



HP LeftHand P4000 SANs

Compatibility Matrix



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Supported Hardware Platforms

SAN/iQ Version

7.0 8.0 8.1
 July 2007 Nov 2008 Apr 2009

HP LeftHand P4300			√
HP LeftHand P4500			√
HP LeftHand P4000 VSA ¹			√
HP DL320S	√	√	√
HP DL380 G4	√	√	√
LeftHand NSM150	√		
LeftHand NSM160	√	√	√
LeftHand NSM200	√		
LeftHand NSM260	√	√	√
LeftHand NSM2060	√	√	√
LeftHand NSM2060 G2	√	√	√
LeftHand NSM2120	√	√	√
LeftHand NSM2120 G2	√	√	√
LeftHand NSM4150	√	√	√
LeftHand Virtual SAN Appliance (VSA) for VMware ¹	√	√	√
IBM System x3650	√	√	√
Dell PowerEdge 2950	√	√	√

¹ The following prerequisites are required for Virtual SAN Appliance (VSA) production use.

- A qualified server running VMware ESX Server 3.X or higher. Qualified servers as listed in VMware ESX Server systems compatibility guide at <http://www.vmware.com/resources/compatibility/search.php>.
- A single virtual CPU with at least 2000 MHz reserved.
- A connection to a virtual switch with at least 1 GbE network connection.
- Virtual disk(s) with 5 GB to 2 TB (2047 sectors) of space per disk located on internal disk storage. This includes direct attached storage that is not accessible from more than one physical server as detailed in the [HP LeftHand P4000 Virtual SAN Appliance in an HP BladeSystem environment solution guide](#).
- Connect the first virtual disk to SCSI address 1:0.
- Configure disks for the VSA as independent and persistent to prevent VM snapshots from affecting them.
- The VMFS data store for the VSA cannot be shared with any other VMs
- Reserved memory based on total disk capacity, as follows:

Total Capacity of All Installed Disks	Minimum Memory Required
< 500 GB	384 MB
500 GB – 4.5 TB	1 GB
4.5 TB – 9 TB	2 GB
9 TB – 10 TB	3 GB

Windows Server 2008 R2

SAN/iQ Version
7.0 8.0 8.1
July 2007 Nov 2008 Apr 2009

Categories	Products	7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Server – all editions			4
	Server Core			4
	Hyper-V			3
Software Initiators	Embedded Version 7.0			4
HBA's	QLogic QLE4060C/QLE4062C/QMH4062 ¹			2
Storage Extensions	HP LeftHand P4000 VSS Provider			4
	HP LeftHand P4000 DSM for MPIO ²			4
	Microsoft Windows Server Backup (without VSS)			4
	Symantec Backup Exec 12			4
	> 2TB File Systems			3
Cluster software	Microsoft Failover Clustering			4
Certifications	Windows Server Catalog of Tested Products			√

¹ BIOS 1.14, iSCSI Firmware 3.0.1.49, STOR Miniport 2.1.4.19; boot from SAN support

² Supports multiple network interfaces; iSCSI HBA's are not supported

Windows Server 2008

SAN/iQ Version
7.0 8.0 8.1
July 2007 Nov 2008 Apr 2009

Categories	Products	7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Server – all editions	4	4	4
	Server Core	4	4	4
	Hyper-V	3	3	3
	Storage Server	3	3	3
	x86/x64	4	4	4
	Software Initiators	Embedded Version 6.0 Build 6000/6001	4	4
HBA's	QLogic QLE4060C/QLE4062C/QMH4062 ¹	2	2	2
Storage Extensions	HP LeftHand P4000 VSS Provider	4	4	4
	HP LeftHand P4000 DSM for MPIO ²		4	4
	Microsoft Windows Server Backup (without VSS)	4	4	4
	Symantec Backup Exec 12	4	4	4
	> 2TB File Systems	3	3	3
Cluster software	Microsoft Failover Clustering	4	4	4
Certifications	Windows Server Catalog of Tested Products	√	√	√
Service Packs	Service Pack 1	4	4	4
	Service Pack 2	4	4	4

¹ BIOS 1.14, iSCSI Firmware 3.0.1.49, STOR Miniport 2.1.4.19; boot from SAN support

² Supports multiple network interfaces; iSCSI HBA's are not supported

Windows Server 2003

SAN/iQ Version
7.0 8.0 8.1
July 2007 Nov 2008 Apr 2009

		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Standard Server/Web/Small Business/R2	4	4	4
	Enterprise Server/Datacenter/R2	4	4	4
	x86/x64 Architecture	4	4	4
Software Initiators	Microsoft iSCSI Initiator 2.03 (3099)	3		
	Microsoft iSCSI Initiator 2.04 (3273)	4		
	Microsoft iSCSI Initiator 2.05 (3392)	4		
	Microsoft iSCSI Initiator 2.06 (3497)	4	4	4
	Microsoft iSCSI Initiator 2.07 (3640)	4	4	4
	Microsoft iSCSI Initiator 2.08 (3825)		4	4
HBAs	Adaptec 7211C/7211F ¹	2		
	Alacritech SEN2000 ²	2	2	2
	emBoot winBoot/I Boot from SAN (MS iSCSI) ²	2	2	2
	QLogic QLA4010/QLA4010C ³	2		
	QLogic QLA4050C/QLA4052C ⁴	2	2	2
	QLogic QLE4060C/QLE4062C/QMH4062 ⁵	2	2	2
Storage Extensions	HP LeftHand P4000 VSS Provider	4	4	4
	HP LeftHand P4000 DSM for MPIO ⁶	4	4	4
	Microsoft NT Backup	4	4	4
	Symantec Backup Exec 10 ⁷	3		
	Symantec Backup Exec 11 ⁸	4	4	4
	Symantec Backup Exec 12		4	4
	> 2TB File Systems	3	3	3
Cluster software	Microsoft Clustering Services	4	4	4
Certifications	Designed for Windows	√	√	√
	Windows Server Catalog of Tested Products	√	√	√
Service Packs	Service Pack 2	4	4	4

¹ Initiator Software Version 1.2 for Windows Server 2003

² Driver 9.0.0.129 & 7.3.0.1r3. Tested with emBoot WinBoot/I 1.5

³ BIOS 1.11, iSCSI Firmware 03.00.00.04, SCSI Miniport Driver 2.1.2.0

⁴ BIOS 1.04, iSCSI Firmware 2.0.0.7, SCSI Miniport Driver 2.1.2.5

⁵ BIOS 1.14, iSCSI Firmware 3.0.1.49, STOR Miniport 2.1.4.19; boot from SAN support

⁶ Supports multiple network interfaces; iSCSI HBA's are not supported

⁷ Requires Symantec Backup Exec 10d (10.1) for Windows Servers Hotfix 40

⁸ Requires Symantec Backup Exec 11d (11.1) for Windows Servers Hotfix 14 32bit or 64bit

Windows Server 2000

SAN/iQ Version
7.0 8.0 8.1
July 2007 Nov 2008 Apr 2009

		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Server/Advanced Server	2		
Software Initiators	Microsoft iSCSI Initiator 2.04 (3273)	2		
HBAs	QLogic QLA4010/QLA4010C ¹	1		
Service Packs	SP4	2		

¹ BIOS 1.11, iSCSI Firmware 03.00.00.04, Miniport Driver 2.1.2.0

VMware

VMware ESX 4

		<u>SAN/iQ Version</u>		
		7.0	8.0	8.1
		July 2007	Nov 2008	Apr 2009
Versions	VMware vSphere 4; ESX/ESXi Server 4			3
	VMware Site Recovery Manager			3
Certifications	Storage/SAN Compatibility Guide ESX/ESXi 4.x			√
	Storage Replication Adapter (SRA)			√
HBAs	QLogic QLE4060C/QLE4062C/QMH4062 ¹			3

¹ BIOS 1.14, iSCSI Firmware 3.0.1.49, STOR Miniport 2.1.4.19; boot from SAN support

VMware ESX 3

		<u>SAN/iQ Version</u>		
		7.0	8.0	8.1
		July 2007	Nov 2008	Apr 2009
Versions	VMware Infrastructure 3; ESX Server 3.0.1	2		
	VMware Infrastructure 3; ESX Server 3.0.2	3	3	3
	VMware Infrastructure 3.5; ESX/ESXi Server 3.5	3	3	3
	VMware Site Recovery Manager	3	3	3
Certifications	Storage/SAN Compatibility Guide ESX/ESXi 3.x	√	√	√
	Storage Replication Adapter (SRA)	√	√	√

VMware ESX 2

		<u>SAN/iQ Version</u>		
		7.0	8.0	8.1
		July 2007	Nov 2008	Apr 2009
Versions	VMware ESX Server 2.5	2		

RedHat

RedHat Enterprise Linux 5

		<u>SAN/iQ Version</u>		
		7.0	8.0	8.1
		July 2007	Nov 2008	Apr 2009
Versions	RedHat Enterprise Linux 5.0	2	2	2
	RedHat Enterprise Linux 5.1	2	2	2
	RedHat Enterprise Linux 5.2		2	2
Software Initiators	iSCSI-initiator-utils-6.2.0.742	2	2	2
	iSCSI -initiator-utils-6.2.0.868	2	2	2
HBAs	QLogic QLE4060C/QLE4062C/QMH4062 ¹	2	2	2
Services	GFS	2	2	2
	RedHat Cluster Suite	2	2	2

¹ BIOS 1.14, iSCSI Firmware 3.0.1.49, STOR Miniport 2.1.4.19; boot from SAN support

RedHat Enterprise Linux 4

		<u>SAN/iQ Version</u>		
		7.0	8.0	8.1
		July 2007	Nov 2008	Apr 2009
Versions	RedHat Enterprise Linux AS 4.0 U4	3		
	RedHat Enterprise Linux AS 4.6	3	3	3
	RedHat Enterprise Linux AS 4.7	3	3	3
Software Initiators	Linux-iSCSI v4.0.3.0	3	3	3
HBAs	QLogic QLA4010/QLA4010C ¹	2		

¹ BIOS 1.11, iSCSI Firmware 03.00.00.04

RedHat Enterprise Linux 3

		<u>SAN/iQ Version</u>		
		7.0	8.0	8.1
		July 2007	Nov 2008	Apr 2009
Versions	RedHat Enterprise Linux AS 3.0 U8	2		
Software Initiators	Linux-iSCSI v3.6.x	2		

Novell

NetWare		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	NetWare 6.5	2	2	2
Software Initiators	NetWare iSCSI Initiator	2	2	2
Cluster software	Novell Cluster Services 1.8	2	2	2
Certifications	Certified	√	√	√
Service Packs	SP6a	2	2	2
	SP7	2	2	2

SUSE Linux		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	SUSE Linux Enterprise Server 9	2	2	2
	SUSE Linux Enterprise Server 10/10.1/10.2	2	2	2
	x86/x64 Architecture	2	2	2
Software Initiators	SUSE Native linux-iscsi (SLES9)	2	2	2
	SUSE Native Open-iSCSI (SLES10)	2	2	2
HBAs	QLogic QLA4010/QLA4010C ¹	2		
	QLogic QLE4060C/QLE4062C/QMH4062 ²	2	2	2
Cluster software	Novell Cluster Services 1.8	2	2	2
Certifications	Certified	√	√	√

¹ BIOS 1.11, iSCSI Firmware 03.00.00.04; boot from SAN support

² BIOS 1.13, iSCSI Firmware 3.0.1.24; boot from SAN support

Fedora

Fedora Core		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Linux Fedora-Core-06 2.6.18-1.2798.fc6 x86	2	2	2
	Fedora 8	2	2	2
	Fedora 9		2	2
	Fedora 10		2	2
Software Initiators	iscsi-initiator-utils-6.2.0.747-0.0.fc6	2		
	iscsi-initiator-utils-6.2.0.865-0.2.fc8	2	2	2
	iscsi-initiator-utils-6.2.0.868-0.7.fc9		2	2
	iscsi-initiator-utils-6.2.0.870-0.1.rc1.fc10		2	2

HP

HP-UX 11i		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	HP-UX 11i v1 (PA-RISC 11.11)	2	2	2
	HP-UX 11i v2 (PA-RISC 11.23)	2	2	2
Software Initiators	HP-UX iSCSI Initiator	2	2	2

IBM

IBM AIX 5L		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	IBM AIX 5L Version 5.3 ML2	2	2	2
	IBM AIX 6.1		2	2
Software Initiators	AIX iSCSI Initiator	2	2	2

SUN

Solaris Enterprise System		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Solaris 10 (SPARC)	2	2	2
Software Initiators	Solaris iSCSI Initiator	2	2	2

Citrix

Citrix XenServer		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	Citrix XenServer 4.0	2 ¹		
	Citrix XenServer 4.1	2 ¹		
	Citrix XenServer 5.0		2	2
	Citrix XenServer 5.5			2
Certifications	Hardware Compatibility List Category 1	√ ¹	√	√

¹ Qualified with SAN/iQ 7.0 SP1

Apple

Apple OS X Leopard		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Versions	OS X Leopard 10.5.4	2 ¹	2	2
	OS X Leopard 10.5.5		2	2
Software Initiators	globalSAN iSCSI Initiator 3.3.0.43	2 ¹	2	2

¹ Qualified with SAN/iQ 7.0 SP1

Oracle 10g, 11g

Supported Operating Systems	RAC Support	File system format	SAN/iQ Version		
			7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Windows Server 2008	√	Local file system			2
		ASM			2
		RAW			2
Windows Server 2003	√	Local file system			2
		ASM			2
		RAW			2
		OCFS ²			2
RedHat Enterprise Linux 5.0 ³	√	Ext2, Ext3, Reiserfs, LVM			2
		OCFS2			2
		GFS ⁴			2
		ASM			2
		RAW			2
RedHat Enterprise Linux 4.0 ³	√	Ext2, Ext3, LVM			2
		OCFS2			2
		GFS ⁴			2
		ASM			2
		RAW			2
SUSE Linux Enterprise Server 10	√	Ext2, Ext3, Reiserfs, LVM			2
		OCFS2			2
		GFS ⁴			2
		ASM			2
		RAW			2
HP-UX 11i v1 & v2	√	LVM			2
		VxVM			2
		CFS			2
		ASM			2
		ASM on SLVM			2
		RAW			2

¹ OVM is not supported at this time

² OCFS is supported on 10g only

³ Oracle Enterprise Linux (OEL) is supported per RHEL equivalent versions

⁴ GFS is supported on 10g only

Support Level Definitions

Level 4	
Level of Support	We have done all practical testing on this environment and it is a "benchmark" environment for quality and performance. We have extensive experience and documentation as well as environment experts in-house. We have the highest possible partnership arrangement with the vendor.
Support Will Say	You are supported. Support has in-house expertise with the OS and applications. We have the ability to answer questions, reproduce customer configurations and resolve issues. We will escalate to engineering if needed. We have a relationship with the OS vendor and can escalate if necessary.
Level 3	
Level of Support	We have done complete testing of the environment, including approved applications and performance testing. There may be some limited caveats, but we support most standard configurations. We have systems and experience in-house and multiple whitepapers and application notes. We are enrolled in vendor partnership programs and pass relevant certifications.
Support Will Say	Support records indicate that we have done a great deal of testing and have in-house expertise. We have tested with applications and failure conditions. We have relationships with the vendor. We have equipment in house, running applications.
Level 2	
Level of Support	We have done testing of all SAN/iQ Feature functionality and advanced failure conditions. Most configurations are supported. We should have a Best Practices document for this environment. We have some in-house expertise, and we have a partnership with the vendor.
Support Will Say	Support records indicate that we have not done a great deal of testing on this particular configuration, but we have in-house expertise with the OS. We have not tested applications or all failure conditions. We may run into problems that will need vendor assistance, but we do have a relationship with the vendor for regular support during normal business hours. We have equipment in house, but not applications running on the equipment.
Level 1	
Level of Support	We have not done any reliability, performance or exhaustive feature testing. We have little or no expertise, and we have no established relationship with the vendor. We have no reason to believe that this configuration will not work. We have seen this work in-house or at a customer site.
Support Will Say	Support records show that we have not done a full certification on this configuration, including performance or failure conditions. We have no reason to believe that this configuration will not work, but we also have no precedent for setting it up and may run into problems that will need vendor assistance and/or time to research in our test lab. We may have limited availability to lab equipment and may need to do troubleshooting on the Customer premises, or at the vendor site.

HP LeftHand P4000 Centralized Management Console

Supported Operating Systems		SAN/iQ Version		
		7.0 July 2007	8.0 Nov 2008	8.1 Apr 2009
Microsoft	Windows XP	√	√	√
	Windows Vista	√	√	√
	Windows 7			√
	Windows Server 2000	√		
	Windows Server 2003	√	√	√
	Windows Server 2008	√	√	√
	Windows Server 2008 R2			√
Novell	SUSE Linux Enterprise 9	√		
	SUSE Linux Enterprise 10	√	√	√
RedHat	RedHat Enterprise Linux 3	√		
	RedHat Enterprise Linux 4	√	√	√
	RedHat Enterprise Linux 5	√	√	√
Fedora	Fedora Core 6	√	√	√
	Fedora 8	√	√	√
	Fedora 9		√	√
HP	HP-UX 11i v1 (11.11)	√	√	√
	HP-UX 11i v2 (11.23)	√	√	√

For more information

<http://www.hp.com/storage/spock>

HP StorageWorks Single Point of Connectivity Knowledge (SPOCK) is the primary portal used to obtain detailed information about supported products and configurations.

Technology for better business outcomes

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