3PAR InForm® OS 2.3.1 Configuration Matrix



Revision Notice
This is the 19th release of this document. A complete revision history is provided at the end of this document.

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About this Document
This Configuration Matrix is a reference for supported InServ Storage Server configurations. For installation and update information, refer to the appropriate 3PAR Implementation Guide.

3PAR® Support Policy

Support of non-Compliant Environments

- A non-compliant configuration is defined as the use of the 3PAR InServ® Storage Server outside of current published specifications including InServ Storage Server Technical Specifications, *3PAR InForm® OS Configuration Matrix* (this document), and *3PAR Implementation Guides*.

- The 3PAR InForm OS Configuration Matrix represents the logical and physical elements that are fully qualified and supported by 3PAR. Any issues or problems within supported configurations receive our highest priority, our very best effort, and have a high probability of being reproduced, quickly explained, and aggressively corrected. Where a customer consciously chooses to implement components or configurations that are not included in this Configuration Matrix, they do so at their own risk, and with the understanding that any issues for such non-compliant configurations will be handled on a commercially reasonable best effort basis, at a priority level subservient to supported configurations, and could invoke an extended response and resolution timeframe. It is also possible that complex problems in non-compliant configurations could not be reproduced within 3PAR QA and test lab environments, and the customer should be prepared to provide their own lab environment for problem reproduction and troubleshooting activities. It's also possible that the end-result of a troubleshooting exercise for a non-compliant configuration could be the realization that an unsupported element might not function within 3PAR's ecosystem, resulting in the need to revert, change, or upgrade disruptively in order to resolve a specific problem.

3PAR® Support Policy (continued)

Support of non-Compliant Environments (continued)

- Under most circumstances, 3PAR will not specifically refuse to troubleshoot non-compliant configurations, but it's important for customers with non-compliant configurations to understand the risks associated with deployment of these configurations. Customers implementing non-compliant configurations should be prepared with Disaster Recovery solutions and contingency plans to work around these configurations if the need arises. It's also strongly recommended that non-compliant configurations be brought into compliance with 3PAR's Configuration Matrix as soon as possible.

3PAR® Support Policy (continued)

Support of OEM FC Host Bus Adapters

- 3PAR qualifies the InServ Storage Server for FC SAN connectivity to QLogic and Emulex branded FC HBAs and associated drivers/FW across all OS platforms we support, and branded HBA models (HP, IBM, AIX, and others) applying specifically to the cases recorded in this configuration matrix.

- Whether listed in this configuration matrix or not, 3PAR will support rebranded versions of QLogic and Emulex HBAs under the following conditions:

  - The rebranded HBA HW is identical to that sold under the QLogic or Emulex brand.
  - The driver, FW, and BIOS versions listed as qualified in this configuration matrix are used on those rebranded HBAs.

Note: HBAs that are not listed have not been tested by 3PAR.

3PAR® Support Policy (continued)

Support of OEM FC Switches

- 3PAR qualifies the InServ Storage Server for FC SAN connectivity to Brocade, Cisco, and QLogic FC switches and associated switch FW/OS.

- Whether listed in this configuration matrix or not, 3PAR will support rebranded versions of Brocade, QLogic, and Cisco FC switches under the following conditions:

    - The rebranded FC switch hardware is identical to that sold under the Brocade, QLogic, or Cisco brand.
    - The switch FW/OS versions listed as qualified in this configuration matrix are used on those rebranded FC switches.

Note: Switches that are not listed have not been tested by 3PAR.

3PAR InForm® OS 2.3.1 End-of-Support Platforms

What does End-of-Support mean?

- EOS Platforms will not be supported with InForm OS 2.3.1.
- EOS Platforms will continue to be supported with previous InForm OS releases.
- Customers connecting to EOS platforms on InForm OS 2.3.1 will be subject to the 3PAR Policy of Support for Non-Compliant Environments (page 3).

End-of-Support Platforms

- 2.3.1 Rev A announced:
  - AIX 5.1 version 5100-08, AIX 5.2 version 5200-06, AIX 5.3 version 5300-03
  - IBM AIX Virtual I/O Server 1.2.x, 1.3.x
  - VMware ESX 3.0.0, 3.0.1, 3.0.2
  - Egenera C-Blade software 4.x.x.x
  - Windows 2000
  - 3PAR MPIO 1.0.14, 1.0.16 for Windows 2003
  - RedHat 3
  - Novell SLES 9
  - Solaris JNI HBA on Solaris 8 and 9

3PAR InForm® OS 2.3.1 End-of-Support Platforms (continued)

End-of-Support Platforms (continued)

- HPUX 11iv1 and 11iv2
- Tru64
- PolyServe Matrix Server for RHEL 2.7.2, 3.1.2
- PolyServe Matrix Server for Windows 3.4.0
- FalconStor NSS, CDP 5
- LSI ONStor EverON 2.2.x, 3.0.x
- NetApp V-series – ONTAP 7.2.2, 7.2.3, 7.2.4
- DataDomain v4.3.x.x, 4.4.x.x, v4.5.x.x, v4.6.x.x
- O/S iSCSI software initiator – Window 2000
- O/S iSCSI software initiator – SLES 9
- O/S iSCSI software initiator – ESX 3.0.1 3.0.2
- Blade Server - HP Blade Server p-class
- Switches – McData 2G: 3016, 3216
- Symantec Storage Foundation 3.x –including VxVM and VCS
- Symantec Storage Foundation 4.0 for Linux, AIX, Solaris
- Symantec Storage Foundation 4.1 for Solaris and HP-UX
- Symantec Storage Foundation 4.3 for Windows

Revision History

320-200172 Rev A November 2009	Initial release of this document to support InForm OS version 2.3.1.
320-200172 Rev B December 2009	- Added IBM Blade server HS22 – 8GB QLogic (44x1945(QMI2582) and 44x1940(QMI3572) - Added Dell M610, M710, M905 blade servers – 8GB QLogic (QME2572) - Added Windows 2008 R2 – 9.1.8.6 QLogic (QMH2462) - Added QLogic driver v8.02.00.06.05.03-k (RHEL5U3 only) - Added Polyserve Matrix v3.7.0 for RHEL5 Linux
320-200172 Rev C January 2010	- Added Recovery Manager 3.0.2 for Exchange - Added Recovery Manager 3.0.2 for SQL - Added Recovery Manager 1.1.0 for VMware vSphere - Added System Reporter 2.6.2
320-200172 Rev D February 2010	- Added SP2 support to VSS Provider 1.6.1 - Added SP2 support to Recovery Manager 3.0.2 for SQL
320-200172 Rev E March 2010	-Added additional Fabric FW/FOS support for Fibre Channel Switches -Added additional MPIO levels to Windows 2003 Fibre Channel -Added SP2 support for Windows 2008 Fibre Channel -Added new level of support for Sun Storage Tek 4G (SG-XPCI2FC-QF4) -Added additional support of AIX Fibre Channel (IBM 8Gbps (only P6 servers), AIX 6.1 6100-04, AIX 5300-08) -Added level 4 for RedHat Linux Fibre Channel -Added R2 support for Microsoft HyperV -Added support for JS22, JS23, and JS43 Blade Servers
320-200172 Rev F April 2010	-Added 3PAR Multipath I/O 1.0.23 for Microsoft Windows 2003 -Added Cisco Unified Computing System (UCS) -Added an IBM 9.1.7.55 STOR Miniport driver for Windows 2003 -Added HP-UX Fibre Channel HBA AD222A -Added HP-UX Fibre Channel HBA driver B.11.31.0909 -Added Citrix XenServer 5.5 as a new Virtual OS -Added QLogic 4Gbps driver 44M6065 (QMI2572) for IBM BladeCenter

320-200172 Rev F April 2010	-Added QLogic 8Gbps driver QMH2562 for HP BladeSystem (c-class) -Added Blade Server support for HPUX 11iv3 OS -Added Windows 2003 SP2 OS support for Oracle 11g RAC Application -Added RHEL 5.4 OS support for Oracle 11g RAC Application
320-200172 Rev G April 2010	-Added 9200 series Fibre Channel switch -Added QLogic Fibre Channel HBA driver for Windows 2003 -Added Emulex Fibre Channel HBA firmware for Windows 2003 -Added QLogic Fibre Channel HBA driver for Windows 2008 -Added Emulex Fibre Channel HBA firmware for Windows 2008 -Updated Solaris Fibre Channel HBA, HBA Drivers, and HBA Firmware -Added new OS level for AIX Fibre Channel IBM Virtual Server -Added 8G HBA firmware for Red Hat Linux Fibre Channel -Added 8G HBA firmware for SUSE Linux Fibre Channel -Added HP-UX OS to Oracle 10g RAC Application -Added HP-UX OS to Oracle 11g RAC Application -Added RHEL 5.4 and 5.2 OS to Oracle 11g RAC Application
320-200172 Rev H May 2010	-Added VSS Provider 1.6.2 table -Added System Reporter 2.7.1 table -Added VMware ESX 4.0 Operating System to Cisco Unified Computing System -Added a revised Support of non-Compliance Environment statement -Added Cisco NX-OS 4.2(5) FW for Fibre Channel switches -Added ESX 4.0 support for Cisco Unified Computing System -Added Emulex 2.80a4 firmware and Emulex v2.30.020 driver support to Windows 2003 Fibre Channel -Added QLogic 931.8.19 and Emulex 2.30.016, 2.30.020 driver and Emulex 2.80a4 firmware support Windows 2008 Fibre Channel -Added Veritas VxDMP 5.1 GA Multipath and Veritas VCS 5.1 GA Host Clustering support for Solaris Fibre Channel -Added AIX 6.1 6100-05 and AIX 5.3 5300-12 support to AIX Fibre Channel -Added Emulex 5.03a2 firmware, 8.03.00.10.10.3-k4 driver, and patch SP3 for SUSE Linux Fibre Channel -Added additional support for Oracle 11g RAC Application -Added Cisco 9148 series switch and NX-OS 5.0(1a) firmware for Fibre Channel

320-200172 Rev J June 2010	-Added Veritas VxDMP 5.1 GA, 5.1 SP1 multipath support for Windows 2003 and Windows 2008 -Added Veritas VCS 5.1 GA, 5.1 SP1 host clustering support for Windows 2003 and Windows 2008 -Added Veritas VCS 5.1 SP1 host clustering support for Windows 2008 -Added Veritas VCS 5.1 SP1 multipath support for Windows 2008 -Added FalconStor NSS, CDP server support to appliances -Added FalconStor Operating Systems NSS, CDP v6.0, v6.1 support for appliances -Added FalconStor VTL Server v5.20 support to appliances -Added IBM General Parallel File System (GPFS) version 3.2 and 3.3 support for Redhat Linux and SUSE Linux Fibre Channel -Added VMware ESX 4.0 U1 support for Virtual OS -Added NetApp ONTAP 7.3.3 support for Appliances -Added AIX 6.1 support for Oracle 11g -Added QLogic 1.54 and 2.02 support for Windows 2003 Fibre Channel -Added VMware ESX 4.0 U1 support for Cisco Unified Computing System (UCS) -Added Cisco Unified Computing Systems support for B250 and B440 blade servers
320-200172 Rev K June 2010	-Added support notes for Windows 2008
320-200172 Rev L July 2010	-Added new support tables for Recovery Manager 3.0.3 for Oracle for Solaris SPARC for RAC and non-RAC -Added new support tables for Recovery Manager 3.0.3 for Oracle for Red Hat Linux for RAC and non-RAC -Added Solaris Fibre Channel support for Solaris 10 MU8 -Added LPem11002-S Emulex HBA for Solaris Fibre Channel -Added VMware ESXi OS support for Virtual OS -Added VMware 4.0 U2 and 4.1 OS support for Virtual OS -Added host clustering support for RHEL 5.4 -Added VMware ESXi OS support for iSCSI -Added VMware ESX/ESXi 3.x, 4.0 GA, 4.0 U1, 4.0 U2, and 4.1 OS support for Blade Servers -Added HBA SG-XPCIE2FC-EBA-Z support for Blade Servers -Added Emulex 2.82a4 firmware support for Solaris Fibre Channel

320-200172 Rev M August 2010	-Added QLogic 7.4.0.16.0 firmware to Fibre Channel Switches -Added VMware ESX 4.0 U1 for Cisco Unified Computing System -Added QLogic 2.10 and HP 2.12 for Windows 2003 -Added QLogic 2.10 and HP 2.12 for Windows 2008 -Added SUSE SLES10 SP3 for iSCSI -Added Hyper-V support for Blade Servers -Added Linux (RH, SUSE) RH4 U2-U8, RH5 U1-U4), SLES10 SP1-SP3, SLES11 -Added QLogic 7.8.0.8.0 Fabric firmware -Added Global File System 2 to Red Hat Linux -Added note indicating ESX/ESXi 4.1 VAAI plug-in not supported for virtual OS -Added NetApp ONTAP 7.3.2 -Added 3PAR VSS 1.6.2 -Added MySQL 5.1
320-200172 Rev N September 2010	-Added Brocade 6.4.x to Fibre Channel Switches table -Added ESX 4.0 support for Cisco FCoE switches -Added Oracle Enterprise Linux support for RHEL -Added QLogic 9100 series switches to Fibre Channel Switches table -Added RHEL 5U4 and 5U5 support for Cisco Unified Computing System -Added QLogic 9.1.8.17 HBA driver to Windows 2008 -Added QLogic 2.32 HBA driver for Solaris -Added Emulex 2.50s HBA driver for Solaris -Added RHEL 5U5 OS support for RHEL Fibre Channel table -Added RHEL 5U5 8.03.01.04.05.05-k HBA driver for RHEL Fibre Channel table -Added Emulex 8.2.0.71 HBA driver for RHEL Fibre Channel table -Added Emulex 8.2.0.33.3p (RHEL5.3 in-box) 8.2.0.71, 8.2.0.48.2p (RHEL 5.4 in-box) 8.2.0.71, 8.2.0.63.3p (RHEL 5.5 in-box) 8.2.0.71 -Added new 3PAR VAAI Plug-In 1.1.0 table -Added new Recovery Manager 4.1.0 for Exchange table
320-200172 Rev P October 2010	-Updated Red Hat Enterprise Linux table

320-200172 Rev R October 2010	-Added a new FCoE Switch table -Added a new support for a new HBA driver for Red Hat Enterprise Linux Fibre Channel -Added a new OS support for AIX Fibre Channel -Added a new server support for AIX Fibre Channel -Added a new iSCSI initiator -Added multipath support for iSCSI -Added new Backup Tools for 3PAR VSS Provider 1.6.2
320-200172 Rev S November 2010	-Added a new System Reporter 2.8 table -Added support for an HBA on Blade Servers -Added support for new Blade Servers -Added support for Brocade Encryption Switch -Supported blade server interconnect modules are now listed -Added Cluster support for Host Explorer -Added HBA Driver support for HP StorageWorks appliances -Added HBA Driver support for RHEL
320-200172 Rev T December 2010	-Added virtual support for Oracle VM Server and Oracle VM Manager -Added support for new HBAs for HP-UX -Added support for Citrix XenServer 5.6
320-200172 Rev U January 2011	-Added OS support for HP StorageWorks appliances -Added new support tables for Recovery Manager 4.1.0 for SQL -Added new support tables for Recovery Manager 3.0.4 for Oracle for Red Hat Linux (non-RAC), for Solaris SPARC (non-RAC), and for RAC -Added Fabric Interconnect column to UCS section -Added support tables for GeoCluster for Microsoft Windows
320-200172 Rev V February 2011	-Miscellaneous technical changes, including updates to HP StorageWorks appliances -Added support for HP StorageWorks X9000 -Added support for HP StorageWorks X3000

2.3.1 Host Connectivity Limits

	E-Class	S-Class 2 | 4 | 8 Nodes	F-Class 2 | 4 Nodes	T-Class 2 | 4 | 8 Nodes
Host Connectivity				
Max Initiators per InServ (SAN or SAN/Direct-connect) - max 3 host HBAs per node	768	1024	1024	1024
Host Connectivity (Fibre Channel)				
Max FC Initiators per InServ	768	1024	768 | 1024	1024
Fan-Out (Max initiators (host HBA ports) per InServ port over SAN) **Note:** This limit is an aggregate of the total iSCSI and/or FC initiators	64 (see Note)	64 (see Note)	64 (see Note)	64 (see Note)
Fan-In (Number of InServ ports visible to a single initiator (host HBA port))	4	4	4	4
Host Connectivity (iSCSI)				
Max iSCSI Initiators per InServ	256	512 | 1024 | 1024	512 | 1024	512 | 1024 | 1024
Max Dual-path iSCSI **Linux** hosts per InServ	128	256 | 512 | 512	256 | 512	256 | 512 | 512
Max Dual-path iSCSI **Windows** hosts per InServ (Each iSCSI Windows initiator visible to a single InServ port = 1 initiator; Windows host with 1 iSCSI initiator that is visible to two InServ ports via IP network is equivalent to a dual-path host and counts as 2 initiators)	128	256 | 512 | 512	256 | 512	256 | 512 | 512
Fan-Out (Max iSCSI initiators per InServ port over IP network; each Linux iSCSI initiator counts as two iSCSI initiators on the InServ)	64	64	64	64
Fan-In (Number of InServ ports visible to a single initiator)	2	4	4	4
Drive Chassis & Disk Connectivity				
Max Distance from Host to Storage	1 mile (Data center/ small campus) or 0.1 ms	1 mile (Data center/ small campus) or 0.1 ms	1 mile (Data center/ small campus) or 0.1 ms	1 mile (Data center/ small campus) or 0.1 ms

Note: Host connectivity limits for configurations with Vmware ESX servers are limited to an aggregate of 32 host initiators fan-out per 4Gbs InServ port and 16 host initiators fan-out per 2Gbs InServ port. This separate limitation applies to all InServ models and node configurations. Please refer to the VMware Implementation Guide for further details.

2.3.1 Virtual Volume Limits

	E-Class	S-Class	F-Class	T-Class
Maximum Volume Limits				
Max Virtual Volume (VV) per system (Base VVs + Virtual Copies (VC) + Full Copies (FC))	8,192	8,192	8,192	8,192
Max Base VVs (Normal VV or Thinly Provisioned VV)	4,095	4,095	4,095	4,095
Max Snapshots per system	Max VV (8192) less Base VVs created	Max VV (8192) less Base VVs created	Max VV (8192) less Base VVs created	Max VV (8192) less Base VVs created
Max VLUNs	32,000	32,000	32,000	32,000
Max TPVVs per Common Provision Group (CPG)	4,095	4,095	4,095	4,095
Virtual Copy Limits				
Total Max Snapshot (SS) per VV	500	500	500	500
Max SS per VV: Read Only	500	500	500	500
Max SS per VV: Read Write	256	256	256	256
Max Read Write Snapshots per Read Only Snapshot	256	256	256	256
Max VVs per Consistency Group for group snapshots (VC or FC)	100	100	100	100
Other Limits				
Max CPGs per system	2,048	2,048	2,048	2,048
Max number of domains	1,024	1,024	1,024	1,024
Max number of domains a given user can belong to	32	32	32	32

Note: There are no additional limits placed on the number of VVs, VLUNs, hosts, CPGs, CLI/GUI connections per domain beyond the system limits.

2.3.1 Remote Copy Limits

	E-Class	S-Class	F-Class	T-Class
Remote Copy Limits				
MTU Sizes	1500 thru 9000 Bytes	1500 thru 9000 Bytes	1500 thru 9000 Bytes	1500 thru 9000 Bytes
Max Distance and Delay				
Max Replicated Volumes per InServ Storage Server (Asynchronous Periodic)	2400	2400	2400	2400
Max Replicated Volumes per InServ Storage Server (Synchronous)	800	800	800	800
Max Replicated Volumes per InServ Storage Server (Synchronous Long Distance)	800	800	800	800
Max Replicated Volumes per InServ Storage Server (1-to-N; Max N=2)				
Asynchronous Periodic mode only	2400	2400	2400	2400
Mix of Synchronous mode and Asynchronous Periodic Mode	800	800	800	800
Max Replicated Volumes per InServ (N-to-1; Max N=4)				
Asynchronous Periodic mode only	2400	2400	2400	2400
Synchronous over IP	130 miles or 1.3 ms (roundtrip)	130 miles or 1.3 ms (roundtrip)	130 miles or 1.3 ms (roundtrip)	130 miles or 1.3 ms (roundtrip)
Synchronous over FC	130 miles or 1.3ms (roundtrip)	130 miles or 1.3ms (roundtrip)	130 miles or 1.3ms (roundtrip)	130 miles or 1.3ms (roundtrip)
Asynchronous Periodic over IP	3000 miles or 150ms (roundtrip)	3000 miles or 150ms (roundtrip)	3000 miles or 150ms (roundtrip)	3000 miles or 150ms (roundtrip)
Asynchronous Periodic over FC	130 miles or 1.3ms (roundtrip)	130 miles or 1.3ms (roundtrip)	130 miles or 1.3ms (roundtrip)	130 miles or 1.3ms (roundtrip)
Asynchronous Periodic over FCIP	60ms (roundtrip)	60ms (roundtrip)	60ms (roundtrip)	60ms (roundtrip)
Mix and Match				
InForm OS Release versions on Primary and Secondary Nodes (all MU versions are treated as the same OS version)	Must be same version	Must be same version	Must be same version	Must be same version

Fibre Channel Switches

Blue = new for this revision

Vendor	Switch Model	Fabric FW/FOS	Speed			Notes
			2Gbps	4Gbps	8Gbps	
Brocade	3000, 3200, 3800	3.2.1	X			Customers are encouraged to migrate off 2GB switches as support will not be offered in future InForm releases
	3250, 3850	5.3.x	X			
	3900	5.3.x	X			
	12000	5.0.5	X			
	24000	5.3.x	X			
	M4500	E/OS 9.6.x, 9.7x, 9.8.x, 9.9.x	X			
	M6140, M6064	E/OS 9.6.x, 9.7x, 9.8.x, 9.9.x	X			
	i10000 (i10K)	E/OS 9.6.x, 9.9.x	X			
	200E	6.0.x, 6,1,x, 6.2.x		X		Access Gateway mode supported, v5.2.1 minimum
	4100, 4900, 5000, 7500	6.0.x, 6,.1.x, 6.2.x, 6.3.x, 6.4.x		X		4100 not supported in Interop mode with M-EOS fabrics
	48000, FA4-18blade	6.0.x, 6.1.x, 6.2.x, 6.3.x, 6.4.x		X		
	M4400, M4700	E/OS 9.6.x, 9.7x, 9.8.x, 9.9.x		X		
	300, 5100, 5300, 5080 (OEM by HP), DCX	6.1.x, 6.2.x, 6.3.x, 6.4.x			X	
	Brocade Encryption Switch / FS8-18 Encryption Blade	6.4.0, 6.4.1			X	Access Gateway mode not supported. Remote Copy not started. Brocade and Brocade (McData) fabric supported (all supported by Brocade Encryption Switch) Operating Systems supported: Windows 2003 (MSCS not supported), Windows 2008 (Failover Cluster not supported), RHEL 4.x, RHEL 5.x, VMware 4.x (3PAR VAAI plug-in not supported). See operating system specific matrix pages for supported operating system versions, HBA drivers, firmware and BIOS.
Cisco	9200 series	NX-OS 2.1(x), 3.0(x), 3.1(x), 3.2(x), 3.3(x), 4.1(x), 4.2(x), 5.0(x)	X			
	9124, 9148, 9134 series	NX-OS 2.1(x), 3.0(x), 3.1(x), 3.2(x), 3.3(x), 4.1(x), 4.2(x), 5.0(x)		X	X	Only the 9148 series operates up to 8GB
	9500 series	NX-OS 2.1(x), 3.0(x), 3.1(x), 3.2(x), 3.3(x), 4.1(x), 4.2(x), 5.0(x)			X	9500 series switches can have blade modules with 2/4/8 Gbps FC ports.
QLogic	SANbox2 (8/16/64)	5.0.0.27.x, 5.0.0.31.x, 5.0.1.10.x	X			Customers are encouraged to migrate off 2Gbps switches as support will not be offered in future InForm releases
	5200	6.2.1.03, 6.2.1.06, 6.8.0.03, 7.4.0.06, 7.4.0.16.0	X			
	5600	6.2.1.03, 6.2.1.06, 6.8.0.03, 7.4.0.06, 7.4.0.16.0		X		
	5800 series, 9000 series, 9100 series, 9200 series	7.4.0.06, 7.8.0.4.0, 7.8.0.8.0			X	The QLogic 9000 can have blade modules that support 4 and 8GB ports

FCoE Switches

Blue = new for this revision

Vendor	Switch Model	Operating System		Multipath Support	Converged Network Adapter (CNA)	NX-OS	MDS OS/FM
		Type	Version				
Cisco	Nexus 5000	Windows 2003	Enterprise R2, SP2 x64	3PAR-MPIO 1.0.23	Qlogic: QLE814x Emulex: LP2100x	4.1.(3)N1(1a)	3.3(2), 3.3(3), 3.3(5), 5.0(1a), 4.2(5)
		Windows 2008	Enterprise SP2 x64	MS-MPIO			
		RHEL	RH5U3 x64	device-mapper-1.02.28-2.el5 device-mapper-multipath-0.4.7-23.el5	Qlogic: QLE814x Emulex: LP2100x	4.1.(3)N1(1a)	3.3(1c), 3.3(2), 4.1(1c), 4.1(3a)
		VMware	ESX 4.0	VMware Embedded	Emulex: LP2100x	4.1.(3)N1(1a)	3.3(2), 3.3(3), 3.3(5), 5.0(1a), 4.2(5)

Cisco Unified Computing System (UCS)

Blue = new for this revision

Operating System	Fabric Interconnect	Server	Adapter Model	Adapter Driver	Adapter Firmware	Adapter Boot Code - BIOS	Host Boot	MultiPath	Host Clustering
Microsoft Windows Server 2003 R2 x86	UCS 6120XP, 6140XP firmware version 1.1(1l), 1.2(1b)	UCS B200, B250, B440 M1 Blade Server	UCS M71KR-E	5.2.20.006[2]	2.80a4	5.03a8	Yes	3PAR MPIO 1.0.23	Yes
Microsoft Windows Server 2003 R2 x64				5.2.20.006[2]	2.80a4	5.03a8		3PAR MPIO 1.0.23	Yes
Microsoft Windows Server 2008 x64 w/Hyper-V				7.2.20.006[2]	2.80a4	5.03a8		Windows 2008 embedded	Yes
Microsoft Windows Server 2008 R2 x64 w/Hyper-V				7.2.20.006[2]	2.80a4	5.03a8		Windows 2008 embedded	Yes
RHEL 5U3 64-bit[1]				8.2.0.71[2]	2.80a4	5.03a8		RHEL 5U3 embedded Device Mapper	No
RHEL 5U4 64-bit				8.2.0.71[2]	2.80a4	5.03a8		RHEL 5U4 embedded Device Mapper	No
RHEL 5U5 64-bit				8.2.0.71[2]	2.80a4	5.03a8		RHEL 5U5 embedded Device Mapper	No
VMware ESX 4.0				8.2.0.30.49vmw	1.00 (A3D1.00X1)	5.03a5		ESX 4.0 embedded	Yes
Microsoft Windows Server 2003 R2 x86			UCS M71KR-Q	9.1.8.17[2]	5.01.02	2.04		3PAR MPIO 1.0.23	Yes
Microsoft Windows Server 2003 R2 x64				9.1.8.17[2]	5.01.02	2.04		3PAR MPIO 1.0.23	Yes
Microsoft Windows Server 2008 x64 w/Hyper-V				9.1.8.17[2]	5.01.02	2.04		Windows 2008 embedded	Yes
Microsoft Windows Server 2008 R2 x64 w/Hyper-V				9.1.8.17[2]	5.01.02	2.04		Windows 2008 embedded	Yes
RHEL 5U3 64-bit[1]				8.02.00.06.05.03-k (in-box)	4.04.05	2.02		RHEL 5U3 embedded Device Mapper	No
RHEL 5U4 64-bit				8.03.00.10.05.04-k (in-box)	4.04.09	2.02		RHEL 5U4 embedded Device Mapper	No
RHEL 5U5 64-bit				8.03.01.04.05.05-k (in-box)	4.04.09	2.02		RHEL 5U5 embedded Device Mapper	No
VMware ESX 4.0, 4.0 U1				821.k1.38vmw	Embedded	Embedded		ESX 4.0 embedded	Yes
VMware ESX 4.0 U1			UCS M81KR	1.1.0.108[4]	Embedded	Embedded		ESX 4.0 embedded	Yes
RHEL 5U4				1.1.1c [2,4]	1.2 (1b)	Embedded		RHEL 5U4 embedded Device Mapper	No
Microsoft Windows Server 2008 R2 x64 w/Hyper-V				1.1.0.1379 [2, 3, 4]	1.2 (1b)	Embedded		OS embedded	Yes

Notes

1: RHEL 5.3 requires updating to errata kernel 2.6.18-128.1.6 or newer due to advisory RHSA-2009:0326.

2: Driver not included in OS image. Download from Cisco or OS vendor and install driver to enable device access.

3: Driver does not support LUNs larger than 2TB.

4: HBA driver does not support more than 2 paths to each LUN on SAN booted configurations.

Windows 2003 Fibre Channel

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	HBA Firmware	SAN Boot HBA BIOS	MultiPath	Host Clustering
Windows 2003 32-bit SP1, SP2, R2 SP1, R2 SP2 ——— Windows 2003 64-bit SP1, SP2, R2 SP1, R2 SP2	x86, x64	QLogic 8GB QLE2560, QLE2562 ——— QLogic 4GB QLA2440, QLA2460, QLA2462, QLE2440, QLE2460, QLE2462, QLE2464, QME2472, 26R0890 (IBM), 26R0884 (IBM), 41Y8527 (IBM), 39Y9306 (IBM), (HP -QMH2462), (Dell - QME2472) ——— QLogic 2GB QLA2310, QLA2340, QLA2342, QLA2344, QLA2350, QLA2352, QLE2360, QLE2362, QME2462, 26K4859 (IBM), 26K4841 (IBM), 341-3574 (Dell)	STOR Miniport 9.1.2.19(IBM), 9.1.3.16(HP), 9.1.3.18(HP), 9.1.4.15(QLogic), 9.1.7.16(QLogic), 9.1.7.17(HP), 9.1.7.18(QLogic), 9.1.7.55(IBM), 9.1.8.25 (QLogic)	embedded in driver	QLogic 1.24, 1.43(IBM), 1.47, 1.52, 1.54, 2.02, 2.10(QLogic), 2.12(HP) ——— HP 1.26, 1.45, 1.48 ——— IBM 1.24, 1.47	3PAR MPIO 1.0.22.7, 1.0.23 ——— Veritas VxDMP 5.0, 5.1 GA, 5.1 SP1[1]	MSCS (with 3PAR MPIO or VxDMP) ——— Veritas VCS (with VxDMP only) 5.0, 5.1 GA, 5.1 SP1[1]
Windows 2003 Itanium SP1, SP2	IA-64		STOR Miniport 9.1.4.15(QLogic), 9.1.7.16(QLogic), 9.1.7.17(HP), 9.1.7.18(QLogic), 9.1.7.55(IBM)		Not supported for IA64		
Windows 2003 32-bit SP1, SP2, R2 SP1, R2 SP2 ——— Windows 2003 64-bit SP1, SP2, R2 SP1, R2 SP2	x86, x64	Emulex 8GB LPe1250, LPe12000, LPe12002 ——— Emulex 4GB LP1105M, LP1150, LP11000, LP11002, LPe1105M, LPe1150, LPe11000, LPe11002, 39Y9186 (IBM), 43W6859 (IBM), 403621-B21 (HP -LPE1105), 341-3575 (Dell) ——— Emulex 2GB LP952L, LP982, LP9002, LP9402, LP9802, LP10000, LP1050	STOR Miniport 1.20a7(HP), 1.30a9(Emulex + IBM), 2.01a4(Emulex), 2.10a7(Emulex), 2.20.006(Emulex), 2.30.020(Emulex)	Emulex 8GB 1.10A5(Emulex) ——— Emulex 4GB 2.10a10(IBM), 2.70a5(Emulex), 2.50a8, 2.70a5(HP, Emulex), 2.72A2(HP, Emulex), 2.82.a4 (Emulex), 2.80a4(Emulex) ——— Emulex 2GB 3.92a2(Emulex), 3.93a0(Emulex) ——— Emulex 2GB 1.91a1(Emulex), 1.91a5(HP), 1.92a1(HP, Emulex)	Emulex 2.00a1 ——— HP 2.00a1, 6.00a2(3.00a4) ——— IBM 1.71a0	3PAR MPIO 1.0.22.7, 1.0.23 ——— Veritas VxDMP 5.0, 5.1 GA, 5.1 SP1[1]	
Windows 2003 Itanium SP1, SP2	IA-64				Not supported for IA64		

Note

1: Load balancing policies "Weighted Path" and "Round-Robin with Subset" are not supported at this time.

Windows 2008 Fibre Channel

Blue = new for this revision

<table>
<tr><th>Operating System</th><th>Server</th><th>HBA</th><th>HBA Driver</th><th>HBA Firmware</th><th>Host Boot</th><th>MultiPath</th><th>Host Clustering</th></tr>
<tr><td>Windows 2008 SP1, SP2, 32-bit</td><td rowspan="6">Intel/AMD x86, x64 - Intel IA64[1]</td><td rowspan="3">QLogic 8GB
QLE2560, QLE2562
———
QLogic 4GB
QLA2440, QLA2460, QLA2462, QLE2440, QLE2460, QLE2462, QLE2464, QME2472, 26R0890, 26R0884, 41Y8527, 39Y9306, 403619-B21, 430-2786
———
QLogic 2GB
QLA2310, QLA2340, QLA2342, QLA2344, QLA2350, QLA2352, QLE2360, QLE2362, QME2462, 26K4859, 26K4841, 300874-B21, 361426-B21, 381881-B21, 354054-B21, 341-3574</td><td rowspan="3">STOR Miniport QLogic
9.1.6.15 (HP), 9.1.7.16 (QLogic), 9.1.7.17 (HP), 9.1.7.18 (QLogic), 9.1.7.29(HP), 9.1.8.25 (QLogic), 9.1.8.19, 9.1.8.17, 9.1.8.17, 9.1.8.6, 9.1.9.25</td><td rowspan="3">Embedded in driver</td><td>QLogic
1.29 (QLogic), 1.47 (IBM), 1.48 (HP), 1.54 (QLogic)
———
2.12(HP), 2.10(QLogic) 2.02, 1.29, 1.26 (QMH2462) (Windows 2008 R2 only)</td><td rowspan="6">Windows 2008 Embedded MPIO
———
Veritas VxDMP 5.1 GA, 5.1 SP1[3]</td><td rowspan="6">Microsoft Failover cluster [4, 5]
———
Veritas VCS 5.1 SP1, 5.1 GA</td></tr>
<tr><td>Windows 2008 SP1, SP2, R2 64-bit[2]</td><td></td></tr>
<tr><td>Windows 2008 SP1, SP2, R2 Itanium</td><td>Not supported for IA64</td></tr>
<tr><td>Windows 2008 SP1, SP2</td><td rowspan="3">Emulex 8GB
LPe1250, LPe12000, LPe12002
———
Emulex 4GB
LP1105M, LP1150, LP11000, LP11002, LPe1105M, LPe1150, LPe11000, LPe11002, 39Y9186, 43W6859, 403621-B21, 341-3575
———
Emulex 2GB
LP952L, LP982, LP9002, LP9402, LP9802, LP10000, LP1050, 394757-B21, 394588-B21</td><td rowspan="3">STOR Miniport Emulex
2.01a4, 2.10a7, 2.20.006, 2.30.016, 2.30.020
———
2.20.006</td><td rowspan="3">Emulex 2GB
3.93a0 (Emulex)
1.92a1 (HP, Emulex)
———
Emulex 4GB
2.70a5 (IBM), 2.72a2 (HP, Emulex), 2.82.a4 (Emulex), 2.80a4
———
Emulex 8GB
1.10a5, 2.72.a2</td><td>Emulex
1.71a1 (IBM),
2.01A2 (Emulex,HP)
6.00a2(3.00a4) (HP)
———
5.03a2, 5.02a0</td></tr>
<tr><td>Windows 2008 SP1, SP2, R2 64-bit[2]</td><td></td></tr>
<tr><td>Windows 2008 SP1, SP2, R2 Itanium</td><td>Not supported for IA64</td></tr>
</table>

Notes

1: Each of the different Windows 2008 versions (x86, x64 and IA64) is only supported with the respective hardware architecture. Example: W2k8 x86 on Intel/ADM x86/x64, W2k8 x64 on Intel/AMD x64. etc.

2: Windows 2008 R2 Hyper-V Live Migration is supported.

3: Load balancing policies "Weighted Path" and "Round-Robin with Subset" are not supported at this time.

4: Microsoft Windows 2008 R2 Failover cluster with MS-MPIO needs to be in maintenance mode when performing InServ Storage Server rolling upgrades (direct connect only).

5: Microsoft Windows 2008 SP1, SP2, R1 Failover cluster with MS-MPIO needs to be in maintenance mode when performing InServ Storage Server rolling upgrades (direct and fabric connect only).

Solaris Fibre Channel

Blue = new for this revision

Operating System & Architecture	HBA Families	HBA Driver	HBA Firmware	SAN Boot	MultiPath	Host Clustering
Intel/AMD x86 Solaris10 MU3-MU8	341-3574 (Dell QLogic) ——— QLogic 2G QLA2340, QLA2342, QLA2310F, QLA2310FL, QLA2340, QLA2342L, QLA2342, QLA2344 (QLogic), SG-XPCI1FC-QF2, X6767A, SG-XPCI2FC-QF2, X6768A, SG-XPCI2FC-QF2-Z, SG-XPCI1FC-QL2 (Sun QLogic), QME2462(Dell QLogic) ——— QLogic 4G QLA2460, QLA2462, QLE2460, QLE2462, QLE2464(QLogic), SG-XPCIE1FC-QF4, SG-XPCIE2FC-QB4-Z, SG-XPCIE2FC-QF4 (Sun QLogic), QME2472 (Dell QLogic), QLA2440(QLogic), SG-XPCIE2FC-QB4-Z (Sun QLogic), SG-XPCIE2FCGBE-Q-Z (Sun QLogic) ——— QLogic 8G QLE2560, QLE2562(QLogic), SG-XPCIE2FC-QF8-Z, SG-XPCIE1FC-QF8-Z (Sun QLogic)	Up through qlc 2.32	qlc & qla (with Sun QLogic & SUN HBA's): Embedded in driver[8] ——— emlxs (with Sun Emulex HBA's): Embedded in driver emlxs (with Emulex HBA): 1.91a1, 1.92a1, 2.50a8, 2.70a5, 2.72a2, 2.82a3, 3.01a1, 3.92a2, 3.93a0, 1.10a5 ——— Emulex lpfc (with Emulex HBA): 1.91a1, 1.92a1, 2.50a8, 2.70a5, 2.72a2, 2.82a3, 3.01a1, 3.92a2, 3.93a0, 1.10a5[7]	Solaris 10 MU6, MU7, MU8: Supported	SSTM (only with qlc/emlxs drivers) ——— VxDMP 5.0GA, 5.0MP1, 5.0MP3[1] 5.1GA	SunCluster[4,5,6] 3.1 8/05 (U4), 3.2 (GA), 3.2 2/08 (U1), 3.2 1/09 (U2) ——— Veritas VCS 5.0GA 5.0MP1 5.1GA
	Emulex 2G LP9802, LP9802DC, LP10000, LP10000DC, LP10000ExDC(Emulex), SGPCI1FC-EM2, SGPCI2FC-EM2 (Sun Emulex) 394757-B21, 394588-B21 (HP Emulex) ——— Emulex 4G LPe11000, LPe11002(Emulex), SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4 (Sun Emulex), SG-XPCI1FC-EM4-Z, SG-XPCI2FC-EM4-Z (Sun Emulex), 39Y9186, 43W6859 (IBM Emulex), 403621-B21 (HP Emulex), LPe1105M (Dell Emulex) SG-XPCIE2FC-EB4-Z (Sun Emulex), SG-XPCIE2FCGBE-E-Z (Sun Emulex) ——— Emulex 8G LPe12000, LPe12002(Emulex), SG-XPCIE1FC-EM8-Z, SG-XPCIE2FC-EM8-Z (Sun Emulex)	Up through emlxs 2.50o (excluding 2.31h)				
SPARC PCI SPARC Solaris 10 MU3-MU8 ——— SPARC PCI (non-blade) SPARC Solaris 8 & 9	1G-X6799A / 1G-X6727A (Sun QLogic) (Solaris 10) ——— QLogic 2G QLA2300, 2G-QLA2302, QLA2342, QLA2310F, QLA2310FL, QLA2340, QLA2342L, QLA2342, QLA2344 (QLogic), SG-XPCI1FC-QF2, X6767A, SG-XPCI2FC-QF2, X6768A, SG-XPCI2FC-QF2-Z, SG-XPCI1FC-QL2 (Sun QLogic) ——— QLogic 4G QLE2460, QLE2462, QLE2464 (QLogic), SG-XPCIE1FC-QF4, SG-XPCIE2FC-QB4-Z, XPCIE2FC-QF4 (Sun QLogic)[10], QLA2460, QLA2462 (QLogic), QLA2440(QLogic) ——— QLogic 8G QLE2560, QLE2562 (QLogic), SG-XPCIE2FC-QF8-Z, SG-XPCIE1FC-QF8-Z (Sun QLogic)[9]	Solaris 10: Up through qlc 2.32 Solaris 8: SAN 4.4.10 - 4.4.13 Solaris 9: SAN 4.4.10 - 4.4.15 ——— qla: 5.03, 5.04, 5.05		Solaris 10 MU6, MU7, MU8: Supported ——— Solaris 8 & 9: SG-XPC11FC-QF2, SG-XPC12FC-QF2 (1.14.09, 1.14.11)	SSTM (only with qlc/emlxs drivers) ——— VxDMP 3.5(All), 4.0(All), 4.1(All), 5.0GA, 5.0MP1, 5.0MP3[1] 5.1GA(Solaris 9 & 10 only)	Solaris 10: SunCluster[4,5,6] 3.1 8/05 (U4), 3.2 (GA), 3.2 2/08 (U1), 3.2 1/09 (U2) Solaris 8 & 9: SunCluster (Max 2 node Server Cluster, SCSI 2 "pathcount" mode only) 3.1, 3.2 ——— Solaris 10: Veritas VCS 4.0 (All), 4.1 (All) 5.0GA, 5.0MP1, 5.1GA(Solaris 9 & 10 only) Solaris 8 & 9: Veritas VCS 5.0GA, 5.0MP1
	Emulex 2G LP9802, LP9802DC, LP10000, LP10000DC, LP10000ExDC (Emulex), SG-PCI1FC-EM2, SG-PCI2FC-EM2 (Sun Emulex) LP9002, LP9002L, LP9002S, LP9002DC (Emulex) ——— Emulex 4G LPe11000, LPe11002 (Emulex), SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4 (Sun Emulex)[10] LP11000, LP11002 (Emulex), SG-XPCI1FC-EM4-Z, SG-XPCI2FC-EM4-Z (Sun Emulex) ——— Emulex 8G LPe12000, LPe12002 (Emulex), SG-XPCIE1FC-EM8-Z, SG-XPCIE2FC-EM8-Z (Sun Emulex)[9]	Solaris 10: Up through emlxs 2.50o[3] (excluding 2.31h) Solaris 8 : SAN 4.4.10 - 4.4.13 Solaris 9: SAN 4.4.10 - 4.4.15 ——— lpfc: 5.02c, 6.02g, 6.02h, 6.10g, 6.11cx2, 6.21g, 6.30g				

Notes

1: VxDMP 5.0MP3RP1HF3: dmp_fast_recovery turned off as a minimum. However, 5.0MP3RP2HF1 does not require this tunable turned off.

2: VxDMP 5.0MP3RP1HF3 required for Symantec Storage Foundation space reclaim feature to work with 3PAR Thinly Provisioned Virtual Volumes.

3: SPARC Solaris 10 (MU7) not supported on a emlxs driver + VxDMP configuration.

4: Sun Cluster support starting with Solaris 10 5/08 (MU5).

5: Sun Cluster is not supported with host connections to InServ LSI HBAs.

6: Online InForm OS v2.3.1 upgrades from 2.2.x are not supported for Sun Cluster configurations that use SCSI-3 reservations. Only online Maintenance Updates (MUs) are supported for Sun Clusters that use SCSI-3 reservations.

7: LPFC only available on SPARC.

8: QLA only supported on SPARC.

9: 8GB on Solaris 10 only.

10: PCI-E on Solaris 10 only

HP-UX Fibre Channel

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	SAN Boot	MultiPath	Host Clustering
HP-UX 11i V3	HP Integrity Blades ——— HP Integrity rx Itanium ——— HP Integrity Superdome Itanium ——— HP 9000 PA-RISC ——— HP 9000 Superdome PA-RISC	HP 8GB AH400A, AH401A, AH402A, AH403A, 451871 (QMH2562) ——— HP 4GB AB378A, AB378B, AB379A, AB379B, AD193A, AD194A, QMH2462, AD222A, AD355A, 403619-B21 (QMH2462) ——— HP 2GB A6795A, A6826A, A9782A, A9784A, AB465A	HP B.11.31.0709, B.11.31.0712, B.11.31.0809, B.11.31.0903, B.11.31.0909, B.11.31.1003, B.11.31.1009	Does not depend on specific HBA BIOS - PA_RISC(A6826A) and IA64(AD194A_4G) with B.11.31.0903	Native Multipath	MC Serviceguard A.11.18.00, A.11.19.00, A.11.20.00.01

AIX Fibre Channel

Blue = new for this revision

<table>
<tr><th>Operating System</th><th>Server</th><th>HBA</th><th>HBA Driver</th><th>Host Boot</th><th>MultiPath</th><th>Host Clustering</th></tr>
<tr><td>IBM Virtual I/O Server
(vSCSI mode)
1.5.1.1-FP10, 1.5.2.0, 2.1.0-FP21-2.1.1.0, 2.1.2.13-FP-22.1 SP-02, 2.1.2.x
(vSCSI and NPIV mode)
2.1.3.x, 2.2.0.x</td><td>IBM eServer
P5, P6, P7</td><td rowspan="3">IBM 8GB
5735
———
IBM 4GB
5773, 5774, 5759(1910), 5758 (1905)
———
IBM 2GB
5716(1977or1957), 6239(0625), 6239(0626), 6228(0611), 6228(0612)</td><td>Embedded in VIO server package</td><td rowspan="4">3PAR MPIO 2.2 required

IBM Virtual I/O Server minimum 1.5.1.1-FP10, 1.5.1.1-FP10, 1.5.2.0, 2.1.0-FP21-2.1.1.0, 2.1.2.13-FP-22.1 SP-02

AIX 5.3 minimum 5300-04</td><td>3PAR MPIO
2.2</td><td>IBM General Parallel File System (GPFS) version 3.2, 3.3
(AIX 5.3 LPAR only)[4]</td></tr>
<tr><td>AIX 6.1
6100-00, 6100-01, 6100-02, 6100-03, 6100-04, 6100-05</td><td>IBM eServer
P5, P6, P7 (6100-04 SP3 minimum)</td><td rowspan="3">Embedded in AIX machine level</td><td>3PAR MPIO
2.2</td><td>HACMP (3PAR MPIO 2.2 required)[1]
———
Veritas VCS 5.0
MP3 (with RP1 minimum)[2]
———
IBM General Parallel File System (GPFS) version 3.2, 3.3[4]
———
IBM AIX 5.3, 6.1, 6.1 TL4</td></tr>
<tr><td>AIX 5.3
5300-06, 5300-07, 5300-08, 5300-09, 5300-10, 5300-11, 5300-12</td><td>IBM eServer
P5, P6</td><td rowspan="2">Veritas VxDMP 5.0 (ODM 1.2 required for Veritas)
MP1, MP3 (with RP1 minimum)[3, 4]
———
3PAR MPIO
2.2 (A/A)</td><td>HACMP (3PAR MPIO 2.2 required)
———
Veritas VCS 5.0
MP1, MP3 (with RP1 minimum)[2]
———
IBM General Parallel File System (GPFS) version 3.2, 3.3[4]</td></tr>
<tr><td>AIX 5.3
5300-07</td><td>IBM JS21 blade server</td><td>IBM 4Gbps QLogic QMC2462s(26R0809)</td></tr>
</table>

Notes

1: Enhanced_concurrent volume groups only.

2: Symantec Storage Foundation 5.1 is not supported.

3: VxDMP 5.0MP3RP1 required for Symantec Storage Foundation space reclaim feature to work with 3PAR Thinly Provisioned Virtual Volumes.

4: Persistent Reserve (PR) mode not supported with IBM General Parallel File System.

Red Hat Enterprise Linux Fibre Channel

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	HBA Firmware	SAN Boot	MultiPath	Host Clustering
RHEL[1,2] 5 U1 - U5	Intel/AMD x86 IA64[6] Power PC (RHEL 5U3 - U4)[6]	QLogic 8GB QLE2560, QLE2562 QLogic 4GB QLA2440, QLA2460, QLA2462, QLE2440, QLE2460, QLE2462, QLE2464, QME2472, 26R0890, 26R0884, 41Y8527, 39Y9306, 403619-B21, 430-2786 QLogic 2GB QLA2310, QLA2340, QLA2342, QLA2344, QLA2350, QLA2352, QLE2360, QLE2362, QME2462, 26K4859, 26K4841, 300874-B21, 361426-B21, 381881-B21, 354054-B21, 341-3574	QLogic 8.01.07-15, 8.02.14.01, 8.02.23, RHEL 5U3: 8.02.00.06.05.03-k(in box), RHEL 5U4: 8.03.00.10.05.04-k(in-box), RHEL 5U4: 8.03.00.1.05.05-k(Red Hat)[5] RHEL 5U5: 8.03.01.04.05.05-k(in-box)	Embedded in driver	Yes	Device Mapper device-mapper-1.02.20-1.el5, device-mapper-multipath-0.4.7-12.el5 (RHEL5.1), device-mapper-1.02.24-1.el5, device-mapper-multipath-0.4.7-17.el5 (RHEL5.2), device-mapper-1.02.28-2.el5, device-mapper-multipath-0.4.7-23.el5 (RHEL5.3), device-mapper-1.02.32-1.el5, device-mapper-multipath-0.4.7-30.el5_4.4 (RHEL5.4)[2], device-mapper-1.02.39-1.el5, device-mapper-multipath-0.4.7-34.el5 (RHEL5.5) device-mapper-multipath-0.4.7-42.el5 (RHEL5.5)[8] Veritas VxDMP 4.1 Veritas VxDMP 5.0 MP3[3], 5.0 MP4, 5.1	Veritas VCS 4.1 Veritas VCS 5.0 MP3 RP2 Veritas VCS 5.1.00.00 GA Global File System (GFS, GFS2) *Red Hat Cluster Suite for RHEL 5U1, U3[4], U4, U5 IBM General Parallel File System (GPFS) version 3.2, 3.3
RHEL[1,2] 4U2 - U8			QLogic(up to RHEL 4U6), 8.01.07-15(QLogic), 8.01.07.25(HP) QLogic(RHEL 4U7 - U8) 8.02.23, 8.02.23(HP)		Not supported	Device Mapper Veritas VxDMP 4.1 5.0 GA, MP1, MP3, MP4	Veritas VCS 4.1 all MPs, 5.0GA, 5.0MP1, 5.0MP3 (with RP2 minimum) Red Hat Cluster Suite for RHEL 4U4 - U5 IBM General Parallel File System (GPFS) version 3.2, 3.3
RHEL[1,2] 5 U1 - U5		Emulex 8GB LPe1250, LPe12000, LPe12002 Emulex 4GB LP1105M, LP1150, LP11000, LP11002, LPe1150, LPe11000, 39Y9186, 43W6859, 403621-B21, 341-3575 Emulex 2GB LP952L, LP982, LP9002, LP9402, LP9802, LP10000, LP1050, 394757-B21, 394588-B21	Emulex 8.1.10.9, 8.1.10.3 (IBM), 8.1.10.12 (Emulex, IBM), 8.2.0.33.3p (RHEL 5U3 in-box), 8.2.0.48.2p (RHEL 5U4 in-box), 8.2.0.48.3p (RHEL 5U4 patch) 8.2.0.63.3p (RHEL 5U5 in-box), 8.2.0.71 (RHEL 5U3, 5U4 and 5U5 - UCS)	Emulex 4GB 2.10a10(IBM) 2.50a8(Emulex), 2.70a5(HP, Emulex), 2.72A2(HP, Emulex) Emulex 2GB 3.92a2(Emulex), 3.93a0(Emulex) Emulex 2GB 1.91a1(Emulex), 1.92a1, 1.91a5(HP) Emulex 8GB 1.10a5	Yes	Device Mapper Veritas VxDMP 4.1 Veritas VxDMP 5.0 GA, MP3[3], MP4, 5.1	Veritas VCS 4.1 Veritas VCS 5.1.00.00 GA Global File System (GFS, GFS2) * Red Hat Cluster Suite for RHEL 5U1[4], U3, U4, U5 IBM General Parallel File System (GPFS) version 3.2, 3.3
RHEL[1,2] 4U2 - U8			Emulex 8.0.16.17, 8.0.16.27 8.0.16.32, 8.0.16.32(HP) 8.0.16.40, 8.0.16.46		Not supported	Device Mapper Veritas VxDMP 4.1 Veritas VxDMP 5.0, GA, MP1, MP3[3], MP4, 5.1	Veritas VCS 4.1 Veritas VCS 5.0 GA, MP1[3] Red Hat Cluster Suite for RHEL 4U4 - U5 IBM General Parallel File System (GPFS) version 3.2, 3.3

Notes

1: Red Hat Enterprise Linux will be represented as RHEL.

2: Includes Oracle Linux (Oracle Enterprise Linux) support including support for Oracle's Unbreakable Enterprise Kernel.

3: Symantec SF5.0 MP3 RP2 is the minimum version required to support Symantec Storage Foundation 3PAR Thinly Provisioned Virtual Volume space reclamation.

4: Symantec Storage Foundation 5.1 is not supported.

5: Achieved by adding patch rpm to the RHEL 5U4 base release.

6: 8G HBAs not supported.

7: A patch was released for RHEL 5.4 device-mapper-multipath.

8: A patch was released for RHEL 5.5 device-mapper-multipath.

SUSE Linux Fibre Channel

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	HBA Firmware	Host Boot	MultiPath	Host Clustering
SUSE SLES 11	Intel/AMD x86 IA64[3]	QLogic 2G QLA2310, QLA2340, QLA2342, QLA2344, QLA2350, QLA2352, QLE2360, QLE2362, QME2462, 26K4859, 26K4841, 300874-B21, 361426-B21, 381881-B21, 354054-B21, 341-3574 QLogic 4G QLA2440, QLA2460, QLA2462, QLE2440, QLE2460, QLE2462, QLE2464, QME2472, 26R0890, 26R0884, 41Y8527, 39Y9306, 403619-B21, 430-2786 QLogic 8G (SLES10 only) QLE2560, QLE2562	SLES 11: 8.02.01.03.11.0-k9(in-box), 8.01.07.25(HP)	Embedded in driver	Yes	Veritas VxDMP 5.0 MP3[1,] 5.0 MP4	Veritas VCS 5.0 MP3[1] IBM General Parallel File System (GPFS) version 3.2, 3.3
SUSE SLES 10 SP1, SP2, SP3			QLogic 8.01.07-15(QLogic), 8.02.00-k6-SLES10-05(in SLES10 SP2), 8.02.14.01(QLogic), SLES 10 SP3: 8.03.00.10.10.3-k4(in-only)			Device Mapper Veritas VxDMP 4.1, 5.0 MP3[1,] 5.0 MP4	Veritas VCS 4.1 Veritas VCS 5.0 MP3[1] IBM General Parallel File System (GPFS) version 3.2, 3.3
SUSE SLES 11		Emulex 2G LP952, LP982, LP9002, LP9402, LP9802, LP10000, LP1050, 394757-B21, 394588-B21 Emulex 4G LP1105M, LP1150, LPe11000, LPe1105M, LPe1150, LPe11000, LPe11002, 39Y9186, 43W6859, 403621-B21, 341-3575 Emulex 8G (SLES10 only) LPe1250, LPe12000, LPe12002	8.2.8.14, 8.1.10.9(Emulex)	Emulex 2G 3.92a2(Emulex), 3.93a0(Emulex) 1.91a1(Emulex), 1.92a1(Emulex), 1.91a5(HP) Emulex 4G 2.10a10(IBM), 2.50a8(Emulex), 2.70a5(HP,Emulex), 2.72a2(HP,Emulex), 2.50a8(HP,Emulex), 5.03a2 (SLES10 SP3 only) Emulex 8G 1.10a5	Yes	Device Mapper Veritas VxDMP 5.0 MP3[1,] 5.0 MP4	Veritas VCS 5.0 MP3[1] IBM General Parallel File System (GPFS) version 3.2, 3.3
SUSE SLES 10 SP1, SP2, SP3			Emulex 8.1.10.9(Emulex), 8.1.6.8(HP), 8.1.6.8(IBM), 8.2.0.29(Emulex), 8.01.07.25(HP), 8.2.0.22(Emulex), 8.2.0.22_p4_HP_Emulex, 8.2.0.48.2p (SLES10 SP2 and SP3 only)		Yes	Device Mapper Veritas VxDMP 4.1, 5.0 GA, MP1, MP3[1,] 5.0 MP4	Veritas VCS 4.1 Veritas VCS 5.0 GA, MP1 IBM General Parallel File System (GPFS) version 3.2, 3.3

Notes

1: Symantec SF5.0 MP3 RP2 is the minimum version required to support Symantec Storage Foundation 3PAR Thinly Provisioned Virtual Volume space reclamation.

2: Symantec Storage Foundation 5.1 is not supported.

3: 8GB HBAs not supported.

Virtual OS Fibre Channel

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	SAN Boot	MultiPath	Virtual OS Clustering	Virtual Machine Clustering	Notes
Microsoft HyperV based on Windows 2008 SP1, SP2, R2	Refer to Windows 2008					Microsoft Failover Cluster		Refer to the Windows 2008 IG for important queuing and online upgrade considerations when using Microsoft Failover Cluster.
VMware ESX and ESXi 3.0.3, 3.5(GA), 3.5 U1, U2, U3, U4, U5	x86, x64 Intel, AMD as supported by VMware	All QLogic and Emulex Fibre channel HBAs supported by VMware	VMware embedded	Yes	VMware embedded (A/A, Policy-Fixed)		VMware Cluster, MSCS	N-Port ID Virtualization (NPIV) is not supported. All releases support Fabric. Support for direct FC as of 3.5 U1 and later. LUN Queue Depth throttling with 3PAR InServ is supported beginning in 3.5 U4. Refer to the *3PAR VMware ESX IG* and *VMware KB articles 1008113, 1010922* for further information and setup.
VMware ESX and ESXi 4.0(GA), 4.0 U1, 4.0 U2, 4.1(GA)[1]	x86, x64 Intel, AMD as supported by VMware	All QLogic and Emulex Fibre channel HBAs supported by VMware	VMware embedded	Yes	VMware embedded (A/A, Policy-Fixed & A/A, Policy-Round Robin)	VMware Cluster	Windows 2008 R2 Failover Cluster[2]	N-Port ID Virtualization (NPIV) is not supported. Release support both Direct and Fabric.
Xen on RHEL5U3, KVM / RHEV-H on RHEL 5U4, RHEL 5U5	Refer to RH5 U3 Refer to RHEL5.4 for KVM			Virtual-Machine/ guest OS - Yes	Device Mapper	RHEL 5U4 Cluster		Xen VM guests supported in the fully virtualized mode: RHEL5.3 - XEN (W2k3 SP2, RHEL4u7) Xen VM guest supported in the paravirtualized mode: RHEL5.3 - XEN (RH5U3)
Xen on SUSE10 SP2	Refer to SUSE10 SP2			No	Yes	No		Xen VM guests supported in the fully virtualized mode: W2K3 SP2 RH 5 MU2 (VM migrations unsupported) SUSE 10 SP2 Xen VM guest supported in the paravirtualized mode: SUSE 10 SP2
Xen on SUSE11	Refer to SUSE11			No	Yes	No		Xen VM guests supported in the fully virtualized mode: W2K3 SP2 RH 5 MU3 SUSE 10 SP2 Xen VM guest supported in the paravirtualized mode: SUSE 11
Egenera PAN Manager 5.1.X.X, 5.2.X.X All Egenera supported pServer operating systems and hypervisor's	BladeFrame EP (PRIMERGY BF400) ES (PRIMERGY BF200) EX (PRIMERGY BF400 S2) (4.0.1 required)	Egenera supplied	Egenera 6.0.7.02e, 8.01.07.15e	Yes (P-servers only)	Egenera embedded	N/A		
Citrix XenServer 5.5, 5.6	x64 Intel, AMD	All QLogic and Emulex HBAs supported by Citrix XenServer	XenServer embedded	XenServer - No Guest OS - Yes	embedded (A/A)	XenServer 5.5 - No XenServer 5.5 - XenServer HA		iSCSI and HA are not supported for XenServer 5.5
HP Integrity Virtual Machines (IVM) v4.1,v 4.2	HP Integrity Blades HP Integrity rx Itanium HP Integrity Superdome Itanium	All HP FC HBAs listed as supported on the HP-UX Operating System	B.11.31.0903 B.11.31.1003	Yes, IVM and guests	Native Multipath	No	MC Serviceguard	
Oracle VM Server 2.2.1 Oracle VM Manager 2.2.0	x86, x64 Intel, AMD as supported by Oracle	All QLogic and Emulex Fibre channel HBAs supported by Oracle	QLogic: v8.03.00.10.02.02-k (in-box)Emulex: v8.2.0.39 (in-box)	Oracle VM - no Guests - Yes	Oracle VM in-box device-mapper-1.02.28-2.el5 device-mapper-multipath-0.4.7-23.el5.4.0.1 device-mapper-event-1.02.28-2.el5	Oracle VM HA OCFS2		All guest operating systems supported by Oracle VM with or without paravirtualized drivers where available.

Notes
1: ESX/ESXi 4.1 standard T10 VAAI plug-in is not supported.
2: Support for Windows 2008 R2 Failover Cluster on ESX 4.0 specifically configured as 'Cluster Virtual Across Physical Hosts' per VMWare KB EN-000269-02

iSCSI (Software Initiator Only)

Blue = new for this revision

Operating Systems	HW	iSCSI initiator	SAN Boot HBA (BIOS)	MultiPath	Host Clustering
Windows 2003 32 bit (SP1, SP2, R2 SP1, R2 SP2) Windows 2003 x64 (SP1, SP2, R2 SP1, R2 SP2) Windows 2003 IA64 (SP1, SP2)	NIC[1]	Microsoft iSCSI initiator v2.08	Windows 2003 SP2 32bit, x64 iSCSI initiator v2.08 Double-take v3.0(Flex manager)	Microsoft MPIO bundled with iSCSI initiator v2.08	No
Windows 2008 32bit (R1, SP2) Windows 2008 x64 R2 Windows 2008 IA64 (SP2, R2)		Embedded	iSCSI initiator v2.08 Double-take v3.0(Flex manager)	Embedded	
RHEL 4U7 - 8 RHEL 5U1 - 4 RHEL 5U4 - 5 KVM		iscsi-initiator-utils-6.2.0.742-0.5.el5, iSCSI-initiator-utils-6.2.0.868-0.18.el5, iSCSI-initiator-utils-6.2.0.871-0.12.el5_4.1 (RHEL5U4), iSCSI-initiator-utils-6.2.0.871-0.16.el5 (RHEL5U5), kvm-83-164.el5, iscsi-initiator-utils-4.0.3.0-8 (RHEL 4U8)	No	device-mapper-multipath-0.4.7-8.el5, device-mapper-1.02.13-1.el5, device-mapper-multipath-0.4.7-23.el5, device-mapper-1.02.28-2.el5, device-mapper-1.02.32-1.el5 (RHEL 5U4) device-mapper-multipath-0.4.5-35.el4 (RHEL 4U8), device-mapper-1.02.20-1.el5, device-mapper-multipath-0.4.7-12.el5 (RHEL5.1), device-mapper-1.02.24-1.el5, device-mapper-multipath-0.4.7-17.el5 (RHEL5.2), device-mapper-1.02.28-2.el5, device-mapper-multipath-0.4.7-23.el5 (RHEL5.3), device-mapper-1.02.32-1.el5, device-mapper-multipath-0.4.7-30.el5_4.4 (RHEL5.4)[2], device-mapper-1.02.39-1.el5, device-mapper-multipath-0.4.7-34.el5 (RHEL5.5) device-mapper-multipath-0.4.7-42.el5 (RHEL5.5)[3]	
Solaris 10 SPARC, x86 Solaris 10 MU5 - MU8		Embedded	No	Sun StorEdge Traffic Manager imbedded in Solaris 10 MU5 - MU8	
SUSE SLES11		open-iscsi-2.0.870-26.5	No	multipath-tools-0.4.8-40.5, device-mapper-1.02.27-8.6	
SUSE SLES10 SP1, SP2, SP3		open-iSCSI 2.0.707-0.19	No	multipath-tools-0.4.7-34.18 device-mapper-1.02.13-6.9	
Debian Linux Release 4.0, 5.0(Etch)		open-iSCSI-2.0-865.12, open-iSCSI-2.0-865.13, open-iSCSI-2.0-865.14	No	multipath-tools 0.4.7-1.1 dmsetup 1.02.08-1	
VMware ESX and ESXi 3.03, 3.5(GA), 3.5 U1, 3.5 U2, 3.5 U3 3.5 U4, 4.0(GA), 4.0 U1, 4.0 U2, 4.1(GA)[1]		VMware embedded	No	VMware embedded (A/A, Policy-Fixed) (also A/A, Policy-Round Robin as of ESX 4.0(GA))	VMware Cluster
Citrix XenServer 5.6		XenServer embedded	XenServer - No Guest OS - Yes	XenServer embedded	XenServer HA

Notes

1: ESX/ESXi 4.1 standard T10 VAAI plug-in is not supported.

2: A patch was released for RHEL 5.4 device-mapper-multipath.

3: A patch was release for RHEL5.5 device-mapper-multipath.

Blade Servers Fibre Channel

Blue = new for this revision

Blade Server	Operating Systems	HBA/CNA	Blade FC Switches / Interconnect Modules	HBA Driver	Host Boot HBA (BIOS)	MultiPath	Host Clustering
IBM BladeCenter HS20/21/22/22V/40/41 Blade LS20/21/22/41/42 Blade JS21/22/23/43 Blade	AIX5.3, 6.1 (JS21/22/23/43) Windows 2003 32-bit Windows 2003 x64 Windows 2008 32-bit Windows 2008 x64 (Including Hyper-V) ESX and ESXi 3.x, 4.0GA, 4.0U1, 4.0U2, 4.1[1] Linux (RHEL, SUSE) (SLES10 SP1-SP3, SLES11) (RH 4 U2-U8, RHEL5U1-U4) Solaris x86 (Solaris 9 and 10) HPUX 11iv3 (HP c-class - BL860c, BL870c and BL890c only)	8GB QLogic 44x1945(QMI2582), 44x1940(QMI3572) ———— 8GB Emulex 46M6140(LPe1205-CIOv) ———— 2GB QLogic 26K4859, 26K4841 ———— 4GB QLogic 26R0890(QMC2462s), 26R0884(QMC2463), 41Y852(QMI2472), 39Y9306(QMI3472), 44M6065(QMI2572), 44X1945(QMI2582), 44X1940(QMI3572) ———— 4GB Emulex 39Y9186(LP1105-BC), 43W6859(LP1105-BCv)	32R1813/1812 Brocade 4GB SAN Switch 44X1921/1920 Brocade 8GB SAN Swtich[3] 44X1907 QLogic Intelligent 8GB Pass-Thru Module 44X1913 QLogic Intelligent 8GB Pass-Thru Module 43W6723 QLogic Intelligent 4GB Pass-Thru Module	Refer to the appropriate operating system matrix page for supported drivers from IBM, HP, DELL and Sun	Refer to the appropriate operating system matrix page for supported drivers from Emulex, QLogic, IBM or HP	Refer to the appropriate operating system matrix page for supported multipath options	Refer to the appropriate operating system matrix page for supported clustering
HP BladeSystem c7000,c3000 (c-class) BL260c Blade, BL280c Blade, BL460c Blade, BL465c Blade, BL480c Blade, BL490c Blade, BL495c Blade, BL620c Blade, BL680c Blade, BL685c Blade, BL860c Blade, BL870c Blade, BL2x220c Blade, BL860c i2 Blade, BL870c i2 Blade, BL890c i2 Blade		10G FCoE CNA HP NC553i (on BL460c G7 blade)[1] ———— 8GB Emulex FC HBA 456972-B21 (LPe1205-HP) 4GB Emulex FC HBA 403621-B21 (LPe1105-HP) 8GB QLogic FC HBA 451871-B21 (QMH2562) 4GB QLogic FC HBA 403619-B21 (QMH2462)	AJ820A/AJ821A/AJ822A HP Brocade 8GB SAN Switch AE372A Brocade 4GB SAN Switch[3] AG641A/AG642A Cisco MDS 9124e Switch[4] 571956-B21 HP VC FlexFabric 10GB/24-Port Module 409513-B21 HP Virtual Connect 4GB Fibre Channel Module 409513-B22 HP Virtual Connect 4GB Fibre Channel Module 572018-B21 HP Virtual Connect 8GB 20-port Fibre Channel Module 466482-B21 HP Virtual Connect 8GB 24-Port Fibre Channel Module HP BladeSystem Virtual Connect Firmware (VC-Ether/VC-FC1/VC-FC2) v1.21/1.10, v1.16/1.02, v1.31/1.20, v2.01/1.30, v2.02/1.30, v2.10/1.32, v2.12/1.32, v2.30/1.40, v2.31/1.40, v2.32/1.40, v2.33/1.40, v2.34/1.41/1.03, v3.00/1.40/1.02, v3.01/1.40/1.02, v3.10/1.41/1.03, v3.15/1.41/1.03 403626-B21 HP 4GB Fibre Channel Pass-thru Module			
Dell PowerEdge 1855 blade enclos., 1955 blade server ———— M1000e blade enclosure M600, M605, M610, M710, M805, M905 blade servers		8GB Emulex LPe1205-M, 46M6140 (LPe1205-CIOv) ———— 8GB QLogic (QME2572) ———— 2GB QLogic 341-3574 (QME2462) ———— 4GB Emulex 341-3575 (Lpe-1105-M) ———— 4GB QLogic	Brocade 4016 4GB FC Switch Brocade 4424 4GB FC Switch Brocade M5424 8GB FC Switch[3] McData 4416 4GB FC Switch Dell FC4 pass-through module				
Sun Blade 6000 Chassis T6300 Server Module T6320 Server Module T6340 Server Module	Solaris SPARC (Solaris 9 and 10)	4GB SG-XPCIE2FC-QB4-Z SG-XPCIE2FCGBE-Q-Z SG-XPCIE2FC-EBA-Z SG-XPCIE2FCGBE-E-Z[2]					

Notes
1: Currently only supported only with VMware vSphere 4.1.
2: Only supported on Solaris 10.
3: Fabric mode or Access Gateway mode
4: Fabric mode or N-Port Virtualizer FlexAttach mode

Appliances

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	Host Boot HBA (BIOS)	MultiPath	Host Clustering
FalconStor CDP and NSS v6.0, v6.1 on RHEL v5.0 and v5.1[1, 2]	FalconStor NSS, CDP	FalconStor supplied QLA23xx, QLx24xx	Embedded	N/A	Embedded	Yes
FalconStor VTL Server v4.0, v5.20 No De-Duplication support[1, 2]	FalconStor VTL	Falconstor supplied QLA23xx[3]	Embedded			
HP Scalable NAS 3.7.0p3 (SLES 10 SP2 with HP kernel: 2.6.16.60-0.37_f594963d.370.1349-HPPS)	HP X5500 Storage Gateway for Linux	HP 82Q 8GB Dual Channel PCI-E FC HBA(QLE2562)	8.03.00.13.10.3-k4		Device Mapper: device-mapper-1.02.13-6.14, multipath-tools-0.4.7-34	N/A
HP StorageWorks Enterprise NAS (aka.PolyServe Matrix Server 3.5.1, 3.7.0) for RHEL4-U3, U4 and RHEL5U1-2 Linux	As supported by HP	QLogic and Emulex series as supported by HP	8.00.02 (2300) 8.01.03 (2400) 8.01.05		Embedded no more than 2 paths to each InServ volume	
			8.01.06 (QLogic), 8.01.16.27 (Emulex), 8.01.16.32 (Emulex), 8.01.16.34 (Emulex)			
			7.0.3.00			
HP StorageWorks Enterprise NAS (aka. PolyServe Matrix Server 3.6.0, 3.6.1, 3.6.2) for Windows 2003			StorPort 9.1.2.16 (QLogic), 1.11a0 (Emulex)		3PAR MPIO 1.0.17 & 1.0.22	
			StorPort 2.00.a12 (Emulex) 9.1.3.18 (QLogic) 9.1.7.18 (QLogic)			

Notes
1: No 3PAR Thinly Provisioned Virtual Volumes support.
2: Only Fabric connect supported; no support for Direct connect.
3: VTL v4.0 - disconnect for InForm OS online upgrade.

Appliances (continued)

Blue = new for this revision

Operating System	Server	HBA	HBA Driver	MultiPath	Host Clustering	Host Boot HBA (BIOS)
LSI ONStor EverON 3.1.x.x, 3.3.2.x, 3.3.3.x[1]	SF4400 series Bobcat series	LSI ONStor interface built into LSI ONStor Gateway	Included in EverON OS	Included in EverON OS	Yes clustered LSI ONStor filers	N/A
LSI ONStor EverON v4.0.2.x[1]	Cougar 3000/6000 Series					
NetApp ONTAP 7.2.5 7.2.6.1, 7.3, 7.3.1.1, 7.3.2, 7.3.3[2, 3]	V6080/A,V6040/A, V6070/A,V6030/A, V3070/A,V3040/A, V3050/C,V3020/C, V3140,V3160,V3170	NetApp Embedded	Included in ONTAP OS	Included in ONTAP OS	Active/Active configuration supported	
Exanet OS v4.1.x[4]	Exanet EX1500 Clustered NAS Server	ExaStore Embedded	Included in ExaStore OS	Multipathing is not available	Active/passive configuration supported	
Vicom f/w 11.1.0.4 Released Feb. 2, 2009[5, 6]	Vicom SAN Mirroring Appliance Model I (4GB only)	Vicom Embedded	Included in Vicom OS	Included in Vicom OS	Yes clustered SAN Mirroring Appliances	
Brocade DMM FOS v6.1.2 - BFOS v6.2.1 - SAS v3.2.0e - DMM v3.2.1a	Brocade DMM SAN Appliance 4GB model	N/A	N/A	N/A	No	
HP StorageWorks X9000 5.4.1x	HP Storageworks X9000 Network Storage System	As built into X9000 Network Storage System	Included in X9000 OS	Device-Mapper included in X9000 OS	Yes X9000 (IBRIX cluster)	
HP StorageWorks X3000 v1.6.0a or later v2.00.a or later (G2)	HP StorageWorks X3000 Network Storage System HP StorageWorks X3000 G2 Network Storage System	Emulex and QLogic-based Fibre Channel HBAs supported by x3000 (G2)	Emulex-based HBAs: 2.30.016, 2.30.020 ---------- QLogic-based HBAs: 9.1.8.25, 9.1.9.25	Microsoft MPIO	Yes Microsoft Failover Cluster	

Notes

1: EverON v3.3.3.x and v4.0.2.x disconnect for complex online upgrades.
2: QLogic switches are not supported by NetApp for back end connectivity in their V-Series systems.
3: No 3PAR Thinly Provisioned Virtual Volumes support.
4: Only Direct connect supported; no support for Fabric connect.
5: For online migration, the 3PAR InServ Storage Server can only be the target Array. 3PAR InServ Storage Server is not supported as the source Array in the migration for online migration.
6: Only Fabric connect supported; no support for Direct connect.

3PAR Multipath I/O 1.0.22.7 for Microsoft Windows

Operating System	Connectivity	Load Balance	Host Persona	Max Supported IO Paths
Windows 2003 x86 with: SP1, SP2, R2 SP1, R2 SP2	Fibre Channel	Round Robin (default) Failover Round Robin with Subset Least Weighted Least Queue Depth	Generic(1)	16
Windows 2003 x64 with: SP1, SP2, R2 SP1, R2 SP2	Fibre Channel	Round Robin (default) Failover Round Robin with Subset Least Weighted Least Queue Depth	Generic(1)	16
Windows 2003 IA64 with: SP1, SP2	Fibre Channel	Round Robin (default) Failover Round Robin with Subset Least Weighted Least Queue Depth	Generic(1)	16

Windows Environment	Storport.sys
Windows 2003 x86, x64, IA64 with SP1	5.2.3.3790.3019 (KB943295)*
Windows 2003 x86, x64, IA64 with SP2	5.2.3.3790.4163 (KB943295)*

An updated Storport storage driver for Windows Server 2003
* http://support.microsoft.com/kb/943295 (required)

Note: Each host initiator can connect up to 4 target InServ Storage Server ports.

3PAR Multipath I/O 1.0.23 for Microsoft Windows

Operating System	Connectivity	Load Balance	Host Persona	Max Supported IO Paths
Windows 2003 x86 with: SP1, SP2, R2 SP1, R2 SP2	Fibre Channel	Round Robin (default) Failover Round Robin with Subset Least Weighted Least Queue Depth	Generic(1)	16
Windows 2003 x64 with: SP1, SP2, R2 SP1, R2 SP2	Fibre Channel	Round Robin (default) Failover Round Robin with Subset Least Weighted Least Queue Depth	Generic(1)	16
Windows 2003 IA64 with: SP1, SP2	Fibre Channel	Round Robin (default) Failover Round Robin with Subset Least Weighted Least Queue Depth	Generic(1)	16

Windows Environment	Storport.sys
Windows 2003 x86, x64, IA64 with SP1	5.2.3.3790.3044 (KB945119)*
Windows 2003 x86, x64, IA64 with SP2	5.2.3.3790.4189 (KB945119)*

An updated Storport storage driver for Windows Server 2003
* http://support.microsoft.com/kb/945119 (required)

Note: Each host initiator can connect up to 4 target InServ Storage Server ports.

3PAR VSS Provider 1.6.1

Blue = new for this revision

Operating System	File System	Backup Tools	Clustering	MultiPath	Protocol	HBA/NIC	Remote Copy	3PAR InForm
Windows 2003 x86 with SP2 or R2 SP2	NTFS, Local Basic Disk type[1]	Veritas NetBackup 6.5 MP2A	MSCS, Stand Alone	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[2] Emulex[2]	No	2.3.1
			Stand Alone	MS iSCSI Initiator v2.08	iSCSI	100/1000 Base-T, GigE		
Windows 2003 x86-64 with SP2 or R2 SP2			MSCS, Stand Alone	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[2] Emulex[2]		
			Stand Alone	MS iSCSI Initiator v2.08	iSCSI	100/1000 Base-T, GigE		
Windows 2008 x86 SP1, SP2			MSCS, Stand Alone	MS Native MPIO	FC	QLogic[2] Emulex[2]		
			Stand Alone	MS Native iSCSI Initiator	iSCSI	100/1000 Base-T, GigE		
Windows 2008 x86-64 SP1, SP2 R2			MSCS, Stand Alone	MS Native MPIO	FC	QLogic[2] Emulex[2]		
			Stand Alone	MS Native iSCSI Initiator	iSCSI	100/1000 Base-T, GigE		

Note: Only Veritas NetBackup 6.5.2A or later support server component on Windows 2008 platform. This is the limitation of Veritas NetBackup.

Note: Microsoft hotfix KB957522 is required when MS native MPIO is used in Windows 2008 with SP1 environment.

Note: Microsoft hotfix KB970770 is required when used in Windows 2008 environment.

Note: Microsoft VSS update KB940349 is required in Windows 2003 environment.

[1] Snapshot on network mapped volume is not supported.
[2] Refer to HBA driver support for Windows Platform.

3PAR VSS Provider 1.6.2

Blue = new for this revision

Operating System	File System	Backup Tools	Clustering	MultiPath	Protocol	HBA/NIC	Remote Copy	3PAR InForm
Windows 2003 x86 SP2 or R2 SP2	NTFS, Local Basic Disk type[1]	Veritas NetBackup 6.5 MP2A, 7.0	MSCS, Stand Alone	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[2] Emulex[2]	No	2.3.1
			Stand Alone	MS iSCSI Initiator v2.08	iSCSI	100/1000 Base-T, GigE		
Windows 2003 x86-64 SP2 or R2 SP2			MSCS, Stand Alone	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[2] Emulex[2]		
			Stand Alone	MS iSCSI Initiator v2.08	iSCSI	100/1000 Base-T, GigE		
Windows 2008 x86 SP1, SP2			MSCS, Stand Alone	MS Native MPIO	FC	QLogic[2] Emulex[2]		
			Stand Alone	MS Native iSCSI Initiator	iSCSI	100/1000 Base-T, GigE		
Windows 2008 x86-64 SP1, SP2, R2			MSCS, Stand Alone	MS Native MPIO	FC	QLogic[2] Emulex[2]		
			Stand Alone	MS Native iSCSI Initiator	iSCSI	100/1000 Base-T, GigE		

Note: Only Veritas NetBackup 6.5.2A or later support server component on Windows 2008 platform. This is the limitation of Veritas NetBackup.

Note: Microsoft hotfix KB957522 is required when MS native MPIO is used in Windows 2008 with SP1 environment.

Note: Microsoft hotfix KB970770 is required when used in Windows 2008 environment.

Note: Microsoft VSS update KB940349 is required in Windows 2003 environment.

[1] Snapshot on network mapped volume is not supported.
[2] Refer to HBA driver support for Windows Platform.

Recovery Manager 1.1.0 for VMware vSphere

Blue = new for this revision

vCenter Server	Operating System	Esx Host Platforms	Data Format	3PAR InForm
4	Windows 2003[1] x86, x64 R2 SP2,	VMware ESX 3.5 VMware ESX 4.0	Datastore[2]/VMDK, RDM	2.3.1
4.1		VMware ESX 3.5 VMware ESX 4.0 VMware ESX 4.1		

Note: Secure SSL is the only supported communication model between the vSphere 4.1 client and the Recovery Manager server.

Note: Support for Recovery Manager server install on Windows server with English locale.

[1]Windows supporting tools HTTPCFG.EXE is required for using SSL in Windows 2003 platform.
[2] Only one to one mapping between Datastore and 3PAR Virtual Volume is supported for Snapshot management.

3PAR VAAI Plug-In 1.1.0

Blue = new for this revision

Hypervisor	Release	Primitives	InForm OS
VMware ESX VMware ESXi	vSphere 4.1	Full Copy, Block Zeroing, Hardware Assisted Locking	2.3.1 MU2

Note: VMware ESX or ESXi host reboot is required after install 3PAR VAAI Plug-In.

Recovery Manager 3.0.2 for Exchange

Blue = new for this revision

Database	Operating System	Virtual Platforms	File System	VSS Provider	Backup Tools	Cluster	MultiPath	Protocol	HBA/NIC	Remote Copy	3PAR InForm
Exchange 2007 SP1 with CCR on Single/Dual InServ	Windows 2003 x64 with SP2 or R2 SP2	VMware Esx 3.5[1]	NTFS, Local Basic Disk type[2]	3PAR VSS 1.6.2	Veritas NetBackup 6.5 MP2A	MSCS, Stand Alone	3PAR MPIO 1.0.22.7, MS iSCSI Initiator v2.0.8	FC iSCSI	QLogic[4] Emulex[4] 100/1000 Base-T, GigE	Yes, one to one periodic sync over IP	2.3.1
	Windows 2008 x64 SP1, SP2	Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS Native MPIO[3]	FC	QLogic[4] Emulex[4]		
Exchange 2003 with SP2	Windows 2003 x86 with SP2 or R2 SP2	VMware Esx 3.5[1]				MSCS, Stand Alone	3PAR MPIO 1.0.22.7, MS iSCSI Initiator v2.0.8	FC iSCSI	QLogic[4] Emulex[4] 100/1000 Base-T, GigE		
	Windows 2008 x86 SP1, SP2	Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS Native MPIO[3]	FC	QLogic[4] Emulex[4]		

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

Note: Microsoft VSS update KB940349 is required in Windows 2003 environment.

[1]Only the primary servers can be on Egenera or VMware VM with RDM. Virtual Copy can only surface to the host server connected to the same InServ as primary server and the destination or target host server cannot be the VMs.

[2] Virtual Copy on network mapped volume is not supported.

[3] Require Microsoft hot fix http://support.microsoft.com/kb/957522 in Windows 2008 SP1 environment.

[4] Refer to HBA driver support for Windows Platform.

Recovery Manager 4.1.0 for Exchange

Blue = new for this revision

Database	Operating System	Virtual Platforms	File System	VSS Provider	Backup Tools	Cluster	MultiPath	Protocol	HBA/NIC	Remote Copy	3PAR InForm
Exchange 2007 SP1, SP2, SP3 with CCR on Single/Dual InServ	Windows 2008 x64 SP1, SP2	VMware ESX 4.0[1], 4.1[1] Egenera 5.1.12-3[1]	NTFS, Local Basic Disk type[2]	3PAR VSS 1.6.2	Veritas NetBackup 6.5 MP2A, 7.0	Failover Cluster Stand Alone	MS Native MPIO[3] MS iSCSI Initiator v2.0.5	FC iSCSI	QLogic[4] Emulex[4] 100/1000 Base-T, GigE	Yes, one to one periodic sync over IP	2.3.1
Exchange 2010, SP1	Windows 2008 x64 SP1, SP2, R2	VMware ESX 4.0[1], 4.1[1] Egenera 5.1.12-3[1]									

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1]Only the primary servers can be on Egenera or VMware VM with RDM. Virtual Copy can only surface to the host server connected to the same InServ as primary server and the destination or target host server cannot be the VMs.
[2] Virtual Copy on network mapped volume is not supported.
[3] Require Microsoft hot fix http://support.microsoft.com/kb/957522.
[4] Refer to HBA driver support for Windows Platform.

Recovery Manager 3.0.2 for SQL

Blue = new for this revision

Database	Operating System	Virtual Platforms	File System	VSS Provider	Backup Tools	Cluster	MultiPath	Protocol	HBA/NIC	Remote Copy	3PAR InForm
SQL 2008 SP1 x86 (SQL writer)	Windows 2003 x86 SP2 or R2 SP2 , Windows 2008 x86 SP1, SP2	VMware ESX 4.0[1], 4.0U1[1]	NTFS, Local Basic Disk type[2]	3PAR VSS 1.6.2	Veritas NBU 6.5 MP2a	MSCS, Stand Alone, Failover Cluster	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]	Yes, one to one periodic sync over IP	2.3.1
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		
SQL 2008 SP1 x64 (SQL writer)	Windows 2003 x64 SP2 or R2 SP2, Windows 2008 x64 SP1, SP2, R2	VMware ESX 4.0[1], 4.0U1[1]				MSCS, Stand Alone, Failover Cluster	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]		
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		
SQL 2005 SP2,3 x86 (SQL 2005 writer)	Windows 2003 x86 SP2, or R2 SP2	VMware ESX 4.0[1], 4.0U1[1]				MSCS, Stand Alone	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]		
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		
SQL 2005 SP2,3 x64 (SQL 2005 writer)	Windows 2003 x64 SP2 or R2 SP2	VMware ESX 4.0[1], 4.0U1[1]				MSCS, Stand Alone	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]		
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

Note: Microsoft VSS update KB940349 is required in Windows 2003 environment.

[1]Only the primary servers can be on Egenera or VMware VM with RDM. Virtual Copy can only be exposed to the physical server where it also connects to the same InServ as the primary server.
[2] Virtual Copy on network mapped volume is not supported.
[3] Require Microsoft hot fix http://support.microsoft.com/kb/957522 in Windows 2008 SP1 environment.
[4] Refer to HBA driver support for Windows Platform.

Recovery Manager 4.1.0 for SQL

Blue = new for this revision

Database	Operating System	Virtual Platforms	File System	VSS Provider	Backup Tools	Cluster	MultiPath	Protocol	HBA/NIC	Remote Copy	3PAR InForm
SQL 2008 SP1 x86 (SQL writer)	Windows 2003 x86 SP2 or R2 SP2, Windows 2008 x86 SP1, SP2	VMware ESX 4.0[1], 4.0U1[1]	NTFS, Local Basic Disk type[2]	3PAR VSS 1.6.2	Veritas NBU 6.5 MP2a	MSCS, Stand Alone, Failover Cluster	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]	Yes, one to one periodic sync over IP	2.3.1
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		
SQL 2008 SP1 x64 (SQL writer)	Windows 2003 x64 SP2 or R2 SP2, Windows 2008 x64 SP1, SP2, R2	VMware ESX 4.0[1], 4.0U1[1]				MSCS, Stand Alone, Failover Cluster	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]		
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		
SQL 2005 SP2,3 x86 (SQL 2005 writer)	Windows 2003 x86 SP2 or R2 SP2, Windows 2008 x86 SP1, SP2	VMware ESX 4.0[1], 4.0U1[1]				MSCS, Stand Alone, Failover Cluster	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]		
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		
SQL 2005 SP2,3 x64 (SQL 2005 writer)	Windows 2003 x64 SP2 or R2 SP2, Windows 2008 x64 SP1, SP2, R2	VMware ESX 4.0[1], 4.0U1[1]				MSCS, Stand Alone, Failover Cluster	3PAR MPIO 1.0.22.7 1.0.23	FC	QLogic[4] Emulex[4]		
		Egenera 5.1.12-3, 5.2.x[1]				Stand Alone	MS iSCSI Initiator v2.0.8	iSCSI	100/1000 Base-T, GigE		

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

Note: Microsoft VSS update KB940349 is required in Windows 2003 environment.

[1]Only the primary servers can be on Egenera or VMware VM with RDM. Virtual Copy can only be exposed to the physical server where it also connects to the same InServ as the primary server.
[2] Virtual Copy on network mapped volume is not supported.
[3] Require Microsoft hot fix http://support.microsoft.com/kb/957522 in Windows 2008 SP1 environment.
[4] Refer to HBA driver support for Windows Platform.

GeoCluster for Microsoft Windows

Blue = new for this revision

Application	Operating System	Virtual Platforms	File System	Cluster	MultiPath	Protocol	Remote Copy	3PAR InForm
Exchange 2003/2007 SQL 2005/2008	Windows 2008 x86 and x64, R2	Microsoft Hyper-V	NTFS, Local Basic Disk Type	Microsoft Failover Cluster	Microsoft Native MPIO	FC, iSCSI	Yes, 1-to-1, Synchronous Remote Copy[1] Yes, Synchronous Long Distance Remote Copy[1]	2.3.1

Refer to HBA driver support for Windows Platform

[1] *Refer to Remote Copy configuration for additional information*

Recovery Manager 3.0.2 for Oracle for Red Hat Linux (Non-RAC)

Blue = new for this revision

Database	Operating System	File System	Volume Manager	MultiPath	Protocol	HBA/NIC	Backup Tools	Remote Copy	Notes	3PAR InForm
Oracle 10gR2, 11gR1	RHEL 4 update 3-6 RHEL 5 update 1,2,3	EXT2, EXT3	oracleasm-support-2.0.4-1, or 2.1.3-1 oracleasmlib-2.0.4-1	Device Mapper	FC	QLogic[1], Emulex[1]	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1 or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic Remote Copy over IP)*	Datafile and archive log destination are on separate 3PAR Virtual Volumes	2.3.1
					iSCSI	100/1000 Base-T				
	Egenera Pan Manager 4.x RHEL 4 update 3		ASM		FC	Egenera_SCSI Egenera_VSCSI Driver[1]				

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] *Refer to HBA driver support for RedHat Linux Platform.*

Recovery Manager 3.0.3 for Oracle for Red Hat Linux (Non-RAC)

Blue = new for this revision

Database	Operating System	File System	Volume Manager	MultiPath	Protocol	HBA/NIC	Backup Tools	Remote Copy	Notes	3PAR InForm
Oracle 10gR2, 11gR1	RHEL 4 update 3-6 RHEL 5 update 1-4	EXT2, EXT3	oracleasm-support-2.0.4-1, or 2.1.3-1 oracleasmlib-2.0.4-1	Device Mapper	FC	QLogic[1], Emulex[1]	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1 or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic Remote Copy over IP)*	Datafile and archive log destination are on separate 3PAR Virtual Volumes	2.3.1
					iSCSI	100/1000 Base-T				
	Egenera Pan Manager 4.x RHEL 4 update 3	N/A	ASM		FC	QLogic[1]				
Oracle 11gR1	Egenera Pan Manager 5.2.7	N/A	oracleasm-support-2.1.3-1 and oracleasmlib-2.0.4-1	Egenera Device Mapper					N/A	

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] *Refer to HBA driver support for RedHat Linux Platform.*

Recovery Manager 3.0.4 for Oracle for Red Hat Linux (Non-RAC)

Blue = new for this revision

Database	Operating System	File System	Volume Manager	MultiPath	Protocol	HBA/NIC	Backup Tools	Remote Copy	Notes	3PAR InForm
Oracle 10gR2, 11gR1, 11gR2	RHEL 4 update 3-6 RHEL 5 update 1-5	N/A	oracleasm-support-2.0.4-1, or 2.1.3-1 oracleasmlib-2.0.4-1	Device Mapper	FC	QLogic[1], Emulex[1]	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1, 6.5 MP5.6, or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic Remote Copy over IP)*	Datafile and archive log destination are on separate 3PAR Virtual Volumes	2.3.1
					iSCSI	100/1000 Base-T				
		EXT2, EXT3	N/A		FC	QLogic[1], Emulex[1]				
					iSCSI	100/1000 Base-T				
	Egenera Pan Manager 4.x RHEL 4 update 3	N/A	ASM		FC	QLogic[1]				
Oracle 11gR1, 11gR2	Egenera Pan Manager 5.2.7	N/A	oracleasm-support-2.1.3-1 and oracleasmlib-2.0.4-1	Egenera Device Mapper					N/A	

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] *Refer to HBA driver support for RedHat Linux Platform.*

Recovery Manager 3.0.2 for Oracle for Solaris SPARC (Non-RAC)

Blue = new for this revision

Database	Operating System	File System	Volume Manager	MultiPath	Protocol	HBA/NIC	Notes	Backup Tools	Remote Copy	3PAR InForm
Oracle 10gR2, 11gR1	Solaris SPARC 10 MU3 - MU6	UFS	ASM	MPxIO	FC	QLogic[2], SUN PCI[2], Emulex[2]	Datafile and archive log destination are on separate 3PAR virtual volumes.	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1 or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic remote copy over IP)*	2.3.1
					iSCSI[3]	100/1000 Base-T, GigE				
		VxFS 4.1 MP1, VxFS 5.0 MP1,MP3RP1	VxVM 4.1 MP1/VRTS3par 1.2, VxVM 5.0 MP1,MP3RP1 and	VxDMP 4.1 MP1, VxDMP 5.0 MP1,MP3RP1	FC	QLogic[2], SUN PCI[2], Emulex[2]	Datafile and archive log destination are on separate Veritas VxVM Disk Groups.			

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] Symantec Veritas VxVM EFI disk is not supported with non-Solaris HBA driver.
[2] Refer to HBA driver support for Solaris Platform.
[3] iSCSI only with Solaris10 MU6.

Recovery Manager 3.0.3 for Oracle for Solaris SPARC (Non-RAC)

Blue = new for this revision

Database	Operating System	File System	Volume Manager	MultiPath	Protocol	HBA/NIC	Notes	Backup Tools	Remote Copy	3PAR InForm
Oracle 10gR2, 11gR1	Solaris SPARC 10 MU3 - MU7	UFS	ASM	MPxIO	FC	QLogic[2], SUN PCI[2], Emulex[2]	Datafile and archive log destination are on separate 3PAR virtual volumes.	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1 or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic remote copy over IP)*	2.3.1
					iSCSI[3]	100/1000 Base-T, GigE				
		VxFS 4.1 MP1, VxFS 5.0 MP1,MP3RP1	VxVM 4.1 MP1/VRTS3par 1.2, VxVM 5.0 MP1,MP3RP1 and VRTS3par 5.0	VxDMP 4.1 MP1, VxDMP 5.0 MP1,MP3RP1	FC	QLogic[2], SUN PCI[2], Emulex[2]	Datafile and archive log destination are on separate Veritas VxVM Disk Groups.			

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] *Symantec Veritas VxVM EFI disk is not supported with non-Solaris HBA driver.*
[2] *Refer to HBA driver support for Solaris Platform.*
[3] *iSCSI only with Solaris10 MU6.*

Recovery Manager 3.0.4 for Oracle for Solaris SPARC (Non-RAC)

Blue = new for this revision

Database	Operating System	File System	Volume Manager	MultiPath	Protocol	HBA/NIC	Notes	Backup Tools	Remote Copy	3PAR InForm
Oracle 10gR2, 11gR1, 11gR2	Solaris SPARC 10 MU3 - MU8	UFS	ASM	MPxIO	FC	QLogic[2], SUN PCI[2], Emulex[2]	Datafile and archive log destination are on separate 3PAR virtual volumes.	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1, 6.5 MP5.6, or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic remote copy over IP)*	2.3.1
					iSCSI[3]	100/1000 Base-T, GigE				
		VxFS 4.1 MP1, VxFS 5.0 MP1,MP3RP1	VxVM 4.1 MP1/VRTS3par 1.2, VxVM 5.0 MP1,MP3RP1 and VRTS3par 5.0	VxDMP 4.1 MP1, VxDMP 5.0 MP1,MP3RP1	FC	QLogic[2], SUN PCI[2], Emulex[2]	Datafile and archive log destination are on separate Veritas VxVM Disk Groups.			

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] Symantec Veritas VxVM EFI disk is not supported with non-Solaris HBA driver.
[2] Refer to HBA driver support for Solaris Platform.
[3] iSCSI only with Solaris10 MU6.

Recovery Manager 3.0.2 for Oracle for RAC

Blue = new for this revision

<table>
<tr><th>Database</th><th>Operating System</th><th>File System</th><th>Volume Manager</th><th>Cluster</th><th>MultiPath</th><th>HBA/NIC</th><th>Notes</th><th>Backup Tools</th><th>Remote Copy</th><th>3PAR InForm</th></tr>
<tr><td rowspan="4">Oracle10gR2 RAC,
Oracle 11gR1 RAC</td><td rowspan="2">Solaris 10
MU3 - MU6 SPARC</td><td>VxCFS 4.1, 5.0 MP1,3</td><td>VxCVM 4.1 with VRTS3par 1.2, 5.0 MP3RP1, 3[2] with VRTS3par 5.0</td><td>VERITAS VCS 4.1, 5.0 MP3RP1 ,3</td><td>VxDMP 4.1, 5.0 MP3RP1,3</td><td rowspan="2">QLogic[1]
SUN PCI[1]
Emulex[1]</td><td rowspan="4">Datafile and archive log destination are on separate 3PAR Virtual Volumes</td><td rowspan="4">Veritas NetBackup 6.5 MP2a, 6.5 MP3.1 or Oracle RMAN with Netbackup Oracle Agent 6.5.2</td><td rowspan="4">Yes (Support one to one periodic Remote Copy over IP)</td><td rowspan="4">2.3.1</td></tr>
<tr><td rowspan="2">N/A</td><td>ASM</td><td>Oracle Clusterware</td><td>MPxIO</td></tr>
<tr><td rowspan="2">RHEL 4.0 update 3-7 and RHEL 5 update1,2,3</td><td>oracleasm-support-2.0.4-1, or 2.1.3-1 oracleasmlib-2.0.4-1</td><td rowspan="2">Oracle Clusterware</td><td rowspan="2">Device Mapper</td><td>QLogic[1]
Emulex[1]</td></tr>
<tr><td>Egenera Pan Manager 4.x RHEL 4 Update 3</td><td>ocfs2 1.2.9 with ocfs-tools 1.2.7 or ocfs2 1.4.1-1 with ocfs2-tools-1.4.1-1</td><td>N/A</td><td>Egenera SCSI
Egenera VSCSI[1]</td></tr>
</table>

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

[1] Refer to HBA driver support for corresponding platforms.
[2] Symantec Veritas VxVM EFI disk is not supported with non-Solaris HBA driver.

Recovery Manager 3.0.3 for Oracle for RAC

Blue = new for this revision

Database	Operating System	File System	Volume Manager	Cluster	MultiPath	HBA/NIC	Notes	Backup Tools	Remote Copy	3PAR InForm
Oracle10gR2 RAC, Oracle 11gR1 RAC	Solaris 10 MU3 - MU7 SPARC	CFS 4.1, 5.0 MP1,3	CVM 4.1 with VRTS3par 1.2, 5.0 MP3RP1, 3[2] with VRTS3par 5.0	VERITAS VCS 4.1, 5.0 MP3RP1, 3	VxDMP 4.1, 5.0 MP3RP1, 3	QLogic[1], SUN PCI[1] Emulex[1]	Datafile and archive log destination are on separate 3PAR Virtual Volumes	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1 or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic Remote Copy over IP)*	2.3.1
		N/A	ASM	Oracle Clusterware	MPxIO					
	RHEL 4.0 update 3-7 and RHEL 5 update1-4		oracleasm-support-2.0.4-1, or 2.1.3-1 oracleasmlib-2.0.4-1	Oracle Clusterware	Device Mapper	QLogic[1] Emulex[1]				
	Egenera Pan Manager 4.x RHEL 4 Update 3	ocfs2 1.2.9 with ocfs-tools 1.2.7 or ocfs2 1.4.1-1 with ocfs2-tools-1.4.1-1	N/A			Egenera SCSI Egenera VSCSI[1]				
Oracle 11gR1	Egenera Pan Manager 5.2.7	N/A	oracleasm-support-2.1.3-1 and oracleasmlib-2.0.4-1	Oracle Clusterware	Egenera Device Mapper	QLogic[1]				

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

Note: Support snapshot on Standby database of Oracle Dataguard.

[1] Refer to HBA driver support for corresponding platforms.

[2] Symantec Veritas VxVM EFI disk is not supported with non-Solaris HBA driver.

Recovery Manager 3.0.4 for Oracle for RAC

Blue = new for this revision

Database	Operating System	File System	Volume Manager	Cluster	MultiPath	HBA/NIC	Notes	Backup Tools	Remote Copy	3PAR InForm
Oracle10gR2 RAC, Oracle 11gR1 RAC, Oracle 11gR2 RAC	Solaris 10 MU3 - MU8 SPARC	CFS 4.1, 5.0 MP1,3	CVM 4.1 with VRTS3par 1.2, 5.0 MP3RP1, 3[2] with VRTS3par 5.0	VERITAS VCS 4.1, 5.0 MP3RP1, 3	VxDMP 4.1, 5.0 MP3RP1,3	QLogic[1], SUN PCI[1] Emulex[1]	Datafile and archive log destination are on separate 3PAR Virtual Volumes	Veritas NetBackup 6.5 MP2a, 6.5 MP3.1, 6.5 MP5.6, or Oracle RMAN with Netbackup Oracle Agent 6.5.2	Yes *(Support one to one periodic Remote Copy over IP)*	2.3.1
		N/A	ASM	Oracle Clusterware	MPxIO					
	RHEL 4.0 update 3-7 and RHEL 5 update 1-5	N/A	oracleasm-support-2.0.4-1, or 2.1.3-1 oracleasmlib-2.0.4-1	Oracle Clusterware	Device Mapper	QLogic[1] Emulex[1]				
	Egenera Pan Manager 4.x RHEL 4 update 3	ocfs2 1.2.9 with ocfs-tools 1.2.7 or ocfs2 1.4.1-1 with ocfs2-tools-1.4.1-1 or ocfs2 1.4.7 with ocfs2-tools-1.4.4-1	N/A			Egenera SCSI Egenera VSCSI[1]				
Oracle 11gR1 RAC	Egenera Pan Manager 5.2.7	N/A	oracleasm-support-2.1.3-1 and oracleasmlib-2.0.4-1	Oracle Clusterware	Egenera Device Mapper	QLogic[1]				

Note: Backup Tools integration support is only in local configuration but not Remote Copy configuration.

Note: Support snapshot on Standby database of Oracle Dataguard.

[1] Refer to HBA driver support for corresponding platforms.

[2] Symantec Veritas VxVM EFI disk is not supported with non-Solaris HBA driver.

Oracle 10g RAC Application (Non-Recovery Manager)

Blue = new for this revision

	Host Configuration			Oracle Configuration			
Database	Operating System*	Host Type*	Multi-Pathing*	Clustering	Quorum	Data Files	Recommended Application Parameters Changes
Oracle 10g RAC R1,R2	RHEL 3 Update 6	x86 Servers (32-bit)	QLogic Failover/ * QLogic HBAs	Oracle Clusterware	OCFS	OCFS	misscount=195(180s), ocfs Heartbeat=76(150s), Hangcheck - (Tick=30s, margin=180s)
					RAW	ASM	misscount=195(180s), Hangcheck - (Tick=30s, margin=180s)
		Egenera			OCFS	OCFS	misscount=195(180s), ocfs Heartbeat=76(150s), Hangcheck - (Tick=30s, margin=180s)
					RAW	ASM	misscount=195(180s), Hangcheck - (Tick=30s, margin=180s)
	RHEL 4 Update 3,Update 4, 6, 7	x86 Servers (32/64-bit)	Device Mapper/ * QLogic HBAs * Emulex HBAs		OCFS	OCFS	misscount=195(180s), ocfs Heartbeat=76(150s), Hangcheck - (Tick=30s, margin=180s)
					RAW	ASM	misscount=195(180s), Hangcheck - (Tick=30s, margin=180s)
		Egenera			OCFS	OCFS	misscount=195(180s), ocfs Heartbeat=76(150s), Hangcheck - (Tick=30s, margin=180s)
	AIX 5.3 ML5	PowerPC P5,P6Servers	3PAR MPIO		RAW	ASM	misscount=195(180s), Hangcheck - (Tick=30s, margin=180s)
							misscount=195(180s)
				HACMP		RAW	misscount=195(180s)
	AIX 5.3 ML5	PowerPC P5 Servers	VxDMP 5.0 with 3PAR ODM * Qlogic * Emulex	Veritas VCS	VxCFS	VxCFS	vxdmpadm start restore interval=30 Change HBA device port parameter to fast_fail: chdev -l fscsi0 -a fc_err_recov=fast_fail -P
	Windows Server 2003 R2	x86 Servers (32/64-bit)	3PAR MPIO	Oracle Clusterware	OCFS	OCFS	
					RAW	ASM	
	Solaris 9, Solaris 10, MU3, MU4, MU5	SPARC Servers	Sun MPXIO/ * QLogic * Emulex	Oracle Clusterware	RAW	ASM	misscount=195(180s)
			VxDMP 4.1/ * QLogic * Emulex	Veritas VCS	CVM 4.1 - RAW	CFS 4.1	misscount=195(180s)
	RHEL 5 Update 1, 2 & 3	x86 Servers (64-bit)	Device Mapper/ * QLogic HBA	Oracle Clusterware	RAW	OCFS2	ocfs Heartbeat=61(120s), Hangcheck - (Tick=30s, margin=180s)
					OCFS2	ASM	ocfs Heartbeat=61(120s), Hangcheck - (Tick=30s, margin=180s)
	HP-UX 11iV3	HP Itanium	HP Native	Oracle Clusterware	ASM, RAW	ASM	# crsctl set css misscount=150

** The specific host configurations used must match with those in the host operating systems matrices.*

Oracle 11g RAC Application (Non-Recovery Manager)

Blue = new for this revision

	Host Configuration			Oracle Configuration			
Database	Operating System*	Host Type*	Multi-Pathing*	Clustering	Quorum	Data Files	Recommended Application Parameters Changes
Oracle 11gR1 RAC (11.1.X.X.X)	Solaris 10 MU3 - MU6	SPARC	Sun MPxIO	Oracle Clusterware	RAW	ASM	misscount=195(180s)
Oracle 11gR1 RAC (11.1.X.X.X)	RHEL 5.x	Egenera X86_64	Egenera Device Mapper	Oracle Clusterware	RAW	RAW (No LVM)	css disktimeout=200s, css misscount=60s, quorum device="/dev/sdb*" interval="2" min_score="1" tko="30" votes="1"
					RAW	RAW with LVM2 & RH Cluster Suite	
Oracle 11gR1 RAC (11.1.X.X.X)	SLES 10 SP2	X86_64	Device Mapper	Oracle Clusterware	RAW	ASM	hangcheck_tick=30s, hangcheck_margin=180s, misscount=215s
Oracle 11gR1 RAC (11.1.X.X.X)	Windows 2003 SP2	X86_64		Oracle Clusterware	RAW, OCFS	ASM, OCFS	
Oracle 11gR1 RAC (11.1.X.X.X)	RHEL 5.x	X86_64		Oracle Clusterware	RAW, OCFS2	RAW, ASM, OCFS2	
Oracle 11gR2 RAC (11.1.X.X.X)	HP-UX 11iV3	HP Itanium	HP Native	Oracle Clusterware	ASM, RAW	ASM	misscount=30(default)
Oracle 11gR2 RAC (11.2.X.X.X)	RHEL 5.x	X86_64	Device Mapper	Oracle Clusterware	ASM	ASM	misscount=30(default)
Oracle 11gR1 RAC (11.1.X.X.X)	AIX 5.3	IBM P5 and P6	3PAR MPIO for AIX 2.2	Oracle Clusterware	RAW	ASM	
Oracle 11gR2 (11.2.X.X.X)	AIX 5.3 (5300-09 minimum), 6.1	IBM P5 and P6	3PAR MPIO for AIX 2.2	Oracle Clusterware	ASM	ASM	misscount=30(default)

** The specific host configurations used must match with those in the host operating systems matrices.*

System Reporter 2.6.1

Blue = new for this revision

Operating System	Platforms	Database	Web Server	Clients	3PAR InForm
Windows 2003 (SP1, SP2, R2), Windows XP (SP1, SP2), Windows 2008, RH Linux 5.1, 5.3	Intel x86	SQLite 3.3 (provided), MySQL 5.0, Oracle 11g	Apache Server 2.0 or later (provided)	Internet Explorer 6 or later, Mozilla Firefox 1.0 or later, Microsoft Excel 2003 or 2007	2.3.1
	Intel x64[1]				

[1] *Only support 32-bit Oracle client application*

System Reporter 2.6.2

Blue = new for this revision

Operating System	Platforms	Database	Web Server	Clients	3PAR InForm
Windows 2003 (SP1, SP2, R2), Windows XP (SP1, SP2), Windows 2008, RH Linux 5.1, 5.3	Intel x86	SQLite 3.3 (provided), MySQL 5.0, Oracle 11g	Apache Server 2.0 or later (provided)	Internet Explorer 6 or later, Mozilla Firefox 1.0 or later, Microsoft Excel 2003 or 2007	2.3.1
	Intel x64[1]				

[1] *Only support 32 bit Oracle client application.*

System Reporter 2.7.1

Blue = new for this revision

Operating System	Platforms	Database	Web Server	Clients	3PAR InForm
Windows 2003 (SP1, SP2, R2), Windows XP (SP1, SP2), Windows 2008, RH Linux 5.1, 5.3, Windows 2008 R2 (x64)	Intel x86	SQLite 3.3 (provided), MySQL 5.1, Oracle 11g	Apache Server 2.0 or later (provided)	Internet Explorer 6 or later, Mozilla Firefox 1.0 or later, Microsoft Excel 2003 or 2007	2.3.1
	Intel x64[1]				

[1] *Only support 32 bit Oracle client application.*

System Reporter 2.8

Blue = new for this revision

Operating System	Platforms	Database	Web Server	Clients	3PAR InForm
Windows 2003 (SP1, SP2, R2), Windows 2008, RH Linux 5 update 2-4, Windows 2008 R2 (x64)	Intel x86	SQLite 3.3 (provided), MySQL 5.1, Oracle 11g, 11gR2	Apache Server 2.1 or later (provided)	Internet Explorer 6 or later, Mozilla Firefox 1.0 or later, Microsoft Excel 2003 or 2007	2.3.1[2]
	Intel x64[1]				

Note: Oracle RAC database is not supported.

[1] *Only support 32 bit Oracle client application.*
[2] *Adaptive Optimization feature is a licensable feature and requires 2.3.1 MU1 or above.*
[3] *Oracle RAC database is not supported.*

Host Explorer 1.1.0

Blue = new for this revision

Operating System	Release	Multipath	Cluster	Connectivity	Host Persona
Microsoft Windows	2003 x86, x64	3PAR MPIO 1.0.22 or above	MSCS	Fibre Channel/ iSCSI	Generic(1)
		Symantec VxDMP 5.0			
	2008 x86, x64	Microsoft Native MPIO			Generic-ALUA(2)
		Symantec VxDMP 5.0			
RedHat Linux	4.0 update 6 and above, 5.0	Device Mapper	Veritas VCS		Generic(1)
		Symantec VxDMP 5.0			
Solaris SPARC	10 [1]	MPxIO	Veritas VCS, Sun Cluster		Generic(1)
		Symantec VxDMP 5.0			

[1] *For detailed supported release version, refer to Solaris Fibre Channel of the configuration matrix.*

InForm CLI Remote Client

Blue = new for this revision

Version	OS Family	Operating System	Languages	Platforms
2.3.1	Linux	Redhat Enterprise Linux 5 SuSE Enterprise Linux 10	English	Intel x86
	Solaris	Solaris 8 Solaris 9 Solaris 10		SPARC
	Windows	Windows 2008 Server (including SP1, SP2) Windows 2008 Server x64 Edition (including SP1, SP2) Windows Vista Business (including SP1, SP2)		Intel x86
		Windows 2003 Server (including SP1, SP2) Windows 2003 Server x64 Edition (including SP1, SP2) Windows XP Professional (including SP1, SP2, SP3)	English Japanese	

InForm Management Console

Blue = new for this revision

Version	OS Family	Operating System	Languages	Platforms	3PAR InForm OS
3.0.x	Linux	Red Hat Enterprise Linux 5 SuSE Enterprise Linux 10	English	Intel x86	2.2.4 (including all MUs)
	Solaris	Solaris 8 Solaris 9		SPARC	
	Windows	Windows 2003 Server (including SP1, SP2) Windows 2003 Server x64 Edition (including SP1, SP2) Windows XP Professional (including SP1, SP2)	English Japanese	Intel x86	
3.1.x	Linux	Red Hat Enterprise Linux 5 SuSE Enterprise Linux 10	English	Intel x86	2.3.1 2.2.4 (including all MUs)
	Solaris	Solaris 9 Solaris 10		SPARC	
	Windows	Windows 2008 Server (including SP1, SP2) Windows Vista Business (including SP1, SP2)		Intel x86	
		Windows 2003 Server (including SP1, SP2) Windows 2003 Server x64 Edition (including SP1, SP2) Windows 2008 Server x64 Edition (including SP1, SP2) Windows XP Professional (including SP1, SP2, SP3)	English Japanese		
4.1.x	Linux	Red Hat Enterprise Linux 5	English	Intel x86	2.3.1 2.2.4 (including all MUs)
	Windows	Windows 2008 Server x64 Edition (including SP1, SP2) Windows XP Professional (Including SP1, SP2, SP3) Windows 7 Professional			
		Windows 2008 Server x64 Edition Windows XP Professional Windows 7 Professional	Japanese		