

HP StorageWorks arrays

Family guide



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HP StorageWorks arrays: Bridging the gap between data explosion and storage infrastructure

Regardless of the size of your organisation, it is likely that you are facing daunting challenges regarding data storage. You not only require immediate access to the exploding volumes of data, but government regulations and corporate governance are dictating what must be kept, for how long and when you need to gain access to it. Adding that to today's economic situation, you need to cut your near term capital and operating costs without sacrificing quality. Therefore, it is critical that you invest in a cost-effective, long-term solution that can support your business now and well into the future, and that all of the different components and options are compatible with one another.

HP StorageWorks' family of disk arrays reduces the complexity of your storage environment and helps to lower costs because they are easy to install, easy to manage and easy to support. All of your storage needs are addressed – whether it is an entry-level modular array, an enterprise-class disk array or intelligent management software. Our simplified array and user interface designs mean that you will spend less time installing, configuring and managing your storage management tasks.

The HP StorageWorks disk array family includes:

- **All-in-One (AiO) Storage Systems:** Providing simple, affordable networked storage; specifically, network-attached storage (NAS) and Internet small computer system interface (iSCSI), with integrated data protection features and simplified management
- **Modular Smart Arrays (MSAs):** Enabling low-cost, scalable, high-performance storage consolidation through SANs to meet entry-level to midrange requirements
- **Enterprise Virtual Arrays (EVAs):** An ideal storage solution for midrange to enterprise-class environments that require high performance, high capacity and high availability
- **XP Disk Arrays:** The HP StorageWorks XP24000/XP20000 Disk Arrays are large enterprise-class storage systems designed for organisations that simply cannot afford any downtime or tolerate any data loss

We also offer a range of complementary options to help you tackle from the most basic to the most complex storage challenges. These include everything from a single tape drive to an automated tape library as well as enterprise-wide SANs with arrays flexible enough to manage gigabytes to petabytes of storage.

Our server family consists of the HP Integrity and HP ProLiant server families as well as HP BladeSystem. When you combine HP StorageWorks solutions with HP servers, the advantages multiply still further – hardware and software integrates seamlessly, systems are easy to manage, change is simplified and you are prepared for future challenges. You can learn more about our server family on page 11.



Why should you choose HP storage with your HP server? There are many reasons why HP StorageWorks is your best storage option with your HP server. Here are just a few:

- Do you need a single interface to monitor, automate and control your complex IT environment? Is pooling and sharing of resources important for increasing your IT utilisation? Do you need to reduce business risk from unplanned downtime?

Our software allows you to manage, virtualise and protect IT resources to simplify and optimise your infrastructure. For example, HP Systems Insight Manager can lower costs and simplify with common storage and server management.

- How efficiently do your storage and servers work together?

We spend hundreds of hours rigorously testing our storage and servers together so you can deploy our solutions with confidence.

- Do you need to save time when deploying storage and servers?

Accelerate deployment with solutions that are ready to run. With Factory Express you can choose how your solution is built, tested, integrated, shipped and deployed, which means you know your solutions will work from Day One.

- How important is it that your service partner provides a single point of ownership and accountability? Do they meet your service needs throughout your business? Have you reached the mission-critical reliability you require to meet your business needs?

From training and basic product support to selective outsourcing, our services help you realise the full potential of your technology to meet your business requirements.

- Do you have everything you need to meet your infrastructure needs?

Our server and storage options – including memory, disk drives, processors, racks, operating system software, array-based software, power and cooling – help optimise your solution by enhancing system performance and functionality.

Storage matters more than ever and the demands on your storage and server infrastructure will only continue to grow. Over the next several pages, you'll see how HP StorageWorks solutions have been designed to answer your unique needs and requirements – and promote greater business outcomes – now and into the future.

HP StorageWorks All-in-One Storage Systems

Unified solutions combining shared iSCSI storage and customised NAS file serving with integrated data protection, designed to be deployed and managed by IT generalists with no storage expertise.

Entry-level

New



HP StorageWorks 400t All-in-One Storage System (AiO400t)



HP StorageWorks 400r All-in-One Storage System (AiO400r)



HP StorageWorks 1200r All-in-One Storage System (AiO1200r)



HP StorageWorks All-in-One SB600c Storage Blade (AiO SB600c)

	HP StorageWorks 400t All-in-One Storage System (AiO400t)	HP StorageWorks 400r All-in-One Storage System (AiO400r)	HP StorageWorks 1200r All-in-One Storage System (AiO1200r)	HP StorageWorks All-in-One SB600c Storage Blade (AiO SB600c)
Processor type and description	Dual-Core Intel® Pentium® E2160 1.8 GHz with 1x1 MB L2 cache	Quad-Core Intel® Xeon® processor E5405 (2.00 GHz, 80W, 1333 MHz FSB) (One processor standard; up to 2 supported)	Quad-Core AMD Opteron™ Model 2354 2.2 GHz	One Quad-Core Intel® Xeon® E5410 (2.33 GHz, 1333 FSB, 80w)
Memory standard/max	2 GB/4 GB	2 GB/4 GB	2 GB or 4 GB/4 GB	2 GB/4 GB
Storage included	4 non-Hot-Plug drives: 1 TB SATA (250 GB) 584 GB SAS (146 GB)	4 Hot-Plug drives: 1 TB SATA (250 GB) 2 TB SATA (500 GB) 1.2 TB SAS (300 GB)	Up to 12 Hot Plug drives: 3 TB SATA (12 X 250 GB) 6 TB SATA (8 X 750 GB) 9 TB SATA (12 X 750 GB) 12 TB SATA (12 X 1 TB) 2.4 TB SAS (8 X 300 GB) 3.6 TB SAS (12 X 300 GB) 5.4 TB SAS (12 X 450 GB)	292 GB 2x146 GB 10K SFF SAS have the OS pre-installed on the server Choose up to 6 SFF drives: 146 GB 10K SAS SFF 250 GB 5.4K SATA SFF
Storage controller	Smart Array E200/128 MB Controller with BBWC		Smart Array P800/512 MB Controller (RAID 0/1/5/6) with BBWC and 2 external SAS expansion ports	Smart Array E200i
Network controller	Embedded NC105i PCIe Gigabit Ethernet Server Adapter plus additional NC360T dual-port Gigabit Ethernet Server Adapter	Embedded NC320i PCIe Dual Port Gigabit Server Adapter	Embedded NC326i PCIe Dual Port Gigabit Server Adapter	Integrated single port NC373i Multifunction Gigabit Server Adapter
Integrated application data storage (iSCSI SAN)	iSCSI support for Windows 2000, Windows Server 2003, Windows Server 2008 (including Hyper-V), VMware ESX Server 3/3.5, Novell SUSE Linux Enterprise Server 10, Red Hat Enterprise Linux 5 and Qlogic 40xx series iSCSI hardware HBAs			
Integrated file serving (NAS)	Heterogeneous file serving with support for SMB/CIFS, NFS, AppleTalk, Novell, HTTP, FTP			
Integrated data protection	File and array snapshots (64/volume for files and 512/volume for iSCSI). Full copy of HP Data Protector Express software for backup and recovery to disk or tape. Supports replication through HP StorageWorks Storage Mirroring			
Operating system	Microsoft Windows Storage Server 2003 R2 (Standard Edition)			
Hardware warranty	1-year parts exchange, 1-year labour, 1-year on-site next business day response			3-year parts, 3-year labour and 3-year on-site limited global warranty
QuickSpec URLs	http://h18000.www1.hp.com/products/quickspecs/12913_div/12913_div.html	http://h18000.www1.hp.com/products/quickspecs/12913_div/12913_div.html	http://h18000.www1.hp.com/products/quickspecs/12866_div/12866_div.pdf	http://h18000.www1.hp.com/products/quickspecs/12789_div/12789_div.pdf
HP related services				
Recommended services				
	3 years Support Plus 24 Hardware Installation HP Proactive Select Service	3 years Support Plus 24 Hardware Installation HP Proactive Select Service	3 years Support Plus 24 Hardware Installation HP Proactive Select Service	3 years Support Plus 24 Installation and Startup Service for HP BladeSystem c-Class Infrastructure (OS + ICE) HP Proactive Select Service
Software	HP StorageWorks Storage Mirroring to replicate iSCSI array and file data to another system HP StorageWorks Data Protector Express Options to protect servers connected to the AiO			
Tape				
	SAS Ultrium tape drives USB, SCSI and SAS DAT tape drives	SCSI Ultrium tape drives 1/8 G2 Autoloader with Ultrium 448/920 Tape Drive(s)	1/8 G2 Autoloader with Ultrium 920/1760 Tape Drive(s) MSL2024 Tape Library with Ultrium 920/960/1760 Tape Drive(s)	MSL2024 tape library with 920 SAS or Ultrium 960 4Gb Fibre MSL4048 tape library with 920 SAS or Ultrium 960 4Gb Fibre

HP StorageWorks Modular Smart Arrays

The HP StorageWorks Modular Smart Array (MSA) family is ideal for organisations looking for entry-level/midrange SANs and low-cost DAS solutions.

Entry-level



HP StorageWorks 20 Modular Smart Array (MSA20)
SATA drive enclosure; capacity for direct attach



HP StorageWorks 50 Modular Smart Array (MSA50)
SAS storage enclosure supporting SAS and SATA

Maximum storage	Up to 12 TB with SATA drives	Up to 3 TB with SAS drives Up to 2.5 TB with SATA drives
Host interface	Ultra320 SCSI	SAS
Maximum number of drives	Up to 12 SATA Large Form Factor (LFF) drives	Up to 10 SAS and/or SATA Small Form Factor (SFF) drives
Hard drives supported	1 TB 3G 7.2K 3.5-inch SATA 750 GB 3G 7.2K 3.5-inch SATA 500 GB 3G 7.2K 3.5-inch SATA 250 GB 3G 7.2K 3.5-inch SATA Note: 3G drives only function at 1.5G	300 GB 3G 10K 2.5-inch Dual Port SAS 146 GB 3G 10K 2.5-inch Dual Port SAS 36 GB 3G 15K 2.5-inch Dual Port SAS 72 GB 3G 15K 2.5-inch Single Port SAS 36 GB 3G 15K 2.5-inch Single Port SAS 146 GB 3G 10K 2.5-inch Single Port SAS 72 GB 3G 10K 2.5-inch Single Port SAS 250 GB 3G 5.4K 2.5-inch SATA 120 GB 3G 5.4K 2.5-inch SATA 60 GB 1.5G 5.4K 2.5-inch SATA
Operating systems supported	Microsoft® Windows® Server 2003; Microsoft Windows Server 2000 Microsoft Windows Storage Server 2003 Novell NetWare 6.5 Red Hat Enterprise Linux 2.1 Red Hat Enterprise Linux SUSE Linux Enterprise 9 (SLES9) SCO OpenServer 6.0.0 SCO UnixWare 7.1.3; SCO UnixWare 7.1.4; VMware	Microsoft Windows Server 2000; Microsoft Windows Server 2003 Microsoft Windows Storage Server 2003 Microsoft Windows 2008 Novell Open Enterprise Server; Novell NetWare 6.5 SPS SCO OpenServer 5.0.7, 6 SCO UnixWare 7.1.3, 7.1.4 Red Hat Enterprise Linux Solaris 10; SUSE Linux Enterprise Server 9, 10; VMware ESX 3.5
Rack height	2U	1U
Warranty	3 years parts only	3 years parts only
HP related services		
Recommended services		
	3 years Support Plus 24 HP StorageWorks MSA Family Disk Array Installation and Startup Service HP Proactive Select Service	3 years Support Plus 24 HP StorageWorks MSA Family Disk Array Installation and Startup Service HP Proactive Select Service
Software		
	HP Systems Insight Manager (SIM) HP Array Configuration Utility (ACU)	HP Systems Insight Manager (SIM) HP Array Configuration Utility (ACU)

For additional information on related software for these products, see page 13.

HP StorageWorks Modular Smart Arrays (continued)

The HP StorageWorks Modular Smart Array (MSA) family is ideal for organisations looking for entry-level/midrange SANs and low-cost DAS solutions.

Entry-level



HP StorageWorks 60 Modular Smart Array (MSA60)
SAS/SATA drive enclosure for direct attach



HP StorageWorks 70 Modular Smart Array (MSA70)
SAS/SATA drive enclosure for direct attach

Maximum storage	Up to 5.4 TB with SAS drives Up to 12 TB with SATA drives Up to 12 TB with SAS Dual Port Midline (MDL) drives	Up to 7.5 TB with SAS drives Up to 6.2 TB with SATA drives
Host interface	SAS	SAS
Maximum number of drives	Up to 12 SATA and/or SAS LFF drives	Up to 25 SAS or SATA SFF drives
Hard drives supported	450 GB 3G 15K 3.5-inch Dual Port SAS 300 GB 3G 15K 3.5-inch Dual Port SAS 146 GB 3G 15K 3.5-inch Dual Port SAS 72 GB 3G 15K 3.5-inch Dual Port SAS 300 GB 3G 15K 3.5-inch Single Port SAS 146 GB 3G 15K 3.5-inch Single Port SAS 72 GB 3G 15K 3.5-inch Single Port SAS 1 TB 3G 15K 3.5-inch Dual Port MDL SAS 750 GB 3G 15K 3.5-inch Dual Port MDL SAS 1 TB 3G 7.2K 3.5-inch SATA 750 GB 3G 7.2K 3.5-inch SATA 500 GB 3G 7.2K 3.5-inch SATA 250 GB 3G 7.2K 3.5-inch SATA	300 GB 3G 10K 2.5-inch Dual Port SAS 146 GB 3G 10K 2.5-inch Dual Port SAS 36 GB 3G 15K 2.5-inch Dual Port SAS 146 GB 3G 10K 2.5-inch Single Port SAS 72 GB 3G 15K 2.5-inch Single Port SAS 72 GB 3G 10K 2.5-inch Single Port SAS 36 GB 3G 15K 2.5-inch Single Port SAS 250 GB 1.5G 5.4K 2.5-inch SATA 120 GB 1.5G 5.4K 2.5-inch SATA 60 GB 1.5G 5.4K 2.5-inch SATA
Operating systems supported	Microsoft Windows 2003; Microsoft Windows 2008 HP-UX 11i v2, 11i v3; HP OpenVMS 8.31H Novell Open Enterprise Server; Novell NetWare 6.5 SPS SCO OpenServer 5.0.7, 6 SCO UnixWare 7.1.3, 7.1.4 Red Hat Enterprise Linux 3, 4, 5 SUSE Linux Enterprise Server 9, 10; Solaris 10; VMware ESX 3.5	Microsoft Windows 2003; Microsoft Windows 2008 HP-UX 11i v2, 11i v3; HP OpenVMS 8.31H Novell Open Enterprise Server; Novell NetWare 6.5 SPS SCO OpenServer 5.0.7, 6 SCO UnixWare 7.1.3, 7.1.4 Red Hat Enterprise Linux 3, 4, 5 SUSE Linux Enterprise Server 9, 10; Solaris 10; VMware ESX 3.5
Rack height	2U	2U
Warranty	3 years parts only	3 years parts only
HP related services		
Recommended services	3 years Support Plus 24 HP StorageWorks MSA Family Disk Array Installation and Startup Service HP Proactive Select Service	3 years Support Plus 24 HP StorageWorks MSA Family Disk Array Installation and Startup Service HP Proactive Select Service
Software	HP Systems Insight Manager (SIM) HP Array Configuration Utility (ACU)	HP Systems Insight Manager (SIM) HP Array Configuration Utility (ACU)

For additional information on related software for these products, see page 12 and 13.

HP StorageWorks Modular Smart Arrays (continued)

The HP StorageWorks Modular Smart Array (MSA) family is ideal for organisations looking for entry-level departmental or remote SAN solutions.

Entry-level



**HP StorageWorks 2000fc G2
Modular Smart Array (MSA2000fc G2)**
4 Gb Fibre Channel connected, 2U storage area network (SAN) solution designed for small to medium-size deployments or remote locations needing high-performance



**HP StorageWorks 2000i
Modular Smart Array (MSA2000i)**
iSCSI connected, 2U storage area network (SAN) solution designed for small to medium-size deployments or remote locations



**HP StorageWorks 2000sa
Modular Smart Array (MSA2000sa)**
SAS connected, modular, reliable, affordable and easy-to-manage shared storage array solution

Maximum capacity	29.7 TB SAS; 60 TB SATA	21.6 TB SAS; 48 TB SATA	21.6 TB SAS; 48 TB SATA
Host interface	4 Gb Fibre Channel	1 Gb Ethernet iSCSI	3 Gb Serial Attached SCSI (SAS)
Number of hosts supported	64	16	4 hosts with SAS direct connect 32 hosts (BladeSystem servers) using 3 GB SAS BL switch
Number of drives (maximum including expansion)	60 (3.5-inch LFF drives) 99 (2.5-inch SFF drives)	48 (3.5-inch LFF drives)	48 (3.5-inch LFF drives)
Storage Expansion option/s	MSA2000 3.5-inch disk enclosure MSA70 2.5-inch disk enclosure	MSA2000 3.5-inch disk enclosure	MSA2000 3.5-inch disk enclosure
Hard drives supported	Supported SAS and SATA 3.5-inch LFF hard disk drives MSA2 146 GB 3G 15K 3.5-inch Dual-port SAS MSA2 300 GB 3G 15K 3.5-inch Dual-port SAS MSA2 450 GB 3G 15K 3.5-inch Dual-port SAS MSA2 500 GB 3G 7.2K 3.5-inch Dual-port SATA MSA2 750 GB 3G 7.2K 3.5-inch Dual-port SATA MSA2 1 TB 3G 7.2K 3.5-inch Dual-port SATA Supported SAS and SATA 2.5-inch SFF hard disk drives 36 GB 3G 15K 2.5-inch Dual-port SAS 72 GB 3G 10K 2.5-inch Dual-port SAS 72 GB 3G 15K 2.5-inch Dual-port SAS 146 GB 3G 10K 2.5-inch Dual-port SAS 300 GB 3G 10K 2.5-inch Dual-port SAS 120 GB 3G 5.4K 2.5-inch SATA	MSA2 146 GB 3G 15K 3.5-inch Dual-port SAS MSA2 300 GB 3G 15K 3.5-inch Dual-port SAS MSA2 450 GB 3G 15K 3.5-inch Dual-port SAS MSA2 500 GB 3G 7.2K 3.5-inch Dual-port SATA MSA2 750 GB 3G 7.2K 3.5-inch Dual-port SATA MSA2 1 TB 3G 7.2K 3.5-inch Dual-port SATA	MSA2 146 GB 3G 15K 3.5-inch Dual-port SAS MSA2 300 GB 3G 15K 3.5-inch Dual-port SAS MSA2 450 GB 3G 15K 3.5-inch Dual-port SAS MSA2 500 GB 3G 7.2K 3.5-inch Dual-port SATA MSA2 750 GB 3G 7.2K 3.5-inch Dual-port SATA MSA2 1 TB 3G 7.2K 3.5-inch Dual-port SATA
Operating systems supported	Microsoft Windows 2008 IA32 Microsoft Windows 2008 x64 Microsoft Windows 2003 R2 Microsoft Windows 2003 x64 Red Hat Enterprise Linux 4, 5 SUSE Linux Enterprise Server 9, 10 HP-UX 11i v3, HP-UX 11i v2; OpenVMS 8.3, OpenVMS 8.3-1H1; VMware ESX 3.0.1, 3.0.2, 3.5 Integrated Citrix XenServer HP Enterprise	Microsoft Windows 2003 R2 Microsoft Windows 2003 x64 Red Hat Enterprise Linux 4, 5 SUSE Linux Enterprise Server 9, 10 VMware ESX 3.0.1, 3.0.2, 3.5 Microsoft Windows 2008 IA32* Microsoft Windows 2008 x64* Integrated Citrix XenServer HP Enterprise	Microsoft Windows 2008 IA32 Microsoft Windows 2008 x64 Microsoft Windows 2003 R2 Microsoft Windows 2003 x64 Red Hat Enterprise Linux 5 SUSE Linux Enterprise Server 10 VMware ESX 3.5
Rack height	2U	2U	2U
Warranty	3 years parts	3 years parts	3 years parts
QuickSpec URL	http://h18000.www1.hp.com/products/quickspecs/13187_div/13187_div.pdf	http://h18000.www1.hp.com/products/quickspecs/12992_div/12992_div.pdf	http://h18000.www1.hp.com/products/quickspecs/13045_div/13045_div.pdf
HP related services			
Recommended services			
Software	3 years Support Plus 24 HP StorageWorks MSA Family Disk Array Installation and Startup Service HP Proactive Select Service		
	HP StorageWorks MSA2000 Snapshot and Volume Copy Software HP StorageWorks Storage Mirroring		

*Check <http://www.hp.com/storage/spock> for required supporting firmware version.
For additional information on related software for these products, see page 12 and 13.

HP StorageWorks Enterprise Virtual Arrays

HP StorageWorks Enterprise Virtual Arrays (EVAs) provide outstanding TCO to support business-critical processes.

Midrange



HP StorageWorks 4400 Enterprise Virtual Array



HP StorageWorks 6400/8400 Enterprise Virtual Array

Number of drives	96	216/324 Note: EVA6400 and EVA8400 support up to 216 and 324 drives respectively.
Storage capacity (Including expansion)	96 TB maximum	216 TB EVA6400 324 TB EVA8400
Drives per enclosure	12 maximum	12 maximum
Servers supported	HP servers (HP-UX, ProLiant, AlphaServers); x86 servers; Dell servers; Sun servers; IBM servers; Alpha XsApple servers (PowerPC and Intel); Fujitsu Siemens and Primergy servers (Bx6x0, Rx and Tx)	HP servers (HP-UX, ProLiant, AlphaServers); x86 servers; Dell servers; Sun servers; IBM servers; Alpha XsApple servers (PowerPC and Intel); Fujitsu Siemens and Primergy servers (Bx6x0, Rx and Tx)
Disk Drive Types (Capacity, Port type, Speed, Form factor, Technology)	72 GB Solid State Disk 146 GB 15K Fibre Channel 300 GB 15K Fibre Channel 450 GB 15K Fibre Channel 400 GB 10K Fibre Channel 1 TB FATA	72 GB Solid State Disk 146 GB 15K Fibre Channel 300 GB 15K Fibre Channel 450 GB 15K Fibre Channel 400 GB 10K Fibre Channel 1 TB FATA Note: Supported within the same enclosure.
Cache	4 GB	8 GB for EVA6400, and 14 GB or 22 GB for EVA8400
Fault-tolerant features	Dual Redundant Controllers Power Supplies Fans Power Distribution Units Embedded switches (optional)	Dual Redundant Controllers Power Supplies Fans Power Distribution Units
Hot Plug support	Hot pluggable power supplies, fans, cache batteries, I/O modules, environmental monitoring units, disks	
Type and number of controllers	Number of Controllers: 2 Controller Name: HSV300	Number of controllers: 2 Controller name: HSV400 or HSV450
Type and number of enclosures	Up to 8 M6412A enclosures	EVA6400 supports up to 18 M6412A enclosures EVA8400 supports up to 27 M6412A enclosures
Supported operating systems	HP-UX; HP OpenVMS; Linux; Sun Solaris; Windows Server 2003; Windows Server 2008; IBM AIX; Apple Mac OS X; XenServer; VMware; Novell NetWare	HP-UX; HP OpenVMS; Windows 2003; Windows Server 2008; Sun Solaris; Linux – Red Hat, SUSE/SLES (including OES) and Oracle Enterprise Linux; IBM AIX; VMware; Apple Mac OS X; Xen – Citrix Xen, RHEL Virtualisation and Oracle Virtual Machine
Warranty (parts-labour-on site)	2/2/2	3/3/3
Warranty (abbreviated description)	2 year parts, 2 year labour, 2 year on-site 9x5 hardware support, with next business day (NBD) support	3-year, 9x5 next business day
QuickSpec URL	http://h18000.www1.hp.com/products/quickspecs/12893_div/12893_div.pdf	http://h18000.www1.hp.com/products/quickspecs/13206_div/13206_div.pdf
HP related services		
Recommended services	HP Support Plus 24 Service HP StorageWorks EVA 4400 Disk Array Installation and Startup Service HP Proactive Select Service	HP Proactive 24 (P24) HP SAN Solution Service HP Data Migration Service
Software	HP StorageWorks Business Copy EVA HP StorageWorks Continuous Access EVA HP StorageWorks SmartStart EVA	HP StorageWorks Business Copy EVA HP StorageWorks Continuous Access EVA

For additional information on related software for these products, see page 12 and 13.

Or visit www.hp.com/storage/evasoftware

HP StorageWorks XP Disk Arrays

The HP StorageWorks XP Disk Array family provides outstanding reliability, availability, performance and capacity to address your mission-critical applications.

High-end



HP StorageWorks XP24000 Disk Array



HP StorageWorks XP20000 Disk Array

Number of drives	1,152	240
Minimum frames (Cabinets)	1	1
Maximum frames (Cabinets)	5	2
Capacity (Raw)	1.13 PB	236 TB
Capacity (Useable)	851 TB	177 TB
External storage capacity	247 PB	96 PB
Maximum shared memory	24 GB	14 GB
Interface	(224) 4 Gb Fibre Channel (112) 1 Gb ESCON (112) 4 Gb FICON	(48) 4 Gb Fibre Channel (24) 1 Gb ESCON (24) 4 Gb FICON
Disk Drive types (Capacity, Port Type, Speed, Form Factor, Technology)	146 GB 15K Fibre Channel 300 GB 15K Fibre Channel 400 GB 10K Fibre Channel 450 GB 15K Fibre Channel 1 TB 7.2K SATA 73 GB Solid State Disk 146 GB Solid State Disk Note: All drives are dual-ported, 4 Gb/s Fibre Channel Arbitrated Loop (FC-AL)	146 GB 15K Fibre Channel 300 GB 15K Fibre Channel 400 GB 10K Fibre Channel 450 GB 15K Fibre Channel 1 TB 7.2K SATA 73 GB Solid State Disk 146 GB Solid State Disk Note: All drives are dual-ported, 4 Gb/s Fibre Channel Arbitrated Loop (FC-AL)
Cache	512 GB	128 GB
Supported operating systems	HP-UX; HP Tru64; HP OpenVMS; HP NonStop; Sun Solaris; IBM AIX; Microsoft Windows; Linux; Mainframe; VMware	HP-UX; HP Tru64; HP OpenVMS; HP NonStop; Sun Solaris; IBM AIX; Microsoft Windows; Linux; Mainframe; VMware
RAID support	RAID 1 (2D + 2D) RAID 1 (4D + 4D) RAID 5 (3D + 1P) RAID 5 (7D + 1P) RAID 5 (14D + 2P) RAID 5 (28D + 4P) RAID 6 (6D + 2P)	RAID 1 (2D + 2D) RAID 1 (4D + 4D) RAID 5 (3D + 1P) RAID 5 (7D + 1P) RAID 5 (14D + 2P) RAID 5 (28D + 4P) RAID 6 (6D + 2P)
Warranty (parts-labour-on site)	2/2/2	2/2/2
QuickSpec URL	http://h18000.www1.hp.com/products/quickspecs/12711_div/12711_div.pdf	
HP related services		
Recommended services		
	HP Critical Service (CS) HP Data Replication Solution HP Data Migration Service	HP Critical Service (CS) HP Data Replication Solution HP Data Migration Service
Software		
	HP StorageWorks XP Thin Provisioning HP StorageWorks XP External Storage	HP StorageWorks XP Thin Provisioning HP StorageWorks XP External Storage

For additional information on related software for these products, see page 12 and 13.

Or visit www.hp.com/storage/xpsoftware

HP StorageWorks arrays

Supported and recommended HP servers

		Entry-level						Midrange			High-end	
		MSA50	MSA60	MSA70	MSA2000sa	MSA2000i	MSA2000fc	EVA4400	EVA6400	EVA8400	XP20000 Disk Array	XP24000 Disk Array
HP ProLiant servers												
Entry-class	DL120 G5	•	•	•				x	x	x	x	x
	DL320 G5p	•	•	•	x	x	x	x	x	x	x	x
	DL320 G5P	•	•	•		•	•	x	x	x	x	x
	DL320S	•	•	•		x	x	x	x	x	x	x
	ML110 G5							x	x	x	x	x
	ML115 G5							x	x	x	x	x
	ML150 G5							x	x	x	x	x
Midrange	ML310 G5	•	•	•	x	x	x	x	x	x	x	x
	DL160 G5	•	•	•		x	x	x	x	x	x	x
	DL165 G5	•	•	•		x	x	x	x	x	x	x
	DL180 G5	•	•	•		x	x	x	x	x	x	x
	DL185 G5	•	•	•		x	x	x	x	x	x	x
	DL360 G5	•	•	•	•	•	•	x	x	x	x	x
	DL365 G5	•	•	•	x	•	•	x	x	x	x	x
High-end	DL380 G5	•	•	•	•	x	x	x	x	x	x	x
	DL385 G5	•	•	•	x	x	x	x	x	x	x	x
	ML350 G5	•	•	•	x	x	x	x	x	x	x	x
	ML370 G5	•	•	•	x	x	x	x	x	x	x	x
	DL580 G5	•	•	•	x	x	x	x	x	x	x	x
	DL585 G5	•	•	•		x	x	x	x	x	x	x
	DL785 G5	•	•	•		x	x	x	x	x	x	x
p-Class	BL20p G4							•	•	•	x	x
	BL25p G2							•	•	•	x	x
	BL45p G2							•	•	•	x	x
c-Class	BL260c G5					x	x	•	•	•	x	x
	BL460c G1				x	•	•	•	•	•	x	x
	BL465c G5				x	•	•	•	•	•	x	x
	BL480c G1				x	•	•	•	•	•	x	x
	BL680c G5				x	x	x	•	•	•	x	x
	BL685c G5				x	x	x	•	•	•	x	x
	BL2x220c G5				x	x	x	•	•	•	x	x
HP Integrity servers												
c-Class	BL860c						•	•	•	x	x	x
	rx2660		•	•			•	•	•	x	x	x
Entry-class	rx3600		•	•			x	•	•	x	x	x
	rx6600		•	•			x	•	•		x	x
Midrange	rx7640		•	•			x	x	•	•	•	x
	rx8640		•	•			x	x	x	•	•	•
High-end	Superdome						x					
HP Integrity NonStop servers												
Entry-class	NS1000										•	•
High-end	NS14000										•	•
	NS16000										•	•

Key: • = recommended starting point, x = supported

Supported servers for MSA2000sa through 3Gb BL Switch:

HP ProLiant BL2x 220c G5; HP ProLiant BL460c; HP ProLiant BL465c; HP ProLiant BL465c G5; HP ProLiant BL480c;
HP ProLiant BL495c G5; HP ProLiant BL680c G5; HP ProLiant BL685c; HP ProLiant BL685c G5

HP related services

To gain the fullest value from your array investment, you can benefit from intelligent software and expert services throughout the IT life-cycle.

HP software

HP provides software that allows you to align IT with business needs, automate error-prone processes and fine-tune your infrastructure.

Storage resource management	
Storage Essentials Enterprise Edition	HP Storage Essentials suite delivers integrated heterogeneous functionality for network (DAS, SAN, NAS) management, storage resource management, provisioning, backup reporting and application infrastructure monitoring. The suite consists of HP Storage Essentials Enterprise Edition and features a range of value-added plug-ins.
Storage Essentials Standard Edition Storage Resource Management (SRM) Software	HP Storage Essentials Standard Edition helps midsize business with limited IT staff see the big picture, reduce complexity and gain control of their SAN infrastructure inventory for small to medium HP storage-based SANs – consisting of HP EVA, HP MSA and HP NAS; HP EML E-series Tape; HBAs and switches – and affordably enjoy the benefits of storage resource management software.
Systems Insight Manager	HP Systems Insight Manager (SIM), our unified server-storage management tool, helps increase IT staff efficiency and hardware platform availability for small and large server deployments alike. It is designed for end-user setup, and its modular architecture enables systems administrators to plug in additional functionality as needed.
Command View EVA	HP StorageWorks Command View EVA is a comprehensive software suite designed to simplify array provisioning and management of the high-performance HP StorageWorks Enterprise Virtual Array (EVA) family of storage array products. For managing EVA with heterogeneous networked SAN devices, including servers and infrastructure, you can use HP Systems Insight Manager to do the job.
EVA Dynamic Capacity Management Software	HP StorageWorks EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilisation on the HP StorageWorks Enterprise Virtual Array (EVA) family. Designed for the enterprise market, EVA Dynamic Capacity Management Software uses advanced automation to automatically 'right-size' the file system and storage volumes to provide the highest levels of capacity utilisation while reducing ongoing storage administration needs.
XP Command View Advanced Edition	HP StorageWorks XP Command View Advanced Edition Software provides centralised, Web-based management for multiple XP Disk Arrays. It reduces the total cost of XP array ownership by increasing the efficiency of storage administrators and saves time in the management of external storage.
XP Thin Provisioning	HP StorageWorks XP Thin Provisioning Software reduces the cost, accelerates return on investment and reduces environmental impact of your HP StorageWorks XP24000 and XP20000 Disk Arrays. Allocate anticipated future storage capacity needs from a pool of virtual disk storage and reduce the physical disk capacity initially required. As utilisation of disk space increases over time, purchase more disk capacity as it is needed and install it without affecting your applications. Accelerate return on investment by using the virtualised storage pool to quickly deploy more applications and servers per storage system. And because you are more efficiently using your storage resources, you enjoy the green effect of reduced floor space, power and cooling requirements and also a reduced carbon footprint.
XP Array Manager	HP StorageWorks XP Array Manager Software improves efficiency and data security by allowing you to manage volumes, allocate disk array resources, control access to the data and protect the data on HP StorageWorks XP24000 and XP20000 Disk Arrays. Configure and manage data volumes for most effective use of the XP Disk Array. Partition array resources to isolate applications and reserve cache memory for the most frequently accessed data. Configure security to prevent unauthorised servers from accessing the data. Create read-only volumes for archiving and data retention and then securely delete the data when it is no longer needed.
Remote replication software	
Continuous Access EVA	HP StorageWorks Continuous Access EVA Software is an array-based application that utilises a powerfully simple graphical user interface (GUI) to create, manage and configure remote replication on the whole EVA product family.
XP Continuous Access	HP StorageWorks XP Continuous Access Software products are high-availability remote replication and disaster recovery solutions that deliver host-independent, real-time remote data replication between HP StorageWorks XP Disk Arrays. With seamless integration into a full spectrum of remote replication-based solutions, HP XP Continuous Access Software can be deployed in solutions ranging from data migration to high-availability server clustering.
Storage Mirroring	HP StorageWorks Storage Mirroring provides host-based, real-time, nearly continuous replication for small and midsize business customers seeking a low-cost alternative to expensive fabric or array-based solutions. Patented replication and failover technology continuously captures byte-level changes as they happen and replicates those changes to one or more target servers at any location without geographic limitations.
Local replication software	
Business Copy EVA	HP StorageWorks Business Copy EVA Software is an array-based application that utilises a powerfully simple HP StorageWorks Replication Solutions Manager user interface to create, manage and configure local replication on the full EVA product family to meet business continuity and regulatory requirements.
XP Business Copy	HP StorageWorks XP Business Copy Software creates local copies of data for businesses that are concerned about business continuity and that need to reduce the cost of backups, accelerate recovery from failures and simplify development and testing.
Data protection and recovery software	
Data Protector	HP Data Protector Software automates high-performance backup and recovery, from disk or tape, over unlimited distances, to enable 24x7 business continuity and increase IT resource utilisation. Data Protector simplifies the use of complex backup and recovery procedures with fast installation, automated routine tasks and easy-to-use features.
Data Protector Express	HP Data Protector Express Software provides a simple and reliable backup and recovery solution for file servers, application servers and desktops that is suitable for organisations without dedicated IT staff.

HP related services (continued)

To gain the fullest value from your array investment, you can benefit from intelligent software and expert services throughout the IT life-cycle.

HP software (continued)

HP provides software that allows you to align IT with business needs, automate error-prone processes and fine-tune your infrastructure.

Business continuity software	
Fast Recovery Solutions	HP StorageWorks Fast Recovery Solutions (FRS) enables the instant recovery of Microsoft Exchange 2003 databases. Ideal for environments that require the highest level of availability, FRS is designed to allow application administrators to utilise the automated disaster recovery technologies built into HP StorageWorks Disk Array systems, without extensive storage training.
Cluster Extension EVA and XP	HP StorageWorks Cluster Extension EVA and XP Software continues your critical applications within minutes or seconds after an event. It offers disaster tolerance against application downtime from fault, failure or site disaster by extending clusters between data centres. It works seamlessly with your open-system clustering software and XP storage systems to automate fail-over and fail-back between sites.
Storage device management software	
XP External Storage	HP StorageWorks XP External Storage Software decreases the stress and reduces the cost of owning heterogeneous data storage by simplifying and centralising common SAN management tasks through storage virtualisation. In addition, it simplifies movement of data between dissimilar arrays. HP XP External Storage Software provides these benefits by giving you the ability to access, monitor and manage data residing on a variety of different disk arrays as if all of the data were residing on an HP StorageWorks XP Disk Array.
XP Disk/Cache Partition	This software can reduce storage costs by dividing a large HP StorageWorks XP Disk Array into smaller segments suitable for departmental usage, while retaining superb performance and high availability.

HP technology services

Reactive support services	
Support Plus Service	Improves system performance and uptime
Support Plus 24 Service	Increases availability of your IT infrastructure with comprehensive 24x7 hardware and software services
Proactive support services	
Proactive 24 Service	Improves uptime with responsive hardware and software services available 24x7
Proactive Select Service	Improves IT performance and manageability through the use of cost-effective flexible proactive services
Mission critical services	
Critical Service	Reduces impact of unplanned downtime and improves IT operational efficiency
Mission Critical Partnership	Helping you successfully deliver your services at an affordable cost to the business
Deployment services	
HP StorageWorks Disk Array Installation and Startup Service	Proper installation of your storage hardware is crucial to help realise improved return on investment (ROI)
HP StorageWorks MSA Family Disk Array Installation and Startup Service	MSA Disk Array start-up, this service provides hardware and software installation
HP StorageWorks EVA 4400 Disk Array Installation and Startup Service	EVA 4400 Disk Array start-up, this service provides hardware and software installation
HP StorageWorks EVA/XP Disk Array Installation and Startup Service	EVA/XP Disk Array start-up, this service provides hardware and software installation
Data Replication Solution Service	Enables an optimal environment, which keeps your mission-critical data safe, more secure and highly available
SAN Solution Service	End technology services make the most of your investment
Other services	
Data Migration Service	Migrating your data 'on line' to align to your specific cost, availability and business needs while your business operation continues
Data Sanitisation Service	Protects your business from the risk of important information being retrieved from retired hard disk media by unauthorised parties
HP Assessment for SANs Service	Optimises availability levels and ongoing management of your storage and SAN environment
HP Performance Analysis for the StorageWorks XP/EVA Disk Arrays	Increases performance, stability and availability by identifying potential bottlenecks
HP StorageWorks EVA Firmware Update Service	A one-time, one-day deployment service designed to upgrade the firmware on one HP StorageWorks EVA disk array to the latest specification of firmware for both controllers and disk drives
HP vDisk LUN Design and Implementation Service	When redeploying an HP StorageWorks disk array, the HP Vdisk/LUN Design and Implementation Service assures proper configuration of storage hardware to help maximise the effectiveness of your storage

HP Services: Scalable, flexible and reliable – like your storage

Your technology infrastructure has become the business infrastructure – where delivering successful business outcomes is the key goal. No other company in the industry matches HP range of service breadth and depth, resources and commitment to optimise storage support in a heterogeneous infrastructure. The integrated end-to-end storage solutions of HP are intentionally designed to help businesses address today's tough technology challenges associated with the explosion of rich digital content, mobility and security requirements as well as the need for efficient storage of data and access to real-time information when and where they need it.

To capitalise fully on your HP storage solution, you need a service partner who thoroughly understands your storage technology and systems environment. With HP Services you gain the advantage of established methodologies and one of the industry's broadest family of integrated storage solutions for enhanced information management and optimisation – services that scale to enhance availability, performance, deployment and support.

For more information about HP services and support, contact your HP sales representative or HP-authorised Channel Partner, or visit www.hp.com/hps/storage

Factory Express

HP Factory Express is designed to help you get a better return from your IT investment by providing customisation, integration and deployment services along with your storage and server purchases. It provides predictable, trusted and tested IT solutions tailored to your business needs. We allow you to customise hardware to your exact specifications in the factory – helping to speed up deployment and free up internal resources. For more information on these services, please contact your HP representative or visit www.hp.com/go/factoryexpress

Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training classes on storage software, networking, archiving and disk storage systems. Our classes are available in the form that suits you best – from traditional instructor-led classes at one of our 80 training centres worldwide to on-site training customised to your needs or on line classes. For more information on these services, please contact your HP representative or visit www.hp.com/learn/storage

HP Financial Services

HP Financial Services provides innovative financing and financial asset management programmes to help you cost-effectively acquire, manage and ultimately retire your HP solutions. For more information on these services, please contact your HP representative or visit www.hp.com/go/hpfinancialservices

HP server family

What kind of server best fits your needs? What level of high availability and performance do you require? How many users will be supported? What operating system will you be using? Whether it's a departmental server, an enterprise data centre or anything in between, HP is committed to meeting your exact needs. This commitment has resulted in more customers choosing HP servers than any other vendor's servers.*

Our product family:

- **HP ProLiant server family:** ProLiant servers offer a superior platform for your mainstream 32-bit and emerging 64-bit x86 applications and are the world's top-selling x86 industry-standard servers since 3Q 1996.*
- **HP Integrity systems family:** The most trusted brand for mission-critical applications. A multi-OS ecosystem running on HP-UX 11i, OpenVMS, Microsoft Windows Server 2003, Linux and NonStop, Integrity systems provide a unique combination of scalability, virtualisation and availability, enabling you to optimise your business outcomes while decreasing costs and reducing risk.
- **HP Integrity NonStop servers:** Real-time, all-the-time business solutions for the organisation.

What can you do to simplify a growing, multi-server environment? How do you integrate all the moving parts and deliver business solutions on time and under budget?

- **HP BladeSystem:** A simple, modular infrastructure that is consolidated up-front to save you more time, energy and money – regardless of what you put inside. In one consolidated box, an HP BladeSystem supports ProLiant and Integrity server blades, StorageWorks storage services and a variety of virtual desktop and workstation solutions. With the essential IT elements built-in – compute, network, storage, management and power and cooling – the BladeSystem is a more efficient way to deliver reliable, cost-effective services to your business. For more information on the HP BladeSystem, visit www.hp.com/go/bladeSystem

You make HP storage products better

Throughout the development of HP StorageWorks arrays, end-user customers and channel partners participate in usability reviews that influence hardware and software design. Over the past few years, such feedback has helped HP StorageWorks reduce array design complexity. Users now spend less time managing their storage due to the simplification of storage management tasks and easy-to-understand user interface designs. Array installation, configuration and repairs also take less time due to the use of more intuitive actions.

For more information about our User Centered Design program, visit www.hp.com/storage/ucd

For more information

To learn more about HP StorageWorks arrays, contact your local HP representative or your authorised HP reseller, or visit www.hp.com/go/arrays

To learn more about HP server families, contact your local HP representative or your authorised HP reseller, or visit:

- www.hp.com/go/proliant
- www.hp.com/go/integrity
- www.hp.com/go/nonstop

You can also visit our other related server family guides:

- Integrity: www.hp.com/go/integrityserverfamilyguide
- BladeSystem: www.hp.com/go/bladeSystem/familyguide
- ProLiant: www.hp.com/go/proliant/familyguide

To quickly find the HP storage products that fit your specific needs, visit www.hp.com/go/product-selector

*Source: IDC Worldwide Quarterly Server Tracker, May 2008.

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Technology for better business outcomes

To learn more, visit www.hp.com/go/storageworks

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