

Overview

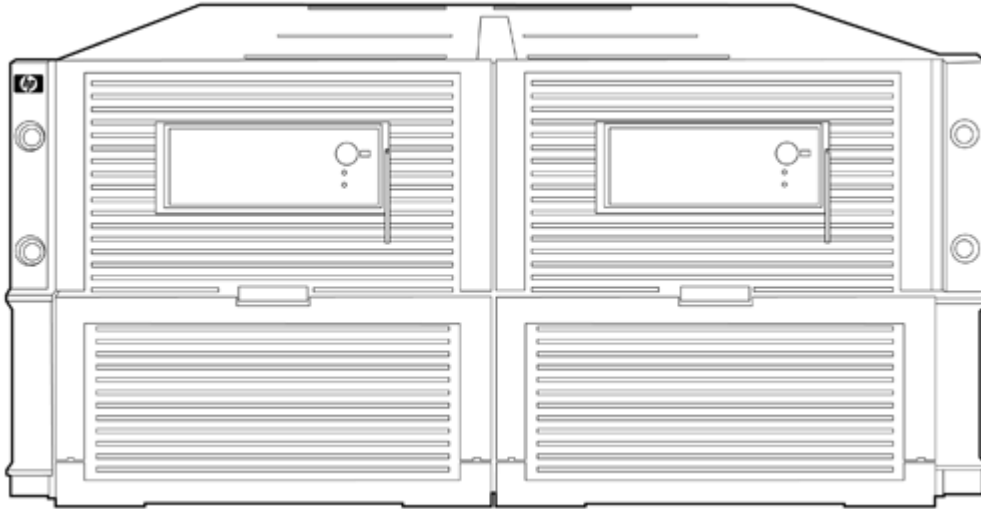
Finding it difficult to keep up with the growth in unstructured data? Looking for a cost-effective high capacity storage option?

With the HP StorageWorks 600 Modular Disk System, HP extends and redefines direct-attached storage for BladeSystem servers, combining the simplicity and cost effectiveness of direct-attached storage without sacrificing flexibility or performance.

Use the MDS600 as part of a straight-forward in-rack 3 Gb/s SAS implementation that delivers high-density, low-cost external zoned direct attach storage for HP BladeSystem servers. Easily configure storage on the fly with easy to use management software.

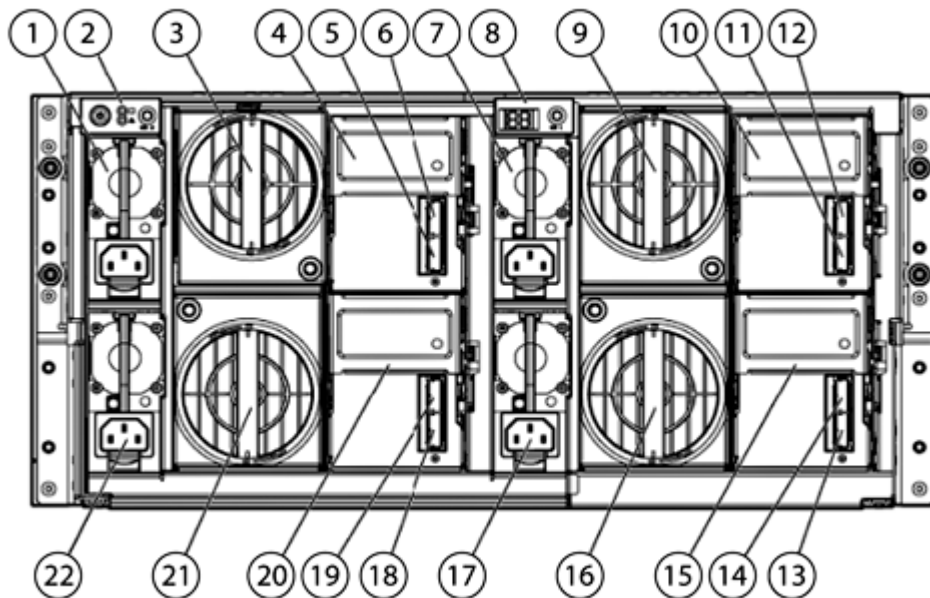
The MDS600 can also be directly connected to ProLiant DL and ML servers using the Smart Array P212 or P411 Controller. Up to six MDS600 storage devices can be supported off a single BladeSystem enclosure for up to 840 TB of capacity. End-to-end 3 Gb/s SAS connectivity enables a high performance storage solution using an HP Smart Array P700m controller, 3Gb SAS BL switches, and the MDS600.

For more information on 3 Gb/s SAS storage solutions for HP BladeSystem, see: www.hp.com/go/directconnect.



HP StorageWorks 600 Modular Disk System

Overview



- | | | |
|----------------------------------|-------------------------------------|-------------------------------------|
| 1. Power supply 1 | 9. Fan module 1 (Drawer 1) | 17. Power supply 4 |
| 2. Power On/UID 2 status panel | 10. Primary I/O module (Drawer 1) | 18. SAS 1 connector |
| 3. Fan module 1 (Drawer 2) | 11. SAS 1 connector | 19. SAS 2 connector |
| 4. Primary I/O module (Drawer 2) | 12. SAS 2 connector | 20. Secondary I/O module (Drawer 2) |
| 5. SAS 1 connector | 13. SAS 1 connector | 21. Fan module 2 (Drawer 2) |
| 6. SAS 2 connector | 14. SAS 2 connector | 22. Power supply 2 |
| 7. Power supply 3 | 15. Secondary I/O module (Drawer 1) | |
| 8. UID 1 status pane | 16. Fan module 2 (Drawer 1) | |

What's New

- Directly connect the MDS600 to ProLiant DL, ML, and SL servers using a Smart Array P212 or P411 Controller using a standard 2m SAS cable. Single domain only.
- A single BladeSystem enclosure can connect to both an MDS600 and an MSA2000sa. Servers are assigned to either the MDS600 or the MDS2000sa.
- Two BladeSystem enclosures can connect to each of the two drive drawers on a single MDS600.
- Two SAS switches can connect to an MDS600 with a single IO module in each drawer. Provides higher performance in a single domain SATA environment.
- Expanded OS support.

Overview

At A Glance

- 5U rackmount form factor
- Supports seventy 3.5" LFF Universal hot pluggable SAS or SATA drives
- Two pull-out drive drawers support hot plug large form factor dual-ported SAS or archival-class SATA drives in just 5U of rack space (35 hot plug drives per drawer)
- 3 Gb/s SAS connectivity using HP StorageWorks 3Gb SAS BL switches in the interconnect bays, and HP Smart Array P700m Controllers in each BladeSystem server
- Using the Virtual SAS Manager (VSM) in the HP StorageWorks 3Gb SAS BL switch, assign or 'zone' drives of the MDS600 directly to BladeSystem servers; supports up to 100 drives per BladeSystem server Includes redundant hot plug fans and redundant 1200W 12V hot plug power supplies standard
- Two dual port I/O module system recommended for SATA customers in single domain environments
- Additional option kit with two dual port I/O modules is added for SAS drives, creating a dual domain environment. A single BladeSystem enclosure supports up to six MDS600's externally. 3-0-0 warranty

Deployment Guide

For detailed deployment information, see the HP direct connect external SAS storage for HP BladeSystem deployment guide. Select Manuals under Resources for HP StorageWorks 600 Modular Disk System:

<http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeld=12169&prodSeriesId=3936271&lang=en&cc=us>



Models

HP StorageWorks 600 Modular Disk System	HP MDS600 with two Dual Port I/O Module System NOTE: Base model for SAS and SATA drives. Add AP763A when using dual ported SAS drives to create a dual domain environment. NOTE: Includes redundant hot plug power supplies and redundant hot plug fans. NOTE: Includes two right angle and two left angle power cords.	AJ866A
	HP StorageWorks MDS600 Dual I/O Module Option Kit NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to create a dual domain environment. NOTE: Configuring the MDS600 with four I/O modules and dual port SAS hard drives creates a dual domain environment for data path redundancy. Configurations using single port SATA hard drives and only two dual port I/O modules will not have data path redundancy, and a warning message will occur stating that the storage shelf is not redundant. NOTE: This option kit is not need when connecting directly to ProLiant DL, ML and SL servers as only single domain is supported.	AP763A
	HP StorageWorks MDS600 with (35) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes thirty-five 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AP764A
	HP StorageWorks MDS 600 with (35) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AP765A
	HP StorageWorks MDS 600 with (35) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AX670A
	HP StorageWorks MDS 600 with (35) 2TB 3G SATA - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 35 2TB 3G SATA drives	BK827A
	HP StorageWorks MDS600 w/35 1TB 6G SAS - 35TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives	BK821A
	HP StorageWorks MDS600 w/35 2TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives	BK823A
	HP StorageWorks MDS600 w/35 600GB 6G SAS - 21TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives	BK819A
	HP StorageWorks MDS600 with (70) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes seventy 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AX668A
	HP StorageWorks MDS 600 with (70) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AX669A



Models

HP StorageWorks MDS 600 with (70) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AX671A
HP StorageWorks MDS600 w/70 2TB 3G SATA - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 2TB 3G Sata drives	BK828A
HP StorageWorks MDS600 w/70 1TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives	BK822A
HP StorageWorks MDS600 w/70 2TB 6G SAS - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives	BK824A
HP MDS600 w/70 600GB 6G SAS - 42TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives	BK820A
HP 2 Stk 4X Fixed C-13 Offset Power Cord Option Kit NOTE: This power cord option kit connects four MDS600 power supplies to a single power plug, reducing the number of PDUs needed in a rack. Can be used in several configurations, including all four power supplies on a single MDS600 or with two power supplies on each of two adjacent MDS600.	AF502B

Related Items

HP StorageWorks 3Gb SAS BL Switch	HP StorageWorks 3Gb SAS BL Switch - Single Pack	AJ864A
	HP StorageWorks 3Gb SAS BL Switch - Dual Pack	AJ865A

Configuration Rules:

1. The SAS Switch is supported only in the HP c-Class Enclosures (c7000 & c3000)
2. Support installation of the 3Gb SAS BL Switch in up to 4 interconnect bays in the c7000 and up to 2 interconnect bays in the c3000.
3. (2) SAS Switches are required in the same c-Class enclosure interconnect bay row for redundancy. Single switch configurations are supported as non-redundant.
4. For the c3000 enclosure, the SAS Switch can only be placed into interconnect bays (3 and 4)
5. For the c7000 enclosure, the SAS Switch can only be placed into interconnect bays (3 and 4), or (5 and 6) or (7 and 8).
6. For the c3000 enclosure using a server's mezzanine slot 1 along with enclosure interconnect bay 2 is not supported.

P700m Smart Array Controller	HP Smart Array P700m Controller/512 NOTE: P700m Smart Array Controller/512 recommended for optimum performance with the MDS600.	508226-B21
	Battery Kit for P700m Controller/512	452348-B21
	HP Smart Array P700m Controller/256 NOTE: Does not support RAID 5 or 6. Does not support battery-backup.	507925-B21



Models

Configuration Rules:

1. A half height blade server must have a P700m (508226-B21 or 507925-B21) installed in server mezzanine slot 1 or mezzanine slot 2.
2. A full height blade server must have a P700m (508226-B21 or 507925-B21) installed in server mezzanine slot 1, mezzanine slot 2 or mezzanine slot 3.
3. A double density blade server must have a P700m (508226-B21 or 507925-B21) installed in server mezzanine slot 2 of each server. 4 SAS Switches in interconnect bays 5, 6, 7 and 8 must also be included in this configuration.

For more information on the P700m, see: www.hp.com/go/p700m.

HP Smart Array P212 Controller

HP Smart Array P212/256MB Controller

For more information on the P212, see: www.hp.com/products/smartarray

HP Smart Array P411 Controller

HP Smart Array P411/256MB Controller
HP Smart Array P411/512MB Battery Backed Write Cache

For more information on the P411, see: www.hp.com/products/smartarray

SAS cable

mini-SAS 4x 2M Cable All

X1000 Network Storage Systems & X3000 Network Storage Gateways

HP StorageWorks X1400 Network Storage System
HP StorageWorks X1600 Network Storage System
HP StorageWorks X1800 Network Storage System
HP StorageWorks X1800sb Network Storage System
HP StorageWorks X3400 Network Storage System
HP StorageWorks X3800 Network Storage System
HP StorageWorks X3800sb Network Storage System

For more information see: www.hp.com/go/X1000 or www.hp.com/go/X3000

Configuration Rules:

The X1800sb or X3800sb must include a P700m.

The X3800 must include a supported Smart Array Controller.

All other X1000/3000 products contain the proper Smart Array controller for MDS600 connectivity.

Tape Backup

HP StorageWorks 1/8 G2 SAS Tape Autoloaders (LTO-3 and LTO-4)
HP StorageWorks MSL2024 SAS Tape Libraries (LTO-3 and LTO-4)
HP StorageWorks MSL4048 SAS Tape Libraries (LTO-3 and LTO-4)
HP StorageWorks MSL8096 SAS Tape Libraries (LTO-3 and LTO-4)

D2D Backup System

HP StorageWorks D2D2500 Backup System
HP StorageWorks D2D4000 Backup System



Features and Benefits

Key Features

High density, low cost SAS storage for BladeSystem servers

- 70 LFF Universal SAS or SATA drives in 5U
- Two pull-out drive drawers support hot plug large form factor dual-ported SAS or archival-class SATA drives in just 5U of rack space
- Each pull-out drive drawer accesses a redundant set of hot plug power supplies and redundant hot plug fans.
- Straight forward SAS architecture provides zoned direct attach storage for BladeSystem servers; just a Smart Array P700m controller in the blade server, a redundant pair of 3Gb SAS BL switches in the chassis connected to an MDS600.
- The same 3Gb SAS BL switch can be used to support the MSA2000sa in a shared SAS storage environment.

Build BladeSystem server storage on the fly

- MDS600 drives are assigned or 'zoned' to individual blade servers using SAS 2.0 zoning capabilities. Use the Virtual SAS Manager (VSM) in the 3Gb SAS BL switch to dynamically assign up to 100 drives specific BladeSystem servers, without complex configuration or re-cabling. Drives zoned to each server appear as local storage to that server. This allows complete flexibility to reconfigure quickly and easily without moving cables
- With zoned direct attach capabilities; server administrators can build local storage on the fly according to their configuration requirements.
- Quickly deploy and expand capacity by configuring additional drives to a servers' drive zone without moving a single cable.

High performance 3 Gb/s SAS connectivity to external storage

- End-to-end 3 Gb/s SAS connectivity ensures a high performance storage solution. Since storage is contained within the rack, latency is reduced as data does not travel over large distances.
- To enhance performance even further, the Smart Array P700m controller installed in the blade server provides 512 MB battery-backed write cache (BBWC). High Performance Smart Array P212 256MB BBWC or P411 256MB & 512MB BBWC available for ProLiant DL, ML, and SL servers.

Directly connect to ProLiant DL, ML, and SL servers

- Directly connect the MDS600 to ProLiant servers using a Smart Array P212 or P411 Controller.
- Directly connect the Smart Array P212 or P411 Controller to the MDS600 drive drawers using 2m SAS cables.
- Connect one or two ProLiant servers to a single MDS600 (max capacity):
 - Use the single port Smart Array P212 in one or two servers to connect to each of the MDS600 drive drawers.
 - Use the dual port Smart Array P411 to connect one server to both MDS600 drive drawers.
- The server sees all drives in the MDS600 drive drawer(s).
- Single domain only.

HP reliability

- Familiar Smart Array technology of the Smart Array Controllers enables support for RAID levels 0, 1, 1+0, 5 and RAID 6 with ADG.
 - Advanced Data Guarding (RAID 6): This is the highest level of fault tolerance. It allocates two sets of parity data across drives and allows simultaneous write operations. This level of fault tolerance can withstand two simultaneous drive failures without downtime or data loss.
 - Distributed Data Guarding (RAID 5): This allocates parity data across multiple drives and allows simultaneous write operations. It is recommended for up to 14 hard drives.
- Receive pre-failure alerts with HP SIM. When drives installed in an MDS600 are used in conjunction with the Smart Array Controller and Systems Insight Manager, the Smart Array firmware in HP hard drives enables extensive fault prediction capabilities. If potential problems develop in one of the drives, the Smart Array Controller, Systems Insight Manager and/or Smart hard disk drive will send a pre-failure alert so you can have the drive replaced, before it fails,



Features and Benefits

under warranty.



Family Information

Product Technology	SAS	3Gb/s SAS
	Modular Chassis	5U, 70 Large Form Factor Universal SAS or SATA drive bays
	Drives available	Serial Attached SCSI (SAS) enterprise-class drives designed for high volume 24x7 usage. Serial-ATA (SATA) are usually reserved for archival of data as they are both relatively inexpensive and are available in very large capacities. The MDS600 can accommodate both SAS and SATA drives within the same enclosure. SAS drive performance can be approximately 30% greater than SATA performance on sequential host IO. SAS performance excels in sequential lower latency response time and random IO per second transaction performance due to higher rpm disk speeds yielding lower seek times.
	Scalability	Up to 70 SAS or SATA 3.5" hot plug hard drives per MDS600 A single BladeSystem enclosure supports up to six MDS600's externally.
	RAID	RAID is provided by the Smart Array P700m Controller installed in each BladeSystem server. ProLiant DL, ML, and SL servers use either the Smart Array P212 or P411 Controller.
	Power supplies	Includes four redundant 1200W 12V hot plug power supplies.
	Fans	<ul style="list-style-type: none">• Includes four redundant hot plug fans.
	Configuration and Management Tools	3Gb SAS BL switch for use with BladeSystem servers: Use the Virtual SAS Manager (VSM) to dynamically assign drives in the MDS600 to each BladeSystem server, without complex configuration or re-cabling. This allows complete flexibility to reconfigure quickly and easily without moving cables. Smart Array Controller: Array Configuration Utility (ACU) provides configuration and management of hard drives, and supports online array capacity expansion, logical drive extension, assignment of online spares and RAID or stripe size migration.
	Management/Health Utilities	Active hardware management using HP SIM: Manage the array with the highly refined HP Systems Insight Manager. Smart Components are available to easily update firmware. A convenient Integrated Management Log records hundreds of events and stores them in an easy-to-view format.

Family Information

Server Compatibility

BladeSystem servers- configured with Smart Array P700m and 3Gb SAS BL switch:

BL2x220c G5, G6
BL260c G5
BL280c G6
BL460c G1/G5/G6
BL465c G5
BL480c G1
BL490c G6
BL495c G5
BL680c G1/G5
BL685c G5/G6
BL860c
BL870c

ProLiant servers- configured with either Smart Array P212 or P411 directly connected to the MDS600 using a 2m SAS cable:

DL160 G6
DL165 G5/G6
DL180 G6
DL185 G5
DL320 G6
DL360 G6
DL365 G5
DL370 G6
DL380 G6
DL385 G5/G6
DL580 G5/G6
DL580 G5/G6
DL585 G5/G6
DL785 G5/G6
ML150 G6
ML310 G5
ML330 G6
ML350 G6
ML370 G6
SL160
SL170



Family Information

OS Support

The OS list below is for BladeSystem installations only. See the HP Single Point of Connectivity Knowledge (SPOCK) website for additional OS details:

<http://h20272.www2.hp.com/>

Windows Server 2003

Windows Server 2008 and R2

Windows Storage Server (see X1000 Network Storage Systems & X3000 Network Storage Gateways support for more info)

RHEL 5

SLES 10

SLES 11

Solaris 10

VMware ESX

HP-UX 11 iV2

HP-UX 11 iV3

VMware ESX 3.5 u4 and ESX 4.0

Open VMS V8.3-1H1

Integrity Windows Release 6.2 for 2008 R2

The OS list below is for ProLiant DL, ML, or SL server installations using the Smart Array P212 or P411 Controller. See the HP Single Point of Connectivity Knowledge (SPOCK) website for additional OS details: <http://h20272.www2.hp.com/>

Windows Server 2003

Windows Server 2008

RHEL 4

RHEL 5

SLES 10

SLES 11

VMware



Service and Support, HP Care Pack and Warranty Information

Warranty	3-0-0 warranty Three-year parts exchange, next business day delivery NOTE: The warranties of the hard drive options purchased for the MDS600 are different for SAS hard drives versus SATA hard drives. SAS hard drive options have a three year warranty and SATA hard drives options have a one year warranty.
-----------------	---

Warranty Upgrade Options	<ul style="list-style-type: none">• Response - Upgrade on-site response from next business day to same day 4-hour response or 6 Hour Call To Repair• Coverage - Extend hours of coverage from next business day to 9 hours x 5 days to 24 hours x 7 days• Duration Select duration of coverage for a period of 1, 3, 4 or 5 years
---------------------------------	---

For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

Protect your business beyond the warranty

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Storage Services: Offering reliability, flexibility and value-just like your storage

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. <http://www.hp.com/hps/storage>



Service and Support, HP Care Pack and Warranty Information

NOTE: Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
 - Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>
-

Recommended Services **HP Care Pack Services recommended for optimal satisfaction of all deployments of your product.**

3-Year HP Support Plus 24

For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Cost-effectively obtain expert multivendor support
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Increase revenue-with access to world-class expertise without headcount implications
- Increase customer satisfaction-with no interoperability gaps

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf>

**Recommended
Deployment**

HP Installation Service

For smooth startup and better business outcomes, HP Hardware Installation - this service provides initial hardware installation of your product into your technology environment (system configuration is not included). In today's new era of business technology- customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

Service Features:

- Installation in accordance with your business's configuration requirements
- The ability to achieve more effective data management

<http://h71028.www7.hp.com/ERC/downloads/5981-9356EN.pdf>



Service and Support, HP Care Pack and Warranty Information

Related Services

Services that will enhance the user experience in many product deployments.

HP Enhanced Implementation Service for SANs

For customers who are building a new or expanding an existing Fibre Channel, FCOE, FCIP, SAS or iSCSI SAN:

HP Enhanced Implementation Service for SANs - For customers who are building a new SAN or expanding their existing one, we offer the HP Enhanced Implementation Service for SANs. This provides complete design and implementation services for Fibre Channel, FCOE, FCIP, SAS and iSCSI SAN connectivity components.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-8527EN.pdf>

HP Entry Storage Data Migration Service for Windows

For customers who need to safely migrate Windows data within their TCP/IP networks with minimal impact to their operations:

You have a need to migrate data between Windows servers within your TCP/IP network. Or you have a need to migrate storage for your Windows servers. Or both. And you need to accomplish these migrations efficiently while minimizing risk at the same time.

HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-4734ENW.pdf>

HP Proactive Select Service

For customers who need to improve IT performance and manageability through the use of cost effective flexible proactive services:

Proactive Select - increased flexibility, minimal complexity -- Select what works for you - your package
Delivery planning + Proactive Service Credits

- Credits are used to redeem proactive services
- Three 'predefined' service credit levels - 30, 60, 180 credits
- Additional credits available
- Available in 1, 3, 4 & 5 year packages
- Reactive
- Utilize existing reactive services products - ranging from Next Day, through 24x7, to 6 Hour Call to Repair

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf>



Service and Support, HP Care Pack and Warranty Information

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

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 courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. www.hp.com/learn/storage

HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit: <http://h20129.www2.hp.com/services/cache/77318-0-0-225-121.html>.

Additional Services Information

For more information about HP Care Pack Services for Storage, please visit: <http://www.hp.com/hps/storage>

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" <http://www.hp.com>



Configuration Information

Step 1 - MDS600 - Choose SAS or SATA configurations

Select one:

Model Name	Model Description:	Part Number
MDS600	HP MDS600 with two Dual Port I/O Module System NOTE: Base model for SAS and SATA drives. Add AP763A when using dual-ported SAS drives to create a dual domain environment. NOTE: Includes four hot plug power supplies and four hot plug fans for n+2 redundancy. NOTE: Includes two right angle and two left angle power cords.	AJ866A
	HP StorageWorks MDS 600 Dual I/O Module Option Kit NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to create a dual domain environment. NOTE: This option kit is not need when connecting directly to ProLiant DL, ML and SL servers as only single domain is supported.	AP763A
	HP StorageWorks MDS 600 with (35) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes thirty-five 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AP764A
	HP StorageWorks MDS 600 with (35) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AP765A
	HP StorageWorks MDS 600 with (35) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AX670A
	HP StorageWorks MDS 600 with (35) 2TB 3G SATA - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 35 2TB 3G SATA drives	BK827A
	HP StorageWorks MDS600 w/35 1TB 6G SAS - 35TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives	BK821A
	HP StorageWorks MDS600 w/35 2TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives	BK823A
	HP StorageWorks MDS600 w/35 600GB 6G SAS - 21TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives	BK819A
	HP StorageWorks MDS600 with (70) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes seventy 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AX668A
	HP StorageWorks MDS 600 with (70) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to ProLiant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AX669A



Configuration Information

HP StorageWorks MDS 600 with (70) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: When directly connecting to Proliant DL, ML, or SL servers in single domain, the redundant I/O modules are not used.	AX671A
HP StorageWorks MDS600 w/70 2TB 3G SATA - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 2TB 3G Sata drives	BK828A
HP StorageWorks MDS600 w/70 1TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives	BK822A
HP StorageWorks MDS600 w/70 2TB 6G SAS - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives	BK824A
HP MDS600 w/70 600GB 6G SAS - 42TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives	BK820A

Step 2 - Choose Supported Options

		Part Number
Smart Array P700m controller	HP Smart Array P700m Controller/512	508226-B21
	Battery Kit for P700m Smart Array Controller/512	452348-B21
	HP Smart Array P700m Controller/256	507925-B21
3Gb SAS BL Switch	HP StorageWorks 3Gb SAS BL Switch - Single Pack	AJ864A
	HP StorageWorks 3Gb SAS BL Switch - Dual Pack	AJ865A
HP Smart Array P212 Controller	HP Smart Array P212/256MB Controller	462834-B21
HP Smart Array P411 Controller	HP Smart Array P411/256MB Controller	462830-B21
	HP Smart Array P411/512MB Battery Backed Write Cache	462832-B21

Step 2b - SAS Cables

Model Description	
mini-SAS 4x 2M Cable All	407339-B21



Configuration Information

Step 3 - MDS600 SAS and SATA Drive Options

NOTE: an MDS600 fully loaded with drives weighs 320lbs.

NOTE: The MDS600 will run 6Gb/s SAS drives at 3Gb/s.

Hot Plug 3.5" SAS Drives

HP 1TB 6G SAS 7.2K DP MDL 1y Wty HDD	507614-B21
HP 2TB 6G SAS 7.2K DP MDL 1y Wty HDD	507616-B21
HP 300GB 6G SAS 3.5" 15K DP HDD	516814-B21
HP 450GB 6G SAS 3.5" 15K DP HDD	516816-B21
HP 600GB 6G SAS 3.5" 15K DP HDD	516828-B21

Hot Plug 3.5" SATA Drives

NOTE: The MDS600 will run 3Gb/s SATA drives at 1.5Gb/s.

HP 500GB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	458928-B21
HP 1TB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	454146-B21
HP 2TB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	507632-B21

Step 4 - Choose Rack Options

Choose HP Rack 10000 series Cabinets for the MDS600

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000series/index.html>

NOTE: An MDS600 fully loaded with drives weighs 320lbs.



QuickSpecs

HP StorageWorks 600 Modular Disk System

Technical Specifications

MDS600	INPUT POWER (per power supply)	Rated Line Voltage	90 to 132 VAC 180 to 264 VAC
		Rated Input Frequency	47 to 63 Hz
		Rated Input Current	10A (at 100 VAC), 7.8A (at 200VAC)
	TEMPERATURE AND HUMIDITY RANGES	Rates Input Power	964 W (at 100 VAC), 1412 W (at 240 VAC)
		Operating Temperature	50° to 95° F (10° to 35° C) NOTE: Maximum Rated 10°C per/hr (50°F/hr)
		Storage Temperature	-22° to 140° F (-30° to 60° C) NOTE: Maximum Rated 20°C/hr (68°F/hr)
		Operating Humidity	10% to 90% relative humidity (Rh), 28° C (82.4° F) maximum wet bulb temperature, non-condensing
		Non-Operating Humidity	5% to 95% relative humidity (Rh), 38.7° C (101.66° F) maximum wet bulb temperature, non-condensing
	PHYSICAL	Length	89.12 cm
		Width	44.7 cm (17.6 in)
Height		22.1 cm (8.7 in)	
Chassis Weight		72.58 kg (160 lb) with no hard drives installed	
Weight		145 kg (320 lb) with hard drives installed	

BTU Rating (maximum) 3535 Btu/hr

Power consumption at 208V

Drive Type	Typical	Service Position Maximum
7200 RPM SATA	800W	1140W
10K 400G SAS	940W	1340W
15K SAS	1280W	1710W

Power consumption at 120V

Drive Type	Typical	Service Position Maximum
7200 RPM SATA	1000W	1500W
10K 400G SAS	1100W	1600W
15K SAS	1320W	1770W

NOTE: Input Power and Heat Dissipation specifications are maximum values and apply to worst-case conditions at full rated power supply load. The power/heat dissipation for your installation will vary depending on the equipment configuration.

NOTE: Temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. The upper limit may be limited by the type and number of options installed.

NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

Upgradeable Firmware Offline

Disk Drives and Enclosure HP 3.5" SAS 3 Gb/s and 1.5 Gb/s SATA

Protocol Support

I/O Module	Connector Type	External mini-SAS 4x (SFF8088)
	Number of Ports	Two



Technical Specifications

© Copyright 2010 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Intel is a US registered trademark of Intel Corporation. Unix is a registered trademark of The Open Group.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

