

# Dell™ PowerVault™ MD3200, MD3200i, MD3600i and MD3600f Series Storage Arrays Support Matrix

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## Introduction

This document provides information on supported software and hardware for Dell PowerVault MD3200, MD3200i, MD3600i and MD3600f series storage arrays as well as usage considerations, recommendations and rules.

**NOTE:** Unless specified, all information in this document is applicable to the latest version of firmware and software listed below.

## Dell PowerVault M32/36 Series Storage Array Rules\*

The following are the connectivity and consideration rules for the MD3200, MD3200i, MD3600i and MD3600f series arrays:

RULE	MD3200 & MD3220 (SAS)	MD3200i & MD3220i (1Gbps iSCSI)	MD3600i & MD3620i (10Gbps iSCSI)	MD3600f & MD3620f (8Gbps Fibre Channel)	Notes
Maximum number of host servers a single storage array can connect to with one RAID Controller Module installed:	4	64	64	64	
Maximum number of host servers a single storage array can connect to with two RAID Controller Modules installed:	8 (4 if using high availability)	64	64	64	
Maximum number of Dell 6GbSAS HBA cards supported in a single host server attached to single array. (It is recommended to use two Dell 6Gb SAS HBA cards for all redundant cabling configurations.)	2 (each card has two ports)	N/A	N/A	N/A	
Unused ports on a Dell 6Gb SAS HBA card already connected to an MD3200 cannot be connected to another device (such as a tape drive or other model storage array).	√	N/A	N/A	N/A	
Maximum number of MD32/36 series storage arrays a host server may connect to:	2 (HA)	4	4	4	
Connecting an MD3200 series SAS array, an MD3200i series iSCSI array and an MD3600i series iSCSI array to the same host is supported.	√	√	√	The I/O co-existence between the Fibre Channel and any other protocol on same host is not supported.	
Support for up to 96 physical disks (system default configuration). Up to seven MD1200 and/or MD1220 series expansion enclosures can be attached to an MD storage array. Any mixture of MD1200 and MD1220 enclosures for a total of 96 physical disks is supported.	√	√	√	√	Applicable to firmware versions 07.75.xx.xx and 07.70.xx.xx
Support for up to 120 physical disks (system default configuration). Up to nine MD1200 and/or MD1220 series expansion enclosures can be attached to an MD storage array. Any mixture of MD1200 and MD1220 enclosures for a total of 120 physical disks is supported.	√	√	√	√	Applicable to firmware version 07.80.xx.xx
Support for up to 192 physical disks through a premium feature option. Up to fifteen MD1200 and/or MD1220 series expansion enclosures can be attached to an MD storage array. Any mixture of MD1200 and MD1220 enclosures for a total of 192 physical disks is supported.	√	√	√	√	Applicable to firmware version 07.80.xx.xx

Maximum number of physical disks in a RAID0, RAID1/10 is 96.	√	√	√	√	Applicable to firmware versions 07.75.xx.xx and 07.70.xx.xx
Maximum number of physical disks in a RAID0, RAID1/10 is 120.	√	√	√	√	Applicable to firmware version 07.80.xx.xx
Maximum number of physical disks in a RAID5 or RAID6 disk group is 30.	√	√	√	√	
Attached MD1200 series expansion enclosures must be run in unified mode.	√	√	√	√	
A hot spare for a disk group must be a physical disk of equal or greater size than any of the member disks.	√	√	√	√	
When using out-of-band management with SMcli by specifying the RAID Controller management port IP addresses on the MD Storage Array, SMcli commands that change the attributes of a virtual disk, virtual disk copy, or snapshot virtual disk, must have management access to the owning RAID Controller Module. Where applicable it is best practice to specify both management port IP addresses on the SMcli invocation: SMcli 192.168.128.101 192.168.128.102 -c.	√	√	√	√	
Co-existence of several Linux multi-path drivers is not supported. When using a MD3200 or MD3600 series array with Linux host servers only the Linux Device Mapper failover driver is supported.**	√	√	√	√	
On Linux systems Device Mapper multi-pathing drivers are required for multi-path support	√	√	√	√	
Virtual disks on an MD3200 or MD3600 series cannot be used for booting.	√	√	√	MD3600f will support boot from SAN	
Disk Groups can be migrated between a Dell PowerVault MD3200 or MD3200i or MD3600i by following the appropriate Disk Group migration procedure***	√	√	√	√	
All iSCSI Host ports on a controller have to be at the same port speed	N/A	Only 1Gbps Supported	√	N/A	
iSCSI Host ports will only auto-negotiate to the port speed set in MDSM	N/A	Only 1Gbps Supported	√	N/A	
Only single path iSCSI boot is supported for all Linux OS's. Multi-path iSCSI boot on Linux is not supported.	N/A	√	√	N/A	

<p>If the iSCSI initiators are connected to MD3200i and/or MD3600i series through the network switches, make sure that your switches support IEEE 802.3x flow control, and the flow control is enabled for both sending and receiving on all switch ports and server NIC ports.</p> <p>If you do not enable the flow control, your iSCSI storage array may experience the degradation of the I/O performance.</p> <p>In addition to enabling the Ethernet IEEE 802.3x flow control it is also recommended to disable unicast broadcast storm control on the switch ports connected to the iSCSI initiators and target arrays and turn on the "PortFast" mode of the spanning tree protocol (STP) on the switch ports connected to the iSCSI initiators and target arrays.</p> <p>Please note that turning the "PortFast" mode on is different from turning off the whole operation of STP on the switch. With "PortFast" on, the STP is still enabled on the switch ports. Do not turn STP off because it may affect the entire network and can leave the network vulnerable to physical topology loops.</p>	N/A	√	√	N/A	
<p>To get the optimal I/O performance, avoid having more than one iSCSI session originating from one host iSCSI port to the same controller. Ideally, the iSCSI host NIC should be connected to only one iSCSI target port on the storage subsystem.</p>	N/A	√	√	N/A	

\* Please also refer to the Hardware Installation section of the MD3200 or MD3200i or MD3600i series Owner's Manual.

\*\* Dell Linux MPP drivers for the MD3000 can coexist with the Device Mapper driver used for the MD3200 and MD3600 series. Refer to *"Linux DM Installation Details for Dell PowerVault MD Series Storage Arrays"* for supporting MD3000, MD3200 and MD3600 series products on a single Linux host.

\*\*\* Refer to the Disk Group Migration section of the MD3200 or MD3200i or MD3600i series Owner's Manuals.

## Default IPv4 settings for the Management Ports on the MD3200i/MD3600i arrays

**NOTE:** No default gateway is set.

By default, the management ports on the storage array are set to DHCP. If DHCP fails, the following IPv4 settings will be used:

Controller/Port	IPv4 address	Subnet Mask
Controller 0	192.168.128.101	255.255.255.0
Controller 1	192.168.128.102	255.255.255.0

## Default IPv4 settings for the iSCSI Ports on an MD32x0i array

**NOTE:** No default gateway is set.

By default, the iSCSI ports on the storage array are set to the following static IPv4 settings:

Controller/Port	IPv4 address	Subnet Mask	Port #
Controller 0, Port 0	192.168.130.101	255.255.255.0	3260
Controller 0, Port 1	192.168.131.101	255.255.255.0	3260
Controller 0, Port 2	192.168.132.101	255.255.255.0	3260
Controller 0, Port 3	192.168.133.101	255.255.255.0	3260
Controller 1, Port 0	192.168.130.102	255.255.255.0	3260
Controller 1, Port 1	192.168.131.102	255.255.255.0	3260
Controller 1, Port 2	192.168.132.102	255.255.255.0	3260
Controller 1, Port 3	192.168.133.102	255.255.255.0	3260

## Default IPv4 settings for the iSCSI Ports on an MD36x0i array

**NOTE:** No default gateway is set.

By default, the iSCSI ports on the storage array are set to the following static IPv4 settings:

Controller/Port	IPv4 address	Subnet Mask	Port #
Controller 0, Port 0	192.168.130.101	255.255.255.0	3260
Controller 0, Port 1	192.168.131.101	255.255.255.0	3260
Controller 1, Port 0	192.168.130.102	255.255.255.0	3260
Controller 1, Port 1	192.168.131.102	255.255.255.0	3260

## Supported Controller Firmware and NVSRAM

NOTE: It is advisable to gather support information before performing any firmware upgrade. This can be performed from the **Support** tab of the MD Storage Manager application.

NOTE: Only drivers and firmware released by Dell are supported. For the latest driver and firmware releases, see the Downloads section at [support.dell.com](http://support.dell.com).

To determine your firmware and NVSRAM levels:

From a management station, connect to the storage array using MD Storage Manager.

Select the **Support** tab.

Click on **Storage Array Profile** and look for the firmware and NVSRAM versions.

Software	Version
RAID Controller Firmware	07.80.41.60
RAID Controller NVSRAM	N26X0-780890-001 for MD3200 and MD3200i series (SAS and 1Gb/s iSCSI storage arrays)
	N26X0-780890-901 for MD3600i and MD3600f series (10Gb/s iSCSI and Fibre Channel storage arrays)

## Supported SAS Host Bus Adapters

Please go to [support.dell.com](http://support.dell.com) to download the latest supported version of the 6Gbps SAS HBA firmware and drivers for your specific server hardware platform.

Host Bus Adapter Name
Dell 6Gbps SAS HBA

## Supported iSCSI Software Initiators

Operating System	SW Initiator Vendor	SW Initiator Version	Notes
Windows 2003 R2 SP2	Microsoft	2.08, 2.07	Available via MS download
Windows 2008 R2 SP2	Microsoft	RTM or later	Included w/OS
Windows 2008 SP2	Microsoft	RTM or later	Included w/OS
Red Hat Enterprise Linux	Red Hat	RTM or later	Included w/OS
SUSE Linux Enterprise Server	SUSE	RTM or later	Included w/OS
VMware ESX	VMware	RTM or later	Included w/OS
Citrix XenServer	Citrix	RTM or later	Included w/OS

## Supported Protocol Offload (TOE / iSCSI) Adapters

Standard Gigabit and 10 Gigabit Ethernet adapters are supported when used with supported software iSCSI initiators. The following list of hardware initiators is also supported.

Please see [support.dell.com](http://support.dell.com) for the latest supported firmware and driver versions.

Host Bus Adapter Name
Broadcom – 5708
Broadcom – 5709
Broadcom – 5709c
Broadcom – 5721j
Broadcom – 57710
Broadcom – 57711
Emulex OneConnect 10G CNA

## Fibre Channel SFP+ Transceiver Support

Description	Manufacturer	Mfr. Part Number
8G FC SFP+	JDSU	PLRXPL-VC-SH4-23-N
8G FC SFP+	Finisar	FTLF8528P2BCV-LS
8G FC SFP+	Avago	AFBR-57D7APZ

## Supported Hard Disk Drives

Only Dell-provided hard disk drives are supported. Hard disk drives not purchased from Dell will be marked as uncertified and will not be usable. Refer to the MD32xx/MD32xxi Drivers and Downloads section for the latest available physical disk firmware.

Form Factor	Dell P/N	Model	Capacity	Speed	Vendor
2.5"	X143K	MBD2147RC	146GB	10K	Fujitsu
2.5"	U706K	MBD2300RC	300GB	10K	Fujitsu
2.5"	W328K	MBE2147RC	146GB	15K	Fujitsu
2.5"	R727K	MBE2073RC	73GB	15K	Fujitsu
2.5"	T855K	HUC103014CSS600	146GB	10K	Hitachi
2.5"	U709K	HUC103030CSS600	300GB	10K	Hitachi
2.5"	W330K	HUC151414CSS600	146GB	15K	Hitachi
2.5"	R730K	HUC151473CSS600	73GB	15K	Hitachi
2.5"	X1MCH	LB150S	149GB	SSD	Pliant
2.5"	X160K	ST9146803SS	146GB	10K	Seagate
2.5"	R744K	ST9300503SS	300GB	10K	Seagate
2.5"	T871K	ST9300603SS	300GB	10K	Seagate
2.5"	U733K	ST9146752SS	146GB	15K	Seagate
2.5"	X162K	ST9146852SS	146GB	15k	Seagate
2.5"	W345K	ST973452SS	73GB	15K	Seagate
2.5"	R734K	ST9500430SS	500GB	7.2K	Seagate
2.5"	W335K	ST9500431SS	500GB	7.2K	Seagate
2.5"	YJ0GR	HUC106030CSS600	300GB	10K	Hitachi
2.5"	8WP8W	HUC106060CSS600	600GB	10K	Hitachi
2.5"	745GC	ST9300605SS	300GB	10K	Seagate
2.5"	R72NV	ST9600205SS	600GB	10K	Seagate
2.5"	7T0DW	ST9600204SS	600GB	10K	Seagate
2.5"	8MP93	ST9600104SS	600GB	10K	Seagate
2.5"	8JRN4	ST9900805SS	900GB	10K	Seagate
2.5"	9W5WV	ST91000640SS	1TB	7.2K	Seagate
2.5"	55RMX	ST9500620SS	500GB	7.2K	Seagate
2.5"	740Y7	MBF2300RC	300GB	10K	Toshiba
2.5"	5R6CX	MBF2600RC	600GB	10K	Toshiba

2.5"	X79H3	WD3000BKHG	300GB	10K	Western Digital
2.5"	C5R62	WD6000BKHG	600GB	10K	Western Digital
3.5"	T875K	HUS156045VLS600	450GB	15k	Hitachi
3.5"	W348K	HUS156060VLS600	600GB	15k	Hitachi
3.5"	X150K	HUS156030VLS600	300GB	15K	Hitachi
3.5"	F617N	ST3300657SS	300GB	15K	Seagate
3.5"	X163K	ST3450757SS	450GB	15K	Seagate
3.5"	R749K	ST3450857SS	450GB	15K	Seagate
3.5"	T873K	ST3600957SS	600GB	15K	Seagate
3.5"	W347K	ST3600057SS	600GB	15K	Seagate
3.5"	U738K	ST31000424SS	1TB	7.2K	Seagate
3.5"	X164K	ST31000425SS	1TB	7.2K	Seagate
3.5"	R755K	ST32000444SS	2TB	7.2K	Seagate
3.5"	W350K	ST32000445SS	2TB	7.2K	Seagate
3.5"	U717K	ST3500414SS	500GB	7.2K	Seagate
3.5"	R752K	ST3600002ss	600GB	10K	Seagate
3.5"	91K8T	ST33000650SS	3TB	7.2K	Seagate
3.5"	6VNCJ	ST500NM0001	500GB	7.2K	Seagate
3.5"	7KXJR	MK1001TRKB	1TB	7.2K	Toshiba
3.5"	WDC07	MK2001TRKB	2TB	7.2K	Toshiba
3.5"	0V8G9	WD1000FYYG	1TB	7.2K	Western Digital
3.5"	YY34F	WD2000FYYG	2TB	7.2K	Western Digital

## Supported Expansion Enclosures

MD32/36 series storage arrays support a maximum of 192 physical disk slots (with premium feature activation). These additional slots can be provided by up to 15 MD1200 expansion enclosures, seven MD1220 expansion enclosures, or a combination of both. When a combination of expansion enclosures is used, total number of disk drive slots in the system cannot exceed 192. For a system without premium feature activation, this physical disk limit is 120.

Enclosure Model	Firmware Version
MD1200	1.01
MD1220	1.01

## Supported Management Software

### MD3200/MD3200i/MD3600i/MD3600f

Consolidated Resource DVD supporting all MD products listed above

#### Windows

Software Component	Version	Notes
MD3200 series Resource DVD	3.0.0.18	
Modular Disk Storage Manager	10.80.G6.47	
Modular Disk Configuration Utility	1.5.0.20	Supported on iSCSI only
MD3200 series VDS/VSS Providers	D0.80.36.10 / S0.80.36.10	
MD Storage Array vCenter Plug-in	see <i>vCenter Plug-in Support</i> table below	

#### Linux

Software Component	Version	Notes
MD3200 series Resource DVD	3.0.0.18	



Modular Disk Storage Manager	10.80.G6.47	
Modular Disk Configuration Utility	1.5.0.20	Supported with iSCSI storage arrays only.
MD3200 series Device Mapper		See section on <i>Supported Device Mapper Software</i>

## vCenter Plug-in Support

vCenter Version	VMware version supported	Notes
2.1	<u>iSCSI:</u> ESX/ESXi 4.1 ESX/ESXi 4.0 ESX/ESXi 3.5  <u>SAS:</u> ESX/ESXi 4.1 only  <u>Fibre Channel:</u> vCenter not supported	
2.2	<u>iSCSI and Fibre Channel:</u> ESX/ESXi 4.1 ESX/ESXi 4.0 ESX/ESXi 3.5  <u>SAS:</u> ESX/ESXi 4.1 only	
2.3 (32-bit)	<u>All protocols:</u> ESX/ESXi 4.1 ESX/ESXi 4.0 ESX/ESXi 3.5	
2.3 (64-bit)	<u>All protocols:</u> ESX/ESXi 5.0	

## Supported Operating Systems

Where clustering is supported by the operating system, it is also supported on the MD3200, MD3200i, MD3600i and MD3600f series storage arrays, subject to the following limitations:

**Windows 2008:** Maximum iSCSI nodes is 16; maximum SAS nodes is 4; maximum FC nodes is 16

**Windows 2003:** Clustering not supported with MD3200, MD3200i, MD3600i and MD3600f series Storage Arrays

Operating System	SAS Host Server	iSCSI Host Server	Management Station	Fibre Channel Host Server	Notes & Required Hotfixes
<b>Windows Server 2008 R2 SP1</b>					
Windows 2008 R2 SP1 Standard and Core	√	√	√	√	
Windows 2008 R2 SP1 Enterprise and Core	√	√	√	√	
Windows 2008 R2 SP1 Data Center and Core	√	√	√	√	
Windows 2008 R2 SP1 Foundation	√	√	√	√	

Windows 2008 R2 SP1 Web and Core			√		
Windows 2008 Storage Server R2 SP1 all editions	√	√	√	√	
Windows 2008 R2 SP1 HPC Server	√	√	√	√	
<b>Windows Server 2008 R2</b>					
Windows 2008 R2 Standard and Core	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
Windows 2008 R2 Enterprise and Core	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
Windows 2008 R2 Data Center and Core	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
Windows 2008 R2 Foundation	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
Windows 2008 R2 Web and Core			√		
Windows 2008 Storage Server R2 all editions	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
Windows 2008 R2 HPC Server	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
<b>Windows Server 2008</b>					
Windows 2008 SP2 Standard and Core (x86, x64)	√	√	√	√	
Windows 2008 SP2 Enterprise and Core (x86,x64)	√	√	√	√	
Windows 2008 SP2 Data Center and Core (x86, x64)	√	√	√	√	
Windows 2008 SP2 Foundation (x86, x64)	√	√	√	√	
Windows 2008 SP2 Web and Core (x86, x64)			√		
Windows 2008 Small Business Server SP2 (x86, x64)	√	√	√	√	
Windows 2008 Essential Business Server SP2 (x86, x64)	√	√	√	√	

Windows 2008 Storage Server SP2 Server, all editions, (x86, x64)	√	√	√	√	
Windows 2008 HPC Server SP2 Server, all editions (x86, x64)	√	√	√	√	
<b>Window Server 2003 R2</b>					
Windows 2003 R2 SP2 Standard (x86, x64)	√	√	√	√	KB950903, KB931300
Windows 2003 R2 SP2 Enterprise (x86,x64)	√	√	√	√	KB950903, KB931300
Windows 2003 Small Business Server R2 SP2 all editions (x86 only )	√	√	√	√	KB950903, KB931300
Windows Storage Server 2003 R2 SP2 all editions, (x86, x64)	√	√	√	√	KB950903, KB931300
Windows Unified Data Storage Server 2003 SP2 all editions, (x64)	√		√		KB950903, KB931300
<b>Red Hat Enterprise Linux</b>					
Red Hat Enterprise Linux 6.1 (base, AP, DT w/WS option)(x64 only)	√	√	√	√	
Red Hat Enterprise Linux 6.0 (base, AP, DT w/WS option)(x64 only)	Not Supported	Not Supported	√	Not Supported	RHEL 6.0 is not supported as a host operating system attached to MD-Series storage arrays. RHEL 6.1 is recommended.
Red Hat Enterprise Linux 5.7 (base, AP, DT w/WS option)(x86, x64)	√	√	√	√	
Red Hat Enterprise Linux 5.6 (base, AP, DT w/WS option)(x86, x64)	√	√	√	√	
Red Hat Enterprise Linux 5.5 (base, AP, DT w/WS option)(x86, x64)	√	√	√	√	Supported with firmware versions 07.75.xx.xx and 07.70.xx.xx
Red Hat Enterprise Linux 5.4+ (base, AP, DT w/WS option (x86, x64)	√	√	√	√	Supported with firmware versions 07.75.xx.xx and 07.70.xx.xx
Red Hat Enterprise Linux 5.4 (base, AP, DT w/WS option) (x86, x64)	√	√	√	√	Supported with firmware versions 07.75.xx.xx and 07.70.xx.xx
<b>SUSE Linux Enterprise Server</b>					
SUSE® Linux Enterprise Server 11.1 (x64 only)	√	√	√	√	

SUSE Linux Enterprise Server 11.0 (x64 only)	√	√	√	√	
SUSE Linux Enterprise Server 10.4 (x64 only)	√	√	√	√	
SUSE Linux Enterprise Server 10.3 (x64 only)	√	√	√	√	Supported with firmware versions 07.75.xx.xx and 07.70.xx.xx
<b>Virtualization Hosts / Hypervisors</b>					
Citrix XenServer 5.6.0 Retail Edition	√	√		√	
VMware ESXi 5.0	√	√		√	* Hardware iSCSI initiators are not supported. * Requires firmware version 07.80.xx.xx * Supported path policies: MRU, RR
VMware ESX/ESXi 4.1 Ux	√	√		√	Supported path policies: MRU, RR
VMware ESX/ESXi 4.1	√	√		√	Supported path policies: MRU, RR
VMware ESX/ESXi 4.0 Ux	√	√		√	* Requires firmware version 07.70.xx.xx or 07.75.xx.xx * Supported path policies: MRU, RR
VMware ESX/ESXi 4.0	√	√		√	* Requires firmware version 07.70.xx.xx or 07.75.xx.xx * Supported path policies: MRU, RR
Microsoft Hyper-V Server 2008 R2 SP1	√	√			
Microsoft Server 2008 R2 SP1 with Hyper-V	√	√	√	√	
Microsoft Hyper-V Server 2008 R2	√	√			KB979711, KB978000, KB980663, KB974672, KB981892
Microsoft Server 2008 R2 with Hyper-V	√	√	√	√	KB979711, KB978000, KB980663, KB974672, KB981892
Microsoft Hyper-V Server 2008 SP2	√	√			
Microsoft Server 2008 SP2 with Hyper-V	√	√	√	√	
<b>Windows Desktop Operating Systems</b>					
Windows 7 (x86, x64)			√		

Windows Vista SP2 (x86, x64)			√		
Windows XP SP3 (x86, x64)			√		

## Supported Device Mapper Software

Operating System	Component	Supported Version
SUSE Linux Enterprise Server 10 SP3	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.3.1.2-3dkms.noarch.rpm
SUSE Linux Enterprise Server 10 SP4	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.9.1.1-1dkms.noarch.rpm
SUSE Linux Enterprise Server 11	Kernel Version	kernel-default-2.6.27.39-0.3.1
	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.5.1.3-1dkms.noarch.rpm
	multipath-tools	Multipath-tools-0.4.8-40.6.1.x86_64.rpm
SUSE Linux Enterprise Server 11 SP1	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.5.2.2-1dkms.noarch.rpm
Red Hat Enterprise Linux 5.4	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.4.1.2-3dkms.noarch.rpm
Red Hat Enterprise Linux 5.4+	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.4.1.2-3dkms.noarch.rpm
Red Hat Enterprise Linux 5.5	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.4.2.1-3dkms.noarch.rpm
Red Hat Enterprise Linux 5.6	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.7.1.4-1dkms.noarch.rpm
Red Hat Enterprise Linux 5.7	scsi_dh_rdac DKMS package	Native
Red Hat Enterprise Linux 6.1	scsi_dh_rdac DKMS package	scsi_dh_rdac-1.8.1.1-1dkms.noarch.rpm

## Supported Fibre Channel Host Bus Adapters

Host Bus Adapter Name	Fabric Configuration	Direct-attach Configuration	Available from
<b>Qlogic*</b>			<a href="http://www.qlogic.com">www.qlogic.com</a>
QLE2560/62	√	√	
QLE2460/62	√	√	
QLE220	√	√	
<b>Emulex*</b>			<a href="http://www.emulex.com">www.emulex.com</a>
LPE12000/2	√	√	
LPE 11002	√	√	
LPE 1150	√	√	
<b>Brocade*</b>			<a href="http://www.brocade.com">www.brocade.com</a>
BR815/BR825	√		

\* See *Required Timeout Settings for Fibre Channel Host Bus Adapters* for required timeout settings by manufacturer.

## Required Timeout Settings for Fibre Channel Host Bus Adapters

This table shows required timeout settings for all Dell-supported fibre channel (FC) HBAs, by manufacturer and OS. Make sure that any FC HBA connected to your MD3600f storage array has these timeout values set as shown.

Use one of these manufacturer utilities to set these values on your HBA:

- *Brocade® Command Line Utility (BCU)*
- *Emulex® HBAnyware® or OneCommand™ Manager*
- *QLogic SANsurfer FC HBA Manager*

HBA Manufacturer	Timeout Parameter	Required Value (in seconds)
<b>Qlogic</b>		
Windows Server 2003 Release 2 (with Service Pack 2)	LinkDownTimeout	70
	PortDownRetryCount	70
Windows Server 2008 Release 2	LinkDownTimeout	10
	PortDownRetryCount	10
Windows Server 2008 Release 2 (with Service Pack 2)	LinkDownTimeout	10
	PortDownRetryCount	10
Linux only	qlport_down_retry	10
<b>Emulex</b>		
Windows only	LinkTimeout	10
	NodeTimeout	10
Linux only	lpfc_devloss_tmo	10
<b>Brocade</b>		
Windows and Linux	pathtov	10

## Supported HBAs, Required Drivers and Firmware

Operating System on Host Server	Brocade BR815/BR825	Emulex LPE11002 LPE12000/2 LPE1150	Qlogic QLE2460/62 QLE2560/62 QLE220
Windows Server 2003 (Service Pack 2)	Device driver version: 2.2.0.2  BIOS: 2.2.0.2	Device driver version: 2.40.005  Firmware: 1.11a5 Adapter Boot Version: 5.03a7  Required patches: KB932755  Recommended patches: KB945119	Device driver version: 9.1.8.25  BIOS: 2.10 Firmware: 5.01.03  Required patches: KB932755, KB939315, KB950903
Windows Server 2008 (Service Pack 2)	Device driver version: 2.2.0.2  BIOS: 2.2.0.2	Device driver version: 2.40.005  Firmware: 1.11a5 Adapter Boot Version: 5.03a7  No patches required	Device driver version: 9.1.8.25  BIOS: 2.10 Firmware: 5.01.03  No patches required
Windows Server 2008 Release 2 (Service Pack 1)	Device driver version: 2.3.0.0  BIOS: 2.3.0.0	Device driver version: 2.40.005  Firmware: 1.11a5 Adapter Boot Version: 5.03a7  No patches required	Device driver version: 9.1.8.25  BIOS: 2.10 Firmware: 5.01.03  No patches required
VMware ESX(i) 4.1	OS native  No patches required	OS native  Firmware: 1.11a5 Adapter Boot Version: 5.03a7  No patches required	OS native  BIOS: 2.02 Firmware: 4.03.01  No patches required
RHEL 6.x	Device driver version: 2.3.0.2  BIOS: 2.3.0.0	Device driver version: OS native  Firmware: 1.11a5 Adapter Boot Version: 5.03a7	Device driver version: OS native  BIOS: 3.0 FW: 5.04.01
RHEL 5.x	<u>RHEL 5.4</u> Not supported  <u>RHEL 5.5</u> Device driver version: 2.2.0.0  <u>RHEL 5.6</u> Device driver version: 2.3.0.0  BIOS: 2.3.0.0	<u>RHEL 5.4</u> Device driver version: 8.2.0.86  <u>RHEL 5.5</u> Device driver version: 8.2.0.86  <u>RHEL 5.6</u> Device driver version: 8.2.0.86  Firmware: 1.11a5 Adapter Boot Version: 5.03a7	<u>RHEL 5.4</u> Device driver version: OS native BIOS: 3.0 FW: in box  <u>RHEL 5.5</u> Device driver version: OS native BIOS: 3.00 Firmware: in box  <u>RHEL 5.6</u> Device driver version: OS native

			BIOS: 2.1 Firmware: 5.04.01(d5)
SLES 11	Device driver version: 2.3.0.0  BIOS: 2.3.0.0	Device driver version: 8.2.8.55  Firmware: 1.11a5 Adapter Boot Version: 5.03a7	Device driver version: OS native  BIOS: 2.12 Firmware: 5.03.02(d5)
SLES 11 (Service Pack 1)	Device driver version: 2.3.0.0  BIOS: 2.3.0.0	Device driver version: 8.3.5.25  Firmware: 1.11a5 Adapter Boot Version: 5.03a7	<u>QLE2560</u> Device driver version: OS native  <u>QLE2562</u> Device driver version: OS native  BIOS: 2.12 Firmware: 5.03.02(d5)
SLES 10 (Service Pack 3)	Device driver version: 2.3.0.0  BIOS: 2.3.0.0	Device driver version: 8.2.0.86  Firmware: 1.11a5 Adapter Boot Version: 5.03a7	<u>QLE2560</u> Device driver version: OS native  <u>QLE2562</u> Device driver version: OS native  BIOS: 2.12 Firmware: 5.03.02(d5)



## Supported Brocade & Dell PowerConnect FOS levels

<b>Switches</b>	<b>Firmware</b>	<b>Description</b>
Brocade		
200E	FOS 6.2.2	Brocade 4Gb 16 port FC switch
4100	FOS 6.4.1a	Brocade 4Gb 32 port FC switch
4900	FOS 6.4.1a	Brocade 4Gb 64 port FC switch
5000	FOS 6.4.1a	Brocade 4Gb 32 port FC switch
300	FOS 6.4.1a	Brocade 8Gb 24 port FC switch
5100	FOS 6.4.1a	Brocade 8Gb 40 port FC switch
5300	FOS 6.4.1a	Brocade 8Gb 80 port FC switch
DCX & DCX-4S		Director class switch chassis
FC8-48	FOS 6.4.1a	48 port 8Gb FC blade module
FC8-32	FOS 6.4.1a	32 port 8Gb FC blade module
FC8-16	FOS 6.4.1a	16 port 8Gb FC blade module
Dell PowerConnect B-DCX-4S		Dell PowerConnect Director class switch chassis
FC8-48	FOS 6.4.1a	48 port 8Gb FC blade module
FC8-32	FOS 6.4.1a	32 port 8Gb FC blade module
FC8-16	FOS 6.4.1a	16 port 8Gb FC blade module

## Tested Brocade, Cisco & Qlogic Fibre Channel Routers

<b>FCIP Routers</b>	<b>Description</b>
Brocade	
7500	Brocade 7500 Extension switch
7800	Brocade 7800 Extension switch
Cisco	
9216i	MDS 9216i Multilayer Fabric Switch
Qlogic	
6142	SANbox 6142

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