Overview

The HP Smart Array P700m is HP's first PCI-Express (PCIE) mezzanine card supporting shared SAS Storage and zoned direct attached storage. It is one of the highest performing controllers in the 3G SAS portfolio and provides new levels of reliability for HP Blade servers, through its support of the latest SCSI technology and advanced RAID capabilities. Supports up to 100 zoned direct attached SAS or SATA hard drives per HP Smart Array P700m Controller.

What's New

- Support for HP ProLiant BL620c G7 and BL680c G7
- Provide clarity with the battery support scope

Models

HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller	508226-B21
HP Smart Array P-Series Low Profile Battery	452348-B21

NOTE: Supports all HP ProLiant and Integrity Server Blades, except HP ProLiant BL2x220c and BL685c G7server blades

NOTE: Battery Option Kit (PN 452348-B21) is needed with HP Smart Array P700m/512 Controller for RAID 6 support.

HP Smart Array Cache Battery Kit	383280-B21

NOTE: Supports the HP ProLiant BL2x220c and BL685c G7 server blades.

NOTE: Battery-backed write cache upgrade (PN 383280-B21) is needed with HP Smart Array P700m/512 Controller for RAID 6 support .

NOTE: HP Smart Array P700m/256 Controller is used with MSA2000 only. HP Smart Array P700m/512 Controller is used with MSA2000 & MDS600.

QuickSpecs

HP Smart Array P700m Controller

Standard Features

The Smart Array Advantage	HP's innovative design and integration work within the Smart Array family of products creates customer value that is unmatched in the industry. Use of Smart Array products across multiple applications results in a much lower Total Cost of Ownership (TCO) than any other server storage RAID product. The HP Smart Array family brings an unparalleled return on investment. **Data Compatibility** Data Compatibility with all Serial Smart Array controllers allows simple and easy upgrades any time needs for higher performance, capacity, and availability increase. **Consistent Configuration and Management Tools**. All Smart Array products utilize a standard set of management and utility software. These tools minimize Total Cost of Ownership (TCO) by reducing training requirements and technical expertise necessary to install and maintain HP server storage. **Pre-Failure Warranty** Pre-Failure Warranty means Systems Insight Manager not only reports when a drive is going to fail but allows replacement of failing drives prior to actual failure. For complete details, consult the HP Support Center or refer to your HP Server documentation.
Key Features	- Smart Array PCIe mezzanine card that connects to a HP 3GB SAS BL Switch through the c-Class enclosure high speed mid-plane supporting shared SAS storage of up to 384TB and zoned direct attach storage of up to 200TB using the MDS600 - Eight (8) 3G SAS physical links distributed across 4 external x2 wide ports which supports up to 4 3G SAS Switches 3G SAS technology delivers high performance and data bandwidth up to 300 MB/s per physical link and contains full compatibility with 1.5G SATA technology - Support for SAS tape products - Software consistency among all Smart Array family products: Array Configuration Utility, Systems Insight Manager, Array Diagnostic Utility (ADU) and SmartStart - P700m/ 512 MB 72-bit wide DDR2-533MHz, battery-backed write cache option supports RAID 6 with ADG, logical drive extension, and RAID migration Recovery ROM protects against a ROM corruption - PCI Express 2.5G host interface provides up to 2 GB/s in each direction - Multi-path support available in Smart Array firmware when using zoned direct attached storage. Both direct attached storage paths are load balanced for improved performance when using MDS600 configured with the HP MDS600 Dual I/O Module Option Kit and dual domain SAS HDD. 3 year parts only warranty
Online Management Features	- Online Array Expansion (requires the battery support) - Online RAID Level Migration (requires the battery support) - Online Stripe Size Migration (requires the battery support) - Online Spares (Global) - User Selectable Expand and Rebuild Priority - Online Logical Drive Extension Availability

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QuickSpecs

HP Smart Array P700m Controller

Standard Features

Performance HP's High Performance Architecture sets new boundaries of industry performance expectations.

- Eight (8) 3G SAS physical links distributed across 4 external x2 wide ports which supports up to 4 3G SAS Switches
- 3G SAS (300MB/s bandwidth per physical link)
- P700m/512 MB 72-bit wide DDR2-533MHz, battery-backed write cache option
- The P700m supports higher performance between the 3G SAS Switch and MDS600 by attaching 2 SAS cables from any quad of 3G SAS Switch ports to the 2 ports on the MDS600 IO module to create an 8x wide SAS port
- x8 2.5G PCI Express host interface provides 2 GB/s maximum bandwidth during burst transfers in each direction

Capacity

- Provides HP BladeSystem c-Class Systems with the capability to expand external storage with either SAS or SATA drives up to 384TB in a shared storage configuration
- Up to 200TB of external storage per Mezz slot in a zoned direct attached storage configuration with 100 x2TB LFF SAS or SATA drives The entire rack is limited to 420 SAS or SATA drives when using 6 MDS600 enclosures

Availability Provides increased server uptime by providing advanced storage functionality:

- Online RAID Level Migration (between any RAID level)
- Online Capacity Expansion
- Logical Drive Capacity Extension
- Global Online Spare
- Pre-Failure Warranty

Fault Prevention The following features offer detection of possible failures before they occur, allowing preventive action to be taken:

- S.M.A.R.T.: Self Monitoring Analysis and Reporting Technology first developed at HP detects possible hard disk failure before it occurs, allowing replacement of the component before failure occurs.
- Drive Parameter Tracking monitors drive operational parameters, predicting failure and notifying the administrator.
- Dynamic Sector Repairing continually performs background surface scans on the hard disk drives during inactive periods and automatically remaps bad sectors, ensuring data integrity.
- Smart Array Cache Tracking monitors integrity of controller cache, allowing pre-failure preventative maintenance.
- Environment Tracking for External Storage System: Monitors fan speed and cabinet temperature of Modular Smart Array Enclosures

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Standard Features

Fault Tolerance   Keeps data available and server running against component failures; several fault tolerance configurations are supported including:

- When the P700m is connected to active/active SAS arrays like MSA2xxxsa products, there are multiple physical and logical paths to each logical disk, enabling the server to endure P700m port failures, switch failures, cable pulls, cable failures, and array controller failures without interruption of normal storage I/O. This capability also enables certain types of maintenance activities without requiring server shutdown.
- When the P700m is connected to the MDS600 configured with the HP MDS600 Dual I/O Module Option Kit and dual domain SAS HDD, there are multiple physical paths to each HDD, enabling the server to endure P700m port failures, switch failures, cable pulls, cable failures, and MDS600 IO module failures without interruption of normal storage I/O.
- Advanced Data Guarding (RAID 6) P700m/512 option: 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. Requires battery support.
- Distributed Data Guarding (RAID 5) P700m/512: This allocates parity data across multiple drives and allows simultaneous write operations. It is recommended for up to 14 hard drives.
- Drive Mirroring (RAID 1, 1+0): This allocates half of the drive array to data and the other half to mirrored data, providing two copies of every file. It is a high-performance RAID.

Fault Recovery   Minimizes downtime, reconstructs data, and facilitates a quick recovery from drive failure:

- Recovery ROM: This feature provides unique redundancy that protects from a ROM image corruption. A new version of firmware can be flashed to the ROM while the controller maintains the last known working version of firmware. If the firmware becomes corrupt, the controller will revert back to the previous version of firmware and continue operating. This reduces the risk of flashing firmware to the controller.
- On-Line Spares: There is no limit to the number of spare drives that can be installed prior to drive failure. If a failure occurs, recovery begins with an On-Line Spare and data is reconstructed automatically.
- DRAM ECC corrects against single bit data and address corruption.

Ease of Use   Consistency and Upgradeability make the Smart Array family unique in the industry:

- GUI based configuration, management and diagnostic software tools
- Common data format between generations of products
- Data migration between servers and external Modular Smart Array enclosures

Warranty   The warranty for this device is 3 years parts only.
Pre-Failure Warranty: Drives attached to the Smart Array Controller and monitored under Insight Manager are supported by a Pre-Failure (replacement) Warranty. For complete details, consult the HP Support Center or refer to your HP Server Documentation.

Software Product Services Standalone telephone support
Rights to new license version
Media and documentation updates

Standard Features

Hardware Product Services	Installation services On-site maintenance (includes warranty support) Response time upgrades during the warranty period Post-warranty coverage RAID setup and performance consulting via statement of work **NOTE:** For additional hardware installation and maintenance information, please refer to the URL: www.hp.com/services/servers
Warranty Upgrade Options	**Response** - Upgrade on-site response from next business day to same day 4 hours **Coverage** - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days **Duration** - Select duration of coverage for a period of 1, 3, or 5 years Warranty upgrade options can come in the form of Care Packs, which are sold at the HP System level this product attaches too.
HP Care Pack Information	HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage. Care Packs for this option is sold at the system level this option attaches too. HP Care Pack is not available for less than the product's warranty duration. HP Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required. HP Care Pack services are prepaid. **NOTE:** For additional HP Care Pack (hardware & software) information, as well as orderable part numbers, please refer to the URL: www.hp.com/services/servers
HP ProLiant and HP Integrity Servers	HP ProLiant BL2x220c G6 HP ProLiant BL280c G6 HP ProLiant BL460c G6 HP ProLiant BL460c G7 HP ProLiant BL465c G5 HP ProLiant BL465c G6 HP ProLiant BL465c G7 HP ProLiant BL490c G6 HP ProLiant BL495c G5 HP ProLiant BL495c G6 HP ProLiant BL620c G7 HP ProLiant BL680c G5 HP ProLiant BL680c G7 HP ProLiant BL685c G6 HP Integrity BL860c HP Integrity BL860c i2 HP Integrity BL870c HP Integrity BL870c i2 HP Integrity BL890c i2 **NOTE:** HP Integrity BL860c supports 508226-B21 only. Use 452348-B21 Battery Option Kit. HP Integrity BL870c supports 508226-B21 only. Use 383280-B21 Battery Option Kit. **NOTE:** Some servers listed above may be discontinued.

Standard Features

Operating Systems	Microsoft Windows 2003
	Microsoft Windows 2003 R2
	Microsoft Windows 2008
	Microsoft Windows 2008 R2
	SLES 10
	SLES 11
	VMware ESX 3.5 U4
	VMware ESX 4.0
	VMware ESX 4.1
	Solaris 10
	Red Hat Enterprise Linux U4
	Red Hat Enterprise Linux U5
	Operating System Support for Integrity server blades
	HP-UX 11i v3 and HP-UX 11i v2
	Microsoft Windows for Integrity 2008 R2 (6.2)
	OpenVMS (8.3-1H1)

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from HP, please visit our OS Support Site at: http://www.hp.com/go/ossupport.

NOTE: For more information on HP's Integrity Server Operating Systems, please visit: http://h20341.www2.hp.com/integrity/cache/332341-0-0-0-121.html and see Operating Environments.

Software Suite

All Smart Array products share a common set of configuration, management and diagnostic tools, including Array Configuration Utility, Array Diagnostic Utility (ADU), and Systems Insight Manager. This software consistency of tools reduces the cost of training for each successive generation of product and takes much of the guesswork out of troubleshooting field problems. These tools lower the total cost of ownership by reducing training and technical expertise necessary to install and maintain HP server storage.

Systems Insight Manager

- Powerful server and server options/storage manager tool
- Monitors over 1200 system wide parameters
- Configuration/Diagnostic Utilities

HP Array Configuration Utility (ACU)

- Powerful Web based configuration utility for all Smart Array controllers
- Provides a graphical view of HP server drive array configurations
- Allows for management of multiple arrays over a secure internet connection from anywhere in the world
- Easy to use Wizards for configuration
- Runs online on Windows and NetWare (CPQONLIN)

HP Option ROM Configuration for Arrays (ORCA)

- An alternative method for easily viewing, creating, and deleting multiple arrays and logical volumes during system power up.
- For advanced array configurations use ACU

HP Array Diagnostic Utility (ADU)

- In depth diagnostic and reporting utility for all Smart Array controllers

QuickSpecs

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Service and Support

Recommended HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services

Hardware Options Support

HP Care Packs provide support for all HP-branded hardware options qualified for inclusion in your server or storage solution. Any additional HP-qualified options installed within the server are covered at the same service level and for the same period as the server and no additional cost.

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf

3-Year HP Hardware Support Onsite Service, 4-hour response, 24x7

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf

HP Installation and Startup of HP ProLiant Servers

Provides for the installation of your new HP ProLiant server and operating system to assist you in bringing your new HP ProLiant server and operating system into operation in a timely and professional manner.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Delivery of the service at a mutually scheduled time convenient to your organization
- Availability of an HP service specialist to answer basic questions during the onsite delivery of this service
- Custom installation as detailed in "Delivery specifications" or in a Statement of Work (SOW)
- Verification prior to installation that all service prerequisites are met

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-7572ENN.pdf

Optional HP Care Pack Services that will enhance your HP product experience

Optional Services

3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour
As an alternative to our recommended support level, for customers who need committed call-to-repair for server hardware.

Provides your IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 or 24 hours of the initial service request to the HP Global Solution Center.

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf

3-Year HP Support Plus 24
As an alternative to our recommended support level, for customers who need access to responsive 24x7 hardware and software support plus software updates on HP and selected third party products:

For a higher return on your server and storage technology, our 3-year combined reactive support service delivers integrated onsite hardware/software support services available 24x7x365, including access to HP technical resources, 4-hour response onsite hardware support and software updates.

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EEE.pdf

HP Proactive Select Service
Customer needs on demand access to consulting, technical proactive services and education courses

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf

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

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X

Service and Support

7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

Customer Technical Training	In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.
HP Services Awards	HP Technology 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.
Additional Services Information	To learn more on HP ProLiant servers, HP BladeSystem servers and HP storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/proliant or www.hp.com/services/bladesystem or http://www.hp.com/services/storage

Related Options

NOTE: This is a list of supported options. Some may be discontinued.

HP Hard Drives	**SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives**	
	HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21
	HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516816-B21
	HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516814-B21
	SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
	HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507616-B21
	HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507614-B21

NOTE: Please see the QuickSpecs for additional part numbers and information at: http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html

	SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	507632-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	454146-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458928-B21

NOTE: Please see the QuickSpecs for additional part numbers and information at: http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html

HP Disk Storage Systems	**MSA SAN Storage Arrays**	
	HP MSA70 Array	418800-B21

NOTE: Upgrades MSA70 to dual domain with one .5m miniSAS to miniSAS cable.
NOTE: Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12652_na/12652_na.html

	MSA SAN Storage Arrays	
	HP 2012 Modular Smart Array 3.5-in Drive Bay Chassis (LFF)	AJ948A

NOTE: Will accept one or two controllers.

HP 2024 Modular Smart Array 2.5-in Drive Bay Chassis (SFF)	AJ949A

NOTE: Will accept one or two controllers.

HP 2300sa G2 Modular Smart Array Controller	AJ808A

NOTE: Please see the QuickSpecs for additional part numbers and information at: http://h18000.www1.hp.com/products/quickspecs/13331_na/13331_na.html

HP MSA2000 Single I/O 3.5 in 12 Drive Enclosure (w/ two .6m SAS cables)	AJ749A
HP s MSA2000 Dual I/O 3.5 inch 12 Drive Enclosure (w/ two .6m SAS cables)	AJ750A
HP MSA2000 Drive Enclosure I/O Module	AJ751A

NOTE: Please see the QuickSpecs for additional part numbers and information at: http://h18000.www1.hp.com/products/quickspecs/13045_na/13045_na.html

HP Dual Domain I/O Module for MSA70 enclosure	AG779A

NOTE: The I/O Module is a field upgradeable option kit the addition of which in the MSA70 will allow dual domain capability providing higher level of redundancy and reliability.
NOTE: Upgrades MSA70 to dual domain with one .5m miniSAS to miniSAS cable.

NOTE: Please see the QuickSpecs for additional part numbers and information at: http://h18000.www1.hp.com/products/quickspecs/12652_na/12652_na.html

	Disk Enclosures	
	HP MDS600 with two Dual Port I/O Module System	AJ866A

NOTE: Please see the QuickSpecs for additional information including configuration

Related Options

steps and additional options needed for a complete solution at:
http://h18000.www1.hp.com/products/quickspecs/13257_na/13257_na.html
(600 Modular Disk System)
NOTE: Base model for SAS and SATA drives. Add AP763A when using dual ported
SAS drives to create a dual domain environment for BladeSystems only.
NOTE: Includes redundant hot plug power supplies and redundant hot plug fans.
NOTE: Includes two right angle and two left angle power cords.

HP 600 Modular Disk System Dual I/O Module Option Kit	AP763A

NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to
create a dual domain environment for BladeSystems only.
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.

HP 600 Modular Disk System	HP MDS600 with two Dual Port I/O Module System	AJ866A

NOTE: Base model for SAS and SATA drives. Add AP763A when using dual ported SAS
drives to create a dual domain environment for BladeSystems only.
NOTE: Includes redundant hot plug power supplies and redundant hot plug fans.
NOTE: Includes two right angle and two left angle power cords.

HP 600 Modular Disk System Dual I/O Module Option Kit	AP763A

NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to create a
dual domain environment for BladeSystems only.
NOTE: Configuring the MDS600 with four I/O modules and dual port SAS hard drives
creates a dual domain environment for data path redundancy.

HP MDS600 w/35 2TB 6G SAS 70TB Bundle	BK823A

NOTE: Includes MDS600 with (35) 2TB LFF Midline SAS drives, (4) dual port I/O modules,
redundant power supplies and redundant fans.
NOTE: For ProLiant BladeSystems Only

HP MDS600 w/70 2TB 6G SAS 140TB Bundle	BK824A

NOTE: Includes MDS600 with (70) 2TB LFF Midline SAS drives, (4) dual port I/O modules,
redundant power supplies and redundant fans.
NOTE: For ProLiant BladeSystems Only

HP 600 Modular Disk System with (35) 1TB LFF SATA Hard Disk Drive Bundle	AP764A

NOTE: Includes thirty-five 1TB LFF SATA drives, two dual port I/O modules, redundant
hot plug power supplies and redundant hot plug fans.

HP 600 Modular Disk System with (35) 450GB LFF SAS Hard Disk Drive Bundle	AP765A

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: This bundle is intended for MDS600 dual domain support in Blade configuration;
dual domain is not supported in rack and tower configuration (ML, DL & SL).

HP MDS600 with (35) 300GB LFF SAS Bundle	AX670A

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: This bundle is intended for MDS600 dual domain support in Blade configuration;
dual domain is not supported in rack and tower configuration (ML, DL & SL).

Related Options

	HP MDS600 with (70) 1TB LFF SATA HDD Bundle	AX668A

NOTE: Includes seventy 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.

HP MDS 600 with (70) 450GB LFF SAS Hard Disk Drive Bundle — AX669A

NOTE: Includes seventy 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.

NOTE: This bundle is intended for MDS600 dual domain support in Blade configuration; dual domain is not supported in rack and tower configuration (ML, DL & SL).

HP MDS 600 with (70) 300GB LFF SAS Hard Disk Drive Bundle — AX671A

NOTE: Includes seventy 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.

NOTE: This bundle is intended for MDS600 dual domain support in Blade configuration; dual domain is not supported in rack and tower configuration (ML, DL & SL).

NOTE: For direct attached storage (MDS6000) please order HP Smart Array P700m/512 Controller. For RAID 6 and cache data retention, battery option kit is required.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13257_na/13257_na.html

Mini SAS to Mini SAS Cables	2M Mini SAS cable	407339-B21

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

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13170_na/13170_na.html

HP Tape Backup	**HP 1/8 G2 Tape Autoloader**	
	HP 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP 1/8 G2 Ultrium 920 SAS Autoloader	AH558A
	HP 1/8 G2 Tape Autoloader Rack Kit	AH166A

NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions.

NOTE: Please reference the Tape Autoloader QuickSpecs at:
http://www.hp.com/go/automation for additional information needed to create a complete solution.

HP MSL2024 Tape Library

HP MSL2024 1 LTO-4 Ultrium 1760 SAS Tape Library	AK378A
HP MSL2024 Ultrium 920 SAS Tape Library	AH559A

HP MSL4048 Tape Library

HP MSL4048 2 LTO-4 Ultrium 1760 SAS Tape Library	AK380A
HP StorageWorks MSL4048 Ultrium 920 SAS Tape Library	AH560A

Related Options

NOTE: Please reference the MSL Tape Library QuickSpecs at:
http://www.hp.com/go/automation for additional information needed to create a
complete solution; reference current compatibility information at:
http://www.hp.com/go/ebs.

Technical Specifications

Dimensions	4 in x 4.5 in x 0.8 in (10.1 cm x 11.4 cm x 2 cm)
Disk Drive and Enclosure	3G SAS (Serial Attached SCSI)
Protocol Support	1.5G SATA (Serial AT Attachment)
SAS Connectors	4 x2 SAS port connections through the Blade mezzanine connector
PCI	PCI Express
PCI Bus Speed	x8 2.5G PCI Express (2 GB/s maximum bandwidth in each direction)
Memory Bus Speed	DDR2-533MHz and 40-bit (256 MB Cache) or 72-bit wide bus(512MB Cache)
SAS Port Link Rate	3G per physical link and 6G per x2 mezz to switch link (2 x 3G
Software upgradeable Firmware	Yes
Cache Memory	256 MB or 512 MB ECC protection, battery-backed optional, and removable
Logical Drives Supported	Up to 64 logical drives **NOTE:** Supports greater than 2 TB logical drives.
Maximum Capacity	200 TB using 100 x2TB SAS or SATA drives
Memory Addressing	64-bit, supporting servers memory space greater than 4 GB
RAID Support	RAID 6 (Advanced Data Guarding) - P700m/512 only (requires battery support) RAID 5 (Distributed Data Guarding) - P700m/512 only RAID 1+0 (Striping & Mirroring) RAID 1 (Mirroring) RAID 0 (Striping) **NOTE:** The RAID support available is dependent on the number of drives assigned to each HP P700m Controller.
Upgradeable Firmware	4-MB flashable ROM with redundant firmware images

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.