever-increasing storage demands

MD3600f/MD3620f arrays deliver an excellent performance/price ratio. Take advantage of a next-generation array with two four (4) 8Gb/s Fibre Channel ports per controller that offers a 2x performance improvement compared to earlier MD storage arrays.

They easily handle the application demands of large databases with increased processing capability. These arrays also support solid state drives (SSD) to meet the most demanding I/O requirements. An optional High Performance Tier (HPT) feature is available to increase array I/O and throughput performance.

## Gain a new level of management efficiency

MD3600f/MD3620f Series arrays are managed by the advanced MD Storage Manager software, an intuitive client-based application. Designed for easy user interaction with the array regardless of your level of familiarity with storage systems. An enterprise window that monitors multiple arrays, including previous generation MD3000i, MD3200, MD3200i and MD3600i Series arrays, through a graphical interface simplifying management through one console.

With the multi-generational and multi-protocol MD Storage Manager, all administrative tasks, including configuration, re-configuration, expansion, maintenance and performance tuning, can be performed with no array

downtime and no interruption to array performance. MD Storage Managers configuration flexibility includes the ability to mix RAID levels, segment sizes, array sizes, and cache policies all within a single storage array.

## Deployment scalability and flexibility

Scale up. Mix and match drive types to create your optimum tiered data environment.

Scale Easily: Up to 64 servers in a SAN environment can be connected to a single MD3600f or MD3620f storage system. Storage capacity can be expanded up to 192 hard drives. Scaling capacity is as simple as plugging in additional PowerVault MD1200 and/or PowerVault MD1220 enclosures.

Mix and Match Drives: MD3600f arrays can hold up to twelve (12) 3.5 inch form factor hard drives and MD3620f arrays hold up to twenty-four (24) 2.5 inch drives. Both the MD1200 enclosure (twelve 3.5" hard drives) and the MD1220 enclosure (twenty-four 2.5" drives) can be added behind MD3600f Series arrays. This flexibility enables the ability to tier within the array for optimizing system performance.

The PowerVault vCenter plug-in and vSphere Storage APIs - Storage Awareness (VASA) provides VMware administrators with powerful capabilities designed to increase their productivity and simplify their jobs.

## Optional features

Snapshots — Each virtual disk supports up to sixteen snapshots, with a total of 256 snapshots per system. These are typically used when data needs to be "frozen" in time. Snapshot scheduler and Snapshot Rollback are features included in the Premium Feature Key providing additional data availability.

Virtual Disk Copy (VDC) - Virtual disk copy is full replication of an existing disk at any point in time, often used for decision support and application development testing. Reads and writes are supported while doing a virtual copy.

Self-Encrypting Drives (SEDs)- With SEDs, if a drive is removed from the array or powered down, the data on that drive is encrypted and useless to anyone who attempts to access it without the appropriate security authorization.

High Performance Tier (HPT) - Meet the most demanding performance requirements for your organization to remain productive and competitive.

## Business Continuity

### Remote Replication

To protect data and processes from major regional disasters like earthquakes, fires or large-scale power outages, your organization needs remote replication of data to a secondary site. Also used for testing and deploying new databases without any downtime.

### Site Recovery Manager

A Storage Replication Adapters (SRA) allows VMware Site Recovery Manager (SRM) to integrate with 3rd party storage array technology.

## Additional Hard Drives Premium Feature Key

Ability to add up to 192 hard drives providing additional capacity to the MD Series of arrays.

Feature	Dell™ PowerVault™ MD3600f Series
Hard Disk Drives	MD3600f – Up to twelve (12) 3.5 inch SAS, Near-line SAS and SSD drives MD3620f – Up to twenty-four (24) 2.5 inch SAS, Near-line SAS and SSD drives
3.5" Drive Performance and Capacities	15,000 RPM SAS drives available in 300 GB, 450 GB and 600 GB 7,200 RPM Near-line SAS drives available in 500 GB, 1TB, 2TB and 3TB
2.5" Drive Performance and Capacities	15,000 RPM SAS drives available in 73 GB and 146 GB 10,000 RPM SAS drives available in 600 GB and 900 GB 7,200 RPM Near-line SAS drives available in 1 TB Solid State Drive (SSD) available in 149 GB (available in 3.5" HDD carriers)
Expansion Capabilities	Expand up to a base of 120 hard drives with an optional Premium Feature Key to scale up to 192 total drives using MD1200 and/or MD1220 expansion enclosures
Host Connectivity	
Single Controller Models	Supports up to 4 servers directly connected or up to 64 servers when configured with an Fibre Channel switch
Dual Controller Models	Supports up to 8 servers directly connected or up to 64 servers when configured with Fibre Channel switches
Storage Controllers and RAID Levels	
Storage Controllers	Each controller contains 2GB of battery-backed cache Dual controllers operate in an active-active environment mirroring each other's cache Cache protection is provided via flash memory for permanent data protection
RAID Levels	Support for RAID levels 0, 1, 10, 5, 6 Up to 192 physical disks per group in RAID 0, 1, 10 Up to 30 physical disks per group in RAID 5, 6 Up to 512 virtual disks
Array Management and Optional Premium Features	
Array Management	2 <sup>nd</sup> generation multi-protocol Modular Disk Storage Manager, Java based user interface Multi-path graphical software provides failover management of redundant data paths between the server and storage array
Optional Premium Features	Snapshots: Up to 16 snapshots per virtual disk and 256 per system Snapshots Plus Virtual Disk Copy: Up to 16 simultaneous virtual disk copies High Performance Tier firmware upgrade increases array IO performance Additional Hard Drives - capacity up to 192 hard drives Remote Replication - providing business continuity and disaster recovery
Back-Panel Connectors (per controller)	
Host Connectivity	Four 8Gb/s SFP ports per controller, compliant with FC-FS2, FC-PI-2, FC-AL-2, FCP, FC-LS2, FC-PH-3
Expansion Connectivity	One x4 6Gb SAS (8088 mini connector)
Remote Management	One RJ-45 1Gb Ethernet
Service Management	One PS/2 Serial
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 one-color LED power indicator, 1 one-color LED controller fault indicator, 1 one-color LED controller identifier, 1 one-color LED cache activity indicator, 1 one-color LED battery fault indicator
Power Supply/Cooling Fan Module	3 one-color LED status for AC status, DC status and power supply cooling fan fault
Power Supplies (per supply)	
Wattage	600 W peak output
Maximum Heat Dissipation	150 W
Input Voltage Range	90 to 264 VAC
Frequency Range	47 to 63 Hz
Maximum Input Current at Rated Power	55 A for 10ms or less, 25 A for 10-150ms
Available Hard Drive Power (per slot)	
Supported Continuous Consumption	3.5" drive: 25 Watts; 2.5" drive: 12 Watts
Physical	
Height x Width x Depth	MD3600f: 8.68cm (3.42") x 44.63cm (17.57") x 56.1cm (22.09"); MD3620f: 8.68cm (3.42") x 44.63cm (17.57") x 50.8 (20")
Weight	MD3600f: 29.3kg (64.59 lbs.) (maximum configuration); MD3620f: 24.2kg (53.35 lbs.) (maximum configuration)
Environmental	
Expanded Temperature Operating Range	Continuous Operation: 10C to 35C, 10% to 80% relative humidity (RH) with a 26C max dew point. De-rate maximum allowable dry bulb temperature at 1°C/300 meters above 900 meters (1 degree F per 550 feet) 10% of annual operating hours: 5C to 40C, 5% to 85%RH with a 26C max dew point. For temperatures between 35 and 40C, de-rate maximum allowable dry bulb temperature 1°C/175 meters above 950 meters (1 degree F per 319 feet)
Relative Humidity	1% of annual operating hours: -5C to 45C, 5% to 90%RH, with a 26C max dew point. For temperatures between 40 and 45C, de-rate maximum allowable dry bulb temperature 1°C/125 meters above 950 meters (1 degree F per 228 feet)
Altitude	Operating: -16 to 3048 m (-50 to 10,000 ft); Note: For altitudes above 2950 feet, the maximum operating temperature is de-rated 1°F/550 ft.

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