

Overview

The HP Smart Array P700m is HP's first mezzanine Card PCI-Express (PCIE) supporting shared SAS Storage. It is one of the highest performing controllers in the 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 HDD per HP Smart Array P700m Controller.

Models

HP Smart Array P700m/256 Controller	507925-B21
HP Smart Array P700m/512 Controller	508226-B21
HP Smart Array P700m/512 Battery Option Kit	452348-B21
Battery-backed write cache upgrade	383280-B21

NOTE: Supports all HP ProLiant Blade Servers, except HP ProLiant BL2x220 server blade.

NOTE: Supports the HP ProLiant BL2x220 server blade.

NOTE: A half height blade server must have a Smart Array P700m Controller (P/N 508226-B21 or 507925-B21) installed in server mezzanine slot 1 or mezzanine slot 2. The preferred slot is mezzanine slot 2.

A full height blade server must have a Smart Array P700m Controller (508226-B21 or 507925-B21) installed in server mezzanine slot 1, mezzanine slot 2 or mezzanine slot 3. The preferred mezzanine slot is slot 2.

A double density blade server must have a Smart Array P700m Controller (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.

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 Storage of up to 192 TB
- 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
- 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 supports RAID 6 with ADG, logical drive extension, and RAID migration Recovery ROM protects against a ROM corruption
- Ships standard with one battery
- 3 year parts only warranty

Online Management Features

- Online Array Expansion
- Online RAID Level Migration
- Online Stripe Size Migration
- Online Spares (Global)
- User Selectable Expand and Rebuild Priority
- Online Logical Drive Extension Availability

Performance

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

- 3G SAS (300MB/s bandwidth per physical link)
- P700m/512 MB 72-bit wide DDR2-533MHz, battery-backed write cache

Capacity

- Provides HP BladeSystem c-Class Systems with the capability to expand external storage with either SAS or SATA drives up to 192 TB in a shared storage configuration and up to 420TB in a direct attached storage configuration.

Standard Features

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 StorageWorks Modular Smart Array Enclosures

Fault Tolerance

Keeps data available and server running while a failed drive is being replaced; several fault tolerance configurations are supported including:

- Advanced Data Guarding (RAID 6) P700m/512: 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) 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.

Standard Features

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 StorageWorks Modular Smart Array enclosures

Compatibility

Servers	HP ProLiant BL2x 220c G5 HP ProLiant BL280c G6 HP ProLiant BL460c HP ProLiant BL460c G5 HP ProLiant BL460c G6 HP ProLiant BL465c HP ProLiant BL465c G5 HP ProLiant BL465c G6 HP ProLiant BL490c HP ProLiant BL490c G6 HP ProLiant BL495c G5 HP ProLiant BL680c G5 HP ProLiant BL685c HP ProLiant BL685c G5 HP Integrity BL860c HP Integrity BL870c
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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.

Operating Systems	Microsoft Windows 2003 Microsoft Windows 2003 R2 Microsoft Windows 2008 SLES 9 SP 4 SLES 10 SP1 VMware 3.5 U3 Red Hat Enterprise Linux 4 U6 Red Hat Enterprise Linux 5 U2 Operating System Support for Integrity server blades HP-UX 11i v3 and HP-UX 11i v2 Microsoft Windows for Integrity 2003 and 2008 (6.2) Solaris OpenVMS (8.3-1H1)
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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, please visit our Support Matrix at: <http://www.hp.com/go/supportos>.

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

Compatibility

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

Smart Array P700m Features

- Smart Array PCIe mezzanine card that connects to a HP 3G SAS BL Switch the c-Class enclosure's high speed mid-plane.
- 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
- Supports connection to both SAS and SATA hard drives
- 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 supports RAID 5, 6 with ADG, logical drive extension, and RAID migration
- Recovery ROM protects against a ROM corruption

Service and Support, HP Care Pack, and Warranty Information

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

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: <http://www.hp.com/hps/hardware/>

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: <http://www.hp.com/hps/carepack/>

Options

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

Hard Drives	HP StorageWorks MSA2 146GB 3G 15K 3.5-inch SAS DP HDD	AJ735A
	HP StorageWorks MSA2 300GB 3G 15K 3.5-inch SAS DP HDD	AJ736A
	HP StorageWorks MSA2 450GB 3G 15K 3.5-inch SAS DP HDD	AJ737A
	HP StorageWorks MSA2 500GB 7.2K 3.5-inch SATA HDD	AJ738A
	HP StorageWorks MSA2 750GB 7.2K 3.5-inch SATA HDD	AJ739A
	HP StorageWorks MSA2 1TB 7.2K 3.5-inch SATA HDD	AJ740A

HP StorageWorks 2000sa Modular Smart Array	HP StorageWorks 2012sa Single Controller Modular Smart Array	AJ752A
	HP StorageWorks 2012sa Dual Controller Modular Smart Array	AJ753A
	HP StorageWorks 2000sa Modular Smart Array Controller	AJ754A
	HP StorageWorks MSA2000 Single I/O 3.5 in 12 Drive Enclosure (w/ two .6m SAS cables)	AJ749A
	HP StorageWorks MSA2000 Dual I/O 3.5 inch 12 Drive Enclosure (w/ two .6m SAS cables)	AJ750A
	HP StorageWorks MSA2000 Drive Enclosure I/O Module	AJ751A

HP MSA2000sa 3Gb BL SAS Switch Bundle	HP MSA2000sa 3Gb BL SAS Switch Bundle	AP716A
	NOTE: Bundle includes:	
	(1) HP MSA2021sa DC Modular Smart Array(P/N AJ753A)	
	(1) HP 3Gb SAS BL Switch Dual Pack (P/N AJ865A)	
	(4) HP Mini SAS 2M Cables (P/N 407339-B21)	
	Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13045_na/13045_na.html	

Mini SAS to Mini SAS Cables	NOTE: Cables for use connecting the Smart Array P700m Controller with the HP StorageWorks 60 Modular Smart Array and HP StorageWorks 70 Modular Smart Array.	
	2M Mini SAS cable	407339-B21

3Gb SAS BL Switch	HP StorageWorks 3Gb SAS BL Switch (CTO Only)	AJ864A
	HP StorageWorks 3Gb SAS BL Switch - Dual Pack	AJ865A

Options

BladeSystem Enclosures	<p>HP BladeSystem c3000 Tower Enclosure with 8 Insight Control Environment Trial Licenses. 458032-B21</p> <p>NOTE: Includes 4 AC Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive and 8 Insight Control Environment Trial Licenses.</p> <p>HP BladeSystem c3000 Tower Enclosure with 8 Insight Control Environment for BladeSystem Licenses 458033-B21</p> <p>NOTE: Includes 4 AC Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive and 8 Insight Control Environment Licenses.</p> <p>HP BladeSystem c3000 CTO Enclosure - Tower 458034-B21</p> <p>NOTE: CTO model includes 4 Active Cool Fans</p> <p>HP BladeSystem Single-Phase c3000 Enclosure 437502-B22</p> <p>NOTE: Includes 4 AC Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive, rail kit, and 8 Insight Control Environment Trial Licenses.</p> <p>HP BladeSystem c3000 Single-Phase Enclosure 437504-B22</p> <p>NOTE: Includes 4 AC Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive, rail kit, and 8 Insight Control Environment Licenses.</p> <p>HP BladeSystem c3000 Tower Enclosure 469499-B21</p> <p>NOTE: Includes 2 AC Power Supplies, 4 Fans, an Onboard Administrator module, a DVD drive and Trial Licenses; additional power supplies and fans can subsequently be added to support more than 4 blades.</p> <p>HP BladeSystem c3000 Tower Enclosure 469500-B21</p> <p>NOTE: Includes 2 AC Power Supplies, 4 Fans, an Onboard Administrator module, a DVD drive and Insight Control Environment for BladeSystem Licenses; additional power supplies and fans can subsequently be added to support more than 4 blades.</p>
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Tape Autoloaders	<p>HP StorageWorks 1/8 G2 Tape Autoloader</p> <p>HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader AK377A</p> <p>HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader AH558A</p> <p>HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit AH166A</p> <p>NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions.</p> <p>NOTE: Please reference the Tape Autoloader QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution.</p>
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Tape Libraries	<p>HP StorageWorks MSL2024 Tape Library</p> <p>HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library AK378A</p> <p>HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library AH559A</p> <p>HP StorageWorks MSL4048 Tape Library</p> <p>HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library AK380A</p> <p>HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library AH560A</p> <p>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.</p>
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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 72-bit wide bus
SAS Port Link Rate	3G per physical link and 12G per x4 wide port connector (4 x 3G)
Software upgradeable Firmware	Yes
Cache Memory	512 MB Read/Write ECC protection, battery-backed, and removable
Logical Drives Supported	Up to 64 logical drives NOTE: Supports greater than 2 TB logical drives.
Maximum Capacity	192 TB
Memory Addressing	64-bit, supporting servers memory space greater than 4 GB
RAID Support	RAID 6 (Advanced Data Guarding) - P700m/512 only 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 Blade Server.
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.
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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.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.

