



HP StorageWorks Modular Smart Array Family

Simple, reliable and cost-effective storage solutions



The role of IT in building an Adaptive Enterprise

Proven innovation—HP's Adaptive Enterprise vision

In today's interconnected world, technology is a powerful asset that allows you to increase productivity, efficiency, availability and performance. Ultimately, technology is the entrance to new markets and higher revenue. HP offers you proven innovation to help your business thrive.

HP delivers more: simple, reliable technology that adapts to your changing business environment while protecting your IT investments. And, in the pursuit of excellence, HP offers the HP Adaptive Enterprise vision—an integrated approach to designing, implementing, measuring, monitoring and operating IT with 100 percent quality and reliability for a superior return on your IT investment.

Optimizing storage for an adaptive IT infrastructure

HP recognizes storage is at the foundation of an adaptive IT infrastructure, a safeguard for business information. To achieve the full impact of storage on your business you must optimize its attributes. Enter the HP StorageWorks Modular Smart Array (MSA) family, a product family leveraging our award-winning Smart Array technology.

Built on industry standards to ensure compatibility, ease-of-use and affordability, this advanced family of products and services allows you to deploy reliable solutions today, while enabling future growth and change. The MSA family is comprised of five modular array systems and two packaged clusters as outlined below. Their scalability, versatility and reliability enable them to integrate seamlessly into any environment.

HP StorageWorks MSA Family

- HP 1500 Modular Smart Array (MSA1500)
- HP 1510i Modular Smart Array (MSA1510i)
- HP 1000 Modular Smart Array (MSA1000)
- HP 500 G2 Modular Smart Array (MSA500 G2)
- HP 50 Modular Smart Array (MSA50)
- HP 30 Modular Smart Array (MSA30)
- HP 20 Modular Smart Array (MSA20)

HP StorageWorks MSA Packaged Clusters

- HP ProLiant DL380 Packaged Cluster with MSA500 G2
- HP ProLiant DL380 Packaged Cluster with MSA1000

Enhancing the MSA family are the HP ProLiant packaged clusters with Modular Smart Array. These products bring powerful, high-end storage capabilities and benefits to the mainstream, while maintaining the simplicity and affordability of traditional direct attach storage (DAS).

In the quest to automate the back office, the emphasis in the 1980s was to ensure IT offered rock-solid stability and reliability. In the 1990s, the emphasis turned to speed, as companies began automating the front office—all the way out to partners and customers. Today, companies must create an Adaptive Enterprise, one that is both stable/reliable and fast/flexible, while also providing a superior return on IT investment.

MSA20 connected via SCSI to HP ProLiant DL380 server



MSA50 connected via SCSI to HP ProLiant DL380 server



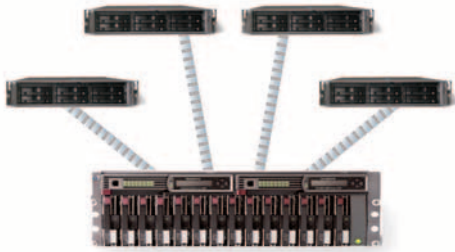
MSA30 connected via SCSI to HP ProLiant DL380 server



MSA500 G2 connected to two HP ProLiant DL380 servers via SCSI with multi-path I/O option



MSA1000 connected to four HP ProLiant DL380 servers via a Fibre Channel switch, with Selective Storage Presentation



MSA1500 attached to an MSA20 and MSA30 and connected to four HP ProLiant DL380 servers via a Fibre Channel switch attached to the 2U controller shelf with Selective Storage Presentation



MSA1510i with MSA30 and MSA20 enclosures, connected via a Procurve Gigabit Ethernet Switch to four ProLiant DL360 servers



HP StorageWorks Modular Smart Array products: simple, reliable and cost-effective

HP knows you must adapt quickly to growth and accomplish IT change seamlessly using simple, reliable and cost-effective technologies. Customers benefit when applications, servers, storage, software and services combine to meet IT's need for simplicity, superior reliability and lowest cost to purchase and own. HP's broad range of product and solution offerings reflects our ability to meet stringent IT requirements, and make companies more efficient, profitable and competitive.

The HP StorageWorks MSA family adapts to changing environments improving the way you do business. This progressive approach streamlines operational expenses through reduced management costs, improved storage efficiency and reduced deployment times. Based on industry-leading Smart Array technology, the MSA family allows you to "hot add" drives, servers and disk enclosures, enabling significant operational savings over traditional Direct Attached Storage (DAS), while maintaining the affordability and simplicity of Smart Array. The MSA family leads the industry with capability for seamless migration with DAS to SAN (Storage Attached Network)—also known as DIS—allowing storage scalability and adaptability to your ever-growing storage requirements.

HP StorageWorks MSA products are optimized for HP ProLiant servers, combining the performance and simplicity of Smart Array with the scalability and efficiency of a network. The MSA500 G2 and MSA1000 are available individually or in prepackaged cluster kits that include HP ProLiant DL380 servers, providing maximum integration and simplified deployment. They are also available as part of HP ProLiant family clusters.

HP now provides comprehensive, affordable packages for the MSA family, reducing ordering complexity by providing everything needed to deploy MSA storage in one simple package. HP partners with you to provide the services and support you need to succeed.

HP Smart Office initiative: focus on business

HP's Smart Office initiative allows small to medium-size businesses (SMBs) to get more. An important component of Smart Office includes the availability of industry-leading services designed specifically to meet the SMB's unique IT needs, lessen computing complexity and keep business running smoothly. And, HP is continually expanding our portfolio to enable SMB customers to get more from technology, whether they need to expand, optimize or simply achieve better results.

With Smart Array architecture you get seamless scalability so you can expand servers/storage as needed to accommodate business needs. The simple modular design of Modular Smart Array lets you effortlessly upgrade from MSA500 G2 to a flexible, 16 TB Fibre Channel (FC) SAN with minimal investment and disruption to your business.

The MSA product family is a superb fit for HP ProLiant servers and is ideal for smaller deployments, including smaller data centers and remote offices. This family takes your mind off technology, so you can focus on business. And, with our new solution bundle offerings, we make storage easier—easier to deploy, operate and own, and all at affordable prices.



Choose the HP StorageWorks Modular Smart Array that's right for your business needs.

Choose MSA technology when data availability is critical to business viability, performance is continually reduced due to capacity shortfalls, and when you need a cost-effective solution to manage key infrastructure components without adding staff or training. The scalable design of this family offers DiS technology, a quick and easy way to convert external storage while leveraging existing infrastructure. It creates high-availability, high-performance, easy-to-deploy solutions that don't require highly skilled storage professionals or expensive, specialized training. Instead of making a large up-front investment, you buy what you need when you need it as your storage needs evolve.

Now you can tighten control of your increasingly complex storage environment with enterprise features at entry-level affordability. Each solution is designed to maximize transfer rates, reduce management costs and drive a rapid return on investment while offering the lowest acquisition prices in the industry and the best price-performance.

HP StorageWorks MSA20



A low-cost, high capacity storage solution

HP StorageWorks MSA20

Low total cost of ownership

The modular, scalable design of the MSA20 provides an extremely flexible platform. You can buy what you need today and purchase additional capacity as your data storage needs grow, instead of making a large up-front investment. Additional drives and enclosures can be easily added as your needs dictate.

Tiered storage

- Lower storage management cost
- Allows more effective utilization of mission-critical storage
- Attaches to an MSA1500

Universal Serial ATA (SATA) hard drive

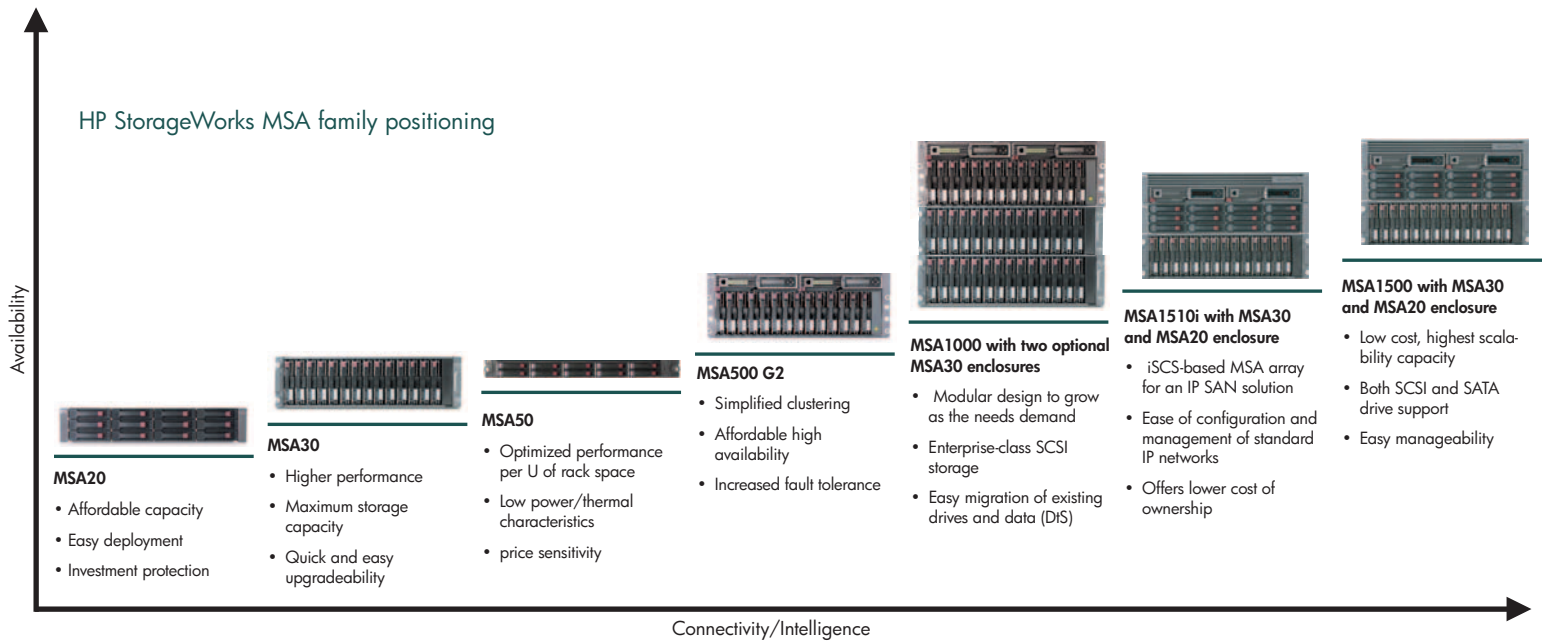
- Investment in disk drives is protected, and cost is minimized
- Common universal drive form factor between your server and storage
- Reduces overall storage management and business costs

Next-generation technology and investment protection

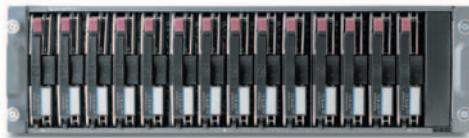
- Integrates seamlessly into your current Ultra320 host-based environment
- Takes advantage of leveraging your existing technology investments
- SATA disk technology offers flexible deployment

Trusted reliability

- MSA20 is built on industry-leading Smart Array technology



HP StorageWorks MSA30



Scalable, simple, high-performance storage

HP StorageWorks MSA30

Scalability and affordability

The MSA30 is for customers who need additional capacities and high-performance I/O. An external storage enclosure that attaches to Smart Array controllers, it provides scalability and performance in your storage domain. The MSA30 also deploys as the storage expansion shelf for the MSA1000 and MSA1500.

Simple deployment

- Common configuration and management as internal storage
- Familiar SCSI connectivity
- Expansion enclosure for MSA1000 and MSA1500

Lowest price point

- The MSA30 and hard drives are the only requirement on servers with an existing Smart Array controller and an external port to achieve a DAS solution

Capacity expansion

- With a 3U rack-mount form factor and 10K and 15K universal hard drives, customers achieve maximum storage capacity per U

High performance I/O

- Provides the necessary expansion of additional disk drives to support high-performance applications such as database management
- Low latency direct attached solution with maximum Ultra320 SCSI performance

Reliable

- Increased uptime with redundancy of volatile components, power supplies, fans and RAID-protected disk drives

Investment protection

- Using the MSA30 as a storage expansion shelf, you can easily migrate your hardware and data from a direct attached environment to an entry-level SAN behind the MSA1000 or MSA1500



Scalable, simple, high-performance storage

HP StorageWorks MSA50

Scalability and affordability

The MSA50 is for customers who need additional capacities and high-performance I/O. The MSA50 is an external storage enclosure that attaches to next generation SAS Smart Array controllers, delivering industry-leading data performance, availability and upgradeability to meet demanding and growing storage needs.

Simple deployment

- Common configuration and management as internal storage
- Familiar DAS connectivity

Affordable capacity in space-saving footprint

- The MSA50 supports SFF SAS 36GB and 72GB 10K as well as 60GB 5400 rpm SATA drives; providing support for up to 720GB of raw storage capacity in one 1U enclosure
- Up to 1.4TB of raw storage capacity in 2U when deployed as a 1+1 cascade

Designed for easy deployment and management

- Simple configuration and setup with HP's Array Configuration Utility
- Easy to maintain and troubleshoot with industry standard management tools including HP OpenView and System Insight Manager

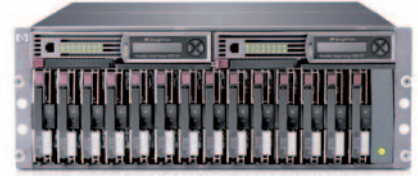
Investment protection

- SAS host connectivity with the ability to mix and match SAS and SATA drives in the same enclosure
- Universal Small Form Factor disk technology

HP StorageWorks MSA500 G2

Consolidation and affordable high availability

The MSA500 G2 is a 4.2 TB shared storage system that is perfect for 2, 3 or 4 nodes of shared storage or clustering. Providing high performance and data availability at a SCSI price, it offers superior data protection and increased uptime.



Affordable data protection and superior performance

Designed for affordable availability and data protection

- Hardware redundancy* with dual controllers, power supplies, cooling and split disk backplane
- Multi-path functionality for dual connectivity paths and load balancing
- Optional HP OpenView Storage Mirroring software is ideal for remote replication

Simplified clustering for HP ProLiant servers

- Supporting 2- to 4-node cluster configurations** for HP ProLiant servers
- Clustering certification for Microsoft® Windows®, Linux® and Novell NetWare operating systems
- Easy-to-manage storage system utilizes familiar HP ProLiant storage configuration and system management tools

Reliable, low-cost storage configurations

- Built upon familiar SCSI technology-no network infrastructure required
- Common array configuration interface with all Smart Array and Modular Smart Array products
- 3-year warranty with 24-hour response standard

Adaptive storage for changing environments

- Support up to 4.2 TB of storage and four HP ProLiant servers
- Simple conversion to MSA1000 and scale out host support and capacity expansion
- Utilizes HP Universal SCSI disk technology

Optimized for performance

- Increased workload performance—twice that of MSA500 first generation
- Rapid drive rebuild technology—decreasing drive rebuilds to 1/5 the time
- End-to-end Ultra320 SCSI technology

* Redundant controller and 4-port module with multi-path software is optional.

** See compatibility information at: www.hp.com/go/msa for a complete list of supported operating systems.



The MSA1000 is a 2 Gb Fibre Channel entry-level to mid-range SAN storage system scaleable to 12 TB. It is designed to reduce the complexity, expense and risk of deploying high-performance shared storage.

Packaged cluster for simplicity and availability

Simple and affordable packaged cluster powered by ProLiant Server and Modular Smart Array technology:

- 8U packaged cluster
- Order with a single part number
- Delivered in a single box
- Color coded cables
- Easy to install, maintain and manage
- Highest availability with redundant path option
- Best in class cluster components
- Multi-OS support for Windows, Linux and Novell
- Fully supported by management and deployment tools
- Delivers high performance and availability

HP StorageWorks MSA1000

Brings the efficiencies of consolidated storage to the entry-level customer

The MSA1000 is an entry-level SAN product. With FC connection, it enables storage consolidation, "LAN-free" backup/restore and multiple node clustering, including remote clusters. This affordable, scalable, high-performance storage solution reduces the complexity and expense of SAN deployments.

Improved data protection

- Redundant components throughout assure high uptime access to your data
- Faster backup and restore
- Optional redundant data paths between servers and storage using HP StorageWorks Secure Path software and native Multi-Path failover drivers
- Host-based remote replication with HP OpenView Storage Mirroring software provides affordable disaster tolerance

Simplified management

- HP Systems Insight Manager and HP OpenView software tools provide powerful but easy-to-use configuration and local or remote monitoring
- Enhanced storage consolidation via Selective Storage Presentation
- High-performance 2 Gb Fibre Channel interface
- Consolidation offers highly efficient management from a central location
- SAN software installation, management and configuration CD with the MSA1000 Small Business SAN Kit

Dynamic growth

- Easy to expand with up to 42 drives and 12 TB of capacity
- Simple to add individual or clustered servers, even to remote locations

Investment protection

- An investment that lets you reduce ongoing and long-term operating costs
- MSA family DTS migration generates a high ROI through an easy, no-risk conversion, using existing tools (HP Array Configuration Utility and HP Systems Insight Manager software)



The MSA1500 provides scalability and performance at a reduced cost with a high return on investment, and with the ability to manage more data with less staffing and increased computing infrastructure utilization for better overall system performance.

HP StorageWorks MSA1510i

SAN advantages in an Ethernet environment

The MSA1510i has an iSCSI interface, offering the advantages of a Storage Area Network (SAN) with the ease of configuration and management of standard IP networks. The MSA 1510i is designed for the customer looking for an entry to mid-level IP SAN storage solution.

The MSA1510i is a 2U controller shelf, with the flexibility to support both enterprise-class SCSI and archival-class SATA drives.

High scalability

- The MSA1510i allows you to scale capacity seamlessly up to a maximum of 16.8 TB capacity with SCSI drives or up to 48 TB capacity with SATA drives.

Lowest cost of ownership

- Ease of installation and operation, in an Ethernet environment.
- Web browser based management with Storage Management Utility.
- Tiered storage capabilities match up data with appropriate levels of performance, availability and cost of data storage.

Easy serviceability

- Hot-plug expansion and replacement of hard drives and redundant controllers, for simple, fast installation and maintenance.
- Redundant fans and power supplies are hot-plug replaceable.

HP StorageWorks MSA1500

Highest scalability and versatility

The HP StorageWorks MSA1500 is a Fibre Channel SAN attached 2U controller shelf that connects to SCSI and/or SATA disk enclosures. This combination provides customers with a low-cost, high-capacity storage solution.

High scalability

- Up to four SCSI enclosures for a native capacity of 16.8 TB of native capacity (using 56-300 GB SCSI disks; also features the ability to attach up to eight attached SATA enclosures provide up to 48 TB (96-250 GB SATA disk drives)). HP recommends SCSI drives for intensive heavy I/O requirements while SATA drives are perfectly suited for archived, "near on-line" disk-to-disk backup configurations.

Lowest cost of ownership

- Tiered storage capabilities match up data with appropriate levels of performance, availability and cost of data storage.

Easy serviceability

- Hot-plug expansion and replacement of hard drives and redundant controllers, for simple, fast installation and maintenance.
- Redundant fans and power supplies are hot-plug replaceable.

Hardware foundation for storage solutions

- Compatibility with leading ISV software vendors for backup and restore, medical imaging, Write-Once Read Many (WORM) for disk, clustering, archiving and HSM applications.
- Designed and implemented for investment protection with your current SAN infrastructure.



Delivering industry-leading technology

The HP StorageWorks Modular Smart Array family delivers industry-leading technology to meet today's and tomorrow's growing storage needs. These storage solutions offer investment protection with the best price-performance features available for direct attach environments, clusters and entry-level SAN environments. It is a dynamic storage family designed to maximize transfer rates, reduce management cost and drive a rapid return on investment. And with the MSA500 G2, MSA1000 and MSA1500, you have options for redundant data paths to protect against data path failure.

These storage solutions offer:

- **Reliable and innovative Smart Array technology:** For 12 years customers have relied on its high availability and performance features in addition to its configuration flexibility, all with low initial investment requirements.
- **Quick response to change:** Industry standards ensure compatibility, ease-of-use, lower cost and the highest level of integration available in the industry on an HP server.

- **Simplified management through intuitive software:** System level monitoring software with HP Systems Insight Manager, consistent configuration utilities that speed time to production, common tools across family minimizes re-training.
- **Reduced complexity with common components:** Universal disk drives enable flexibility in investment protection by allowing customers to move existing disk drives from servers to the MSA30, MSA500 G2, MSA1000 or the MSA1500.
- **Highly available data protection:** Features redundant controllers, redundant paths, redundant power supplies and fans, Advanced Data Guarding (RAID 6 WITH ADG) and pre-failure warranty on the disk drives.
- **Improved operational efficiency through storage consolidation:** Bridges the gap between traditional DAS and networked storage environments and lets you extend your investment in HP Smart Array storage and HP ProLiant servers without costly fork-lift upgrades; the sharing of storage between multiple servers increases scalability, reduces management costs and improves overall storage utilization.

MSA technical specifications

	MSA20	MSA30	MSA50	MSA500 G2	MSA1000	MSA1510i	MSA1500
Capacity	Scales from up to 3 TB (12 HP SATA 1.5 Gb/s 250 GB)	14 Universal SCSI drive bays come standard; when using 300 GB Universal disk drives up to 4.2 TB of storage is available	10 SFF SAS or SATA drives. For up to 720 GB of storage available. Cascades 1+1 for up to 1.4 TB in 2U.	14 universal SCSI drive bays come standard; when using 300 GB Universal disk drives up to 4.2 TB of storage is available; DAS to SAN (DIS) technology allows in-place upgrade to MSA1000.x	Scales up to 12 TB with 42 Universal disk drives by adding up to two MSA30 enclosures	When using up to eight attached SATA enclosures, provides up to 48 TB (96-250 GB SATA disk drives) of native capacity; can also provide 16.8 TB of enterprise-class SCSI drives utilizing 4 SCSI enclosures	When using up to eight attached SATA enclosures, provides up to 48 TB (96-250 GB SATA disk drives) of native capacity; can also provide 16.8 TB of enterprise-class SCSI drives utilizing 4 SCSI enclosures
Servers supported	HP ProLiant servers	HP ProLiant servers, HP AlphaServer platforms, HP Integrity servers, PA-RISC servers, and HP workstation c8000	HP ProLiant servers	HP ProLiant servers	HP ProLiant servers, most multi-vendor industry-standard 32-bit Intel and AMD-based (x86) servers, HP AlphaServer platforms and HP Integrity servers	HP ProLiant servers, most multi-vendor industry-standard 32-bit Intel-based (x86) servers	HP ProLiant servers, most multi-vendor industry-standard 32-bit Intel-based (x86) servers and most 64-bit Integrity servers
Max server connections	1	Up to 4 using the MSA30 MI with HP Serviceguard	1	4 with single host connections; 2 with redundant host connections	20, with single or redundant host connections; 7, using the MSA1000 Small Business SAN Kit	20, with single or redundant host connections	20, with single or redundant host connections
OS support	Microsoft Windows Server 2003, 2000; Novell NetWare 5.1, 6.5; Red Hat Enterprise Linux 2.1; Red Hat Linux	Microsoft Windows Server 2003, 2000; Windows NT; Linux; NetWare; Tru64 UNIX [®] ; OpenVMS; HP-UX	Microsoft Windows Server 2003, 2000; Linux, NetWare	Microsoft Windows Server 2003, 2000; Windows NT; Linux; NetWare	Microsoft Windows Server 2003, 2000; Windows NT; Linux; HP-UX; NetWare; Tru64 UNIX; OpenVMS; SCO; Small Business SAN Kit is 32-bit Windows and Linux only	Microsoft Windows server 2000 SP4 and Windows 2003	Microsoft Windows Server 2003, 2000 and Advanced Server; HP-UX; Red Hat Linux; SuSE Linux SLES 8; NetWare 5.1 and 6.5
Host interface	Ultra320 SCSI	Ultra320 SCSI	3 G SAS	Ultra320 SCSI	2 Gb Fibre Channel	Dual Gigabit Ethernet	2 Gb Fibre Channel
Array controller	Attaches to Smart Array controllers in HP ProLiant servers	Attaches to Smart Array controllers in HP ProLiant or Integrity servers ¹ .	Attaches to next generation Smart Array controllers beginning with the SA-P600	Single or redundant	Single or redundant	Single or redundant	Single or redundant
RAID Levels	0, 1+0, 5, RAID 6 WITH ADG	0, 1+0, 5, RAID 6 WITH ADG	0, 1+0, 5, RAID 6 with ADG	0, 1+0, 5, RAID 6 WITH ADG	0, 1+0, 5, RAID 6 WITH ADG	0, 1+0, 5, RAID 6 WITH ADG	0, 1+0, 5, RAID 6 WITH ADG
DAS to SAN (DfS) ready	No		No	Yes	Yes	Yes	Yes
Drive carrier	Universal Serial 1"	Universal 1"	Universal SFF	Universal 1" and Universal Serial 1"	Universal 1" and	Universal 1"	Universal 1" and Universal Serial 1"
Drive count per shelf	12 SATA	14 SCSI	10SFF SAS and/or SATA	14 SCSI	12 SATA, 14 SCSI	12 SATA, 14 SCSI	
Expansion	No	No	Yes, up to 20 drives in 2U with 1+1 cascade	No	Yes, 42 sdrives with SCSI I	Yes, 96 drives with SATA; 56 drives with SCSI	Yes, 96 drives with SATA; 56 drives with SCSI
Upgradeability	Online capacity expansion allows for adding storage to an operational MSA20	With MSA30 I/O upgrade module kits, upgrading HP StorageWorks 4300/4200 enclosures to Ultra320 speeds is quick and easy ² .	Online capacity expansion allows for adding storage to an operational MSA50	Online capacity expansion up to 4.2 TB. It converts to the MSA1000 quickly for additional scalability and capacity, and increased availability in a SAN.	Utilizes HP Universal disk drives and HP DfS technology to allow for fast upgrades from MSA500 G2 and most Smart Array controllers ³ .	Scalable to eight SATA enclosures for 48 TB or four SCSI enclosures for 16.8 TB of storage capacity with four dual-channel SCSI I/O cards	Scalable to eight SATA enclosures for 48 TB or four SCSI enclosures for 16.8 TB of storage capacity with four dual-channel SCSI I/O cards

¹ Note: Smart Array controllers are NOT supported in HP Serviceguard/Multi-initiator configurations

² The MSA30 can also be deployed with the MSA1000 for capacity expansion. Also supports the Ultra320 4-Port Upgrade I/O Module

³ For additional capacity it scales up to two additional MSA30 enclosures.

HP StorageWorks MSA packaged kits



HP StorageWorks MSA20



HP StorageWorks MSA500 G2



HP StorageWorks MSA1000



HP StorageWorks MSA1500

Starter kits

MSA20 Starter Kit

- MSA20
- Dual hot-pluggable fans/power supplies
- 2 power cables, 1 Ultra320 SCSI host adapter
- 1 SCSI cable

MSA500 G2 Starter Kit

- MSA500 G2
- HBAs and cables for 2 servers
- Cluster cabling and documentation

MSA1000 SAN Starter Kit

- MSA1000
- HBAs and cables for 2 servers
- Embedded 8-port Fabric switch

MSA1500 SAN Starter Kit

- MSA1500 controller shelf
- 1 drive enclosure (either SCSI or SATA)
- HBAs and cables for 2 servers
- 8-port Fabric switch

High Availability upgrade kits

MSA500 G2 High Availability Upgrade Kit

- MSA500 G2 controller
 - MSA500 G2 4-port module
 - 2 HBAs and cables
 - Smart Array multi-path software
- Add this kit to the MSA500 G2 for a fully redundant 2-node cluster or 4-node shared storage system.*

MSA1000 High Availability Upgrade Kit

- Redundant controller
 - HP MSA SAN Switch 2/8
 - HBAs and cables for 2 servers
- Combine the Starter Kit and a High Availability Upgrade Kit for a complete MSA1000 SAN with dual data paths to insure uninterrupted business.*

MSA1500 High Availability Upgrade Kit

- Redundant controller
 - HP 4/8 Base SAN Switch
 - HBAs and cables for 2 servers
- Combine the Starter Kit and a High Availability Upgrade Kit for a complete MSA1500 SAN with dual data paths to insure uninterrupted business.*

Small business SAN kits

MSA1000 Small Business SAN Kit

- Redundant controller
 - A new 2/8q Fibre Channel Switch
 - Two new HP StorageWorks Q200 Fibre Channel HBAs for Windows® and Linux® (HBA), cables, optics, easy-to-use SAN installation software
- Also available: MSA1000 Small Business HA Kit with all necessary redundant components to assure high availability.*

Cluster Solutions

HP ProLiant DL380 Packaged Cluster with MSA500 G2 Kit

- 2 HP ProLiant DL380 G4 servers
 - MSA500 G2
 - Cabling for 2 servers
 - HBAs for server connections (hard drives not included)
- Combine the HP ProLiant DL380 Packaged Cluster with MSA500 G2 High Availability Upgrade Kit for fully redundant cluster with dual data paths to protect against failure.*

HP ProLiant DL380 Packaged Cluster with MSA1000 Kit

- 2 HP ProLiant DL380 G4 servers clustered with MSA1000
 - HBAs and cabling for 2 servers
 - 8-port Fabric Switch (hard drives not included)
- Combine the HP ProLiant DL380 Packaged Cluster with MSA1000 High Availability Upgrade Kit for fully redundant MSA1000 cluster with dual data paths to protect against failure.*

HP makes MSA products easy to order and deploy

HP has created packaged kits and product solution bundles for HP StorageWorks Modular Smart Array customers. Packaged kits and server-storage bundles make our “best-of-breed” solutions easier to order and deploy.

An affordable response to change

The HP StorageWorks Modular Smart Array family is an easy, efficient and affordable response to change. MSA family technology is ideal for SMBs. Created using proven innovation and time-tested Smart Array technology, this family provides solutions for demanding and growing storage needs. When you choose HP, we give you more

by delivering more reliability, more service and support, and more local expertise—all at a competitive price. Our leading-edge services and proven technologies help businesses optimize their storage domain to achieve higher productivity levels and greater return on IT assets.

Now extend SAN advantages to SMB customers and departments with iSCSI technology

iSCSI uses TCP for moving data between application end points, and leverages Ethernet IP infrastructure, familiar to most users worldwide. This provides lower cost of ownership, enabling SMB customers and departments to deploy IP SANs.



Stories in success

AutoTradeCenter (ATC), one of the world's leading Internet-based automotive remarketing companies, depends on the performance, reliability and responsiveness of its HP e-commerce infrastructure to attract and retain blue-chip clients. To accomplish this, HP developed an HP ProLiant Parallel Database Cluster with HP ProLiant servers and an HP StorageWorks MSA1000 system. "The MSA1000 system was less than half the price of the EMC-Dell solution, which allowed us to buy two SAN systems," says Jorge Borbolla, Chief Information Officer, AutoTradeCenter. "It all comes down to a very attractive ROI proposition," says Borbolla. "By maintaining an extremely reliable site based on HP solutions, we've seen a marked increase in revenue due to our robust HP e-commerce platform, and we're solidifying our reputation as a technology leader."

For more success stories on HP storage products and MSA1000 solutions, please visit:

<http://h18006.www1.hp.com/storage/casestudies/index.html>.

For success stories on HP ProLiant servers and MSA500 G2 and MSA30 cluster solutions, please visit:

<http://h18004.www1.hp.com/solutions/enterprise/highavailability/dl380/endorsements-g3.html>.

The smartest way to invest in IT

You understand the value of being able to capitalize on change. But the question still remains: can you afford it? HP Financial Services provides innovative financing and financial asset management programs to help you cost-effectively acquire, manage and ultimately retire your HP solutions.

HP Financial Services offers flexible financing options, tailored for your needs. We also provide transition services-programs that make it easier for you to migrate from existing technology to your new HP solution by providing value for the equipment you no longer need. Furthermore, our services are global, so you can deploy your lease solution in a consistent manner across the world.

When you finance your new HP solution from HP Financial Services, you avoid paying a large, up-front investment; facilitate add-ons and upgrades; remove the risks of ownership; and eliminate costs and risks associated with equipment disposition when the equipment no longer meets your needs. Our flexible approach to financing enables you to wrap your equipment (including third-party components), services and software into one convenient payment, and get it all from HP. Leasing helps you capitalize on change, making it the smartest way to invest in IT.

For more information on these services, please contact your HP sales representative, or visit:

www.hp.com/go/hpfinancialservices.

HP Factory Express

Once you have decided on an MSA product that fits your business needs, how will your IT Group deploy 10, 20, 50, 500, or 5000 servers, MSAs, disks, cables, network cards, operating systems, and your company's unique applications in the same or different geographic locations? Ask about HP Factory Express Service.

HP Factory Express is a comprehensive portfolio of pre-priced, pre-configured, customized and integrated factory solutions and deployment services—supporting HP's products from the desktop to the datacenter with Windows, Linux and HP-UX11i. With HP Factory Express you choose how your solution is built, tested, integrated, shipped and deployed. Whether you are a CIO or IT manager, HP Factory Express can help you save time, money and resources.

For more information

For more information on HP StorageWorks Modular Smart Array products, visit: www.hp.com/go/msa.

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5982-2257EN, Rev. 4, October 2005

