

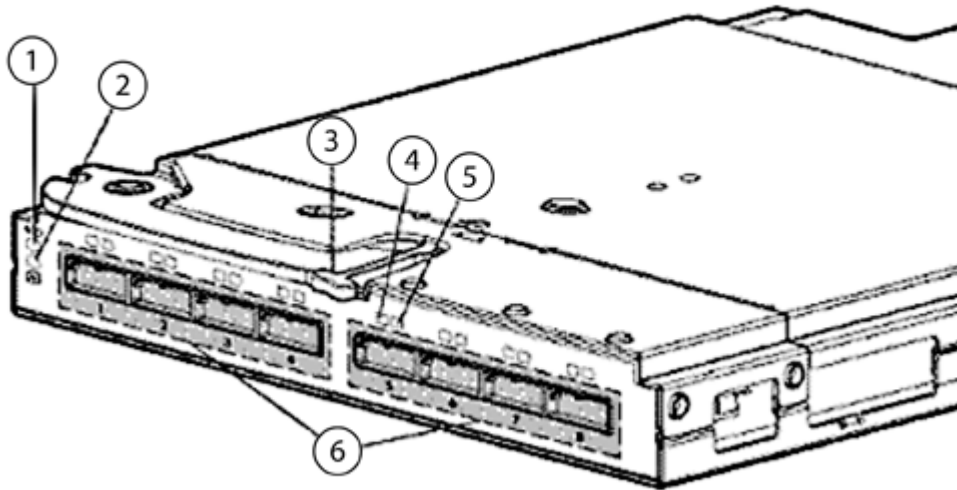
Overview

The HP StorageWorks 3Gb SAS BL Switch for HP BladeSystem c-Class enclosures is an integral part of HP direct connect SAS storage, enabling a straight forward external zoned SAS or shared SAS storage solution. The SAS architecture combines a P700m Smart Array in each server, and 3Gb SAS BL switches connected to HP StorageWorks MDS600 enclosures for zoned SAS, or MSA2000sa arrays for shared SAS storage.

The 3Gb SAS BL Switch enables two external SAS storage solutions for BladeSystem servers:

- Zoned SAS: Use the Virtual SAS Manager of the 3Gb SAS BL Switch to zone groups of physical drives in the MDS600 and assign them to individual blade servers. The drives in the zone will appear as local drives to that individual server. A P700m Smart Array controller installed in the server provides RAID functionality for the group of physical drives that have been zoned to that server.
- Shared SAS: The 3Gb SAS BL Switch can also be used to access shared SAS storage provided by the MSA2000sa. A P700m Smart Array controller installed in each server acts as a pass through, with RAID functionality for shared SAS storage provided by the MSA2000sa array. The MSA2000sa creates a shared storage environment where more than one blade server can access a storage logical unit.

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



1. Unit ID LED

- Blue-Being identified.
- Off-Normal.

2. Health LED

- Green-Healthy.
- Off-Not powered up.
- Amber-There is a problem with the switch.

4. Link LED

- Solid green-A link between server and storage is established.
- Blinking green-There is activity on the established link.
- Off-There is no link between the server and storage.

5. Fault LED

- Off-Normal.
- Amber-There is a problem with the port.

Overview

3. Release button for the locking latch handle
6. SAS ports (to external storage)

At A Glance

- Hot Pluggable 3Gb/s SAS Switch for HP BladeSystem
- Dual Domain architecture support
- Eight 3 Gb/s SAS ports
- Use the 3G SAS BL Switch Virtual SAS Manager to configure external SAS storage
- Use SAS cables to connect to MDS600 enclosures for zoned SAS or MSA2000sa enclosures for shared SAS
- Supported by c3000 and c7000 BladeSystem enclosures
- Supports SAS tape devices for optional backup

For detailed deployment information, see the HP direct connect external SAS storage for HP BladeSystem deployment guide:

<http://h20000.www2.hp.com/bizsupport/TechSupport/DocumentIndex.jsp?contentType=SupportManual&lang=en&cc=us&docIndexId=64180&taskId=101&prodTypeId=3709945&prodSeriesId=3832737>

Models

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

Solutions Components

Configuration Rules: 3Gb/s SAS Switch:

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

Use the 3Gb/s SAS BL Switch Virtual SAS Manager to configure external SAS storage. Supported Internet browser versions: Microsoft Internet Explorer 6.0/7.0, Mozilla Firefox 3.

P700m:

- A half height blade server must have a P700m (508226-B21 or 507925-B21) installed in server mezzanine slot 1 or mezzanine slot 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.
- 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.

Related Items

HP MDS600

Use the Virtual SAS Manager of the 3Gb SAS BL Switch to zone groups of physical drives in the MDS600 and assign them to individual blade servers. The drives in the zone will appear as local drives to that server. A P700m Smart Array controller installed in the server provides RAID functionality for the group of physical drives that have been zoned to that server. For more information on the MDS600, see:

www.hp.com/go/mds600

HP MDS600 with two Dual Port I/O Module System

AJ866A

NOTE: Base model for SAS and SATA drives. Includes redundant hot plug power supplies and fans.

Add AP763A when using dual ported SAS drives to create a dual domain environment.

HP Option Kit with two Dual Port I/O Modules for MDS600

AP763A

NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to create a dual domain environment. Includes redundant hot plug power supplies and fans.

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) 1TB LFF SATA HDD 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.

Solutions Components

	HP MDS600 w/(35) 450GB LFF SAS 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.	
MSA2000sa	The 3Gb SAS BL Switch can also be used to access to shared SAS storage provided by the MSA2000sa. A P700m Smart Array controller installed in each server acts as a pass through, with RAID functionality for shared SAS storage provided by the MSA2000sa array.	
	HP StorageWorks 2312sa G2 Dual Controller Modular Smart Array (LFF)	AJ805A
	HP StorageWorks 2324sa G2 Dual Controller Modular Smart Array (SFF)	AJ807A
	For more information on the MSA2000sa, see: www.hp.com/go/msa2000sa	
P700m	HP Smart Array P700m Controller/256	507925-B21
	HP Smart Array P700m Controller/512	508226-B21
	Battery Kit for P700m Controller/512	452348-B21
	For more information on the P700m, see: www.hp.com/go/p700m	
SAS cable	2M Mini SAS cable	407339-B21
Tape Drives	LTO Ultrium Tape Drives	
	HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive	DW085A
	HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive	EH847A
	HP StorageWorks 1U SAS Rack-Mount Kit with one LTO-4 Ultrium 1760	EH946A
	HP StorageWorks LTO-4 Ultrium 1840 SAS Internal Tape Drive	EH860A
	Rack-mount Tape Drive Enclosures	
	HP StorageWorks 1U SAS Rack-Mount Kit	AE459A
	HP StorageWorks 3U SAS Rack-mount Kit	AG576A
	Tape Autoloaders	
	HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	Tape Libraries	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library	AH560A
	HP StorageWorks MSL8096 2 LTO-4 Ultrium 1760 SAS Drive Library	AH382A
	NOTE: HP recommends a maximum of 2 tape drives per 3Gb SAS BL Switch and 64K transfer sizes. Attaching a library with 4 tape drives requires purchasing a second tape library SAS cable (AN975A or AN976A) and attaching 2 drives to the redundant 3Gb SAS BL Switch. Attaching more than 2 tape drives per switch and transfer sizes greater than 64K could result in a failed backup or restore. A future release of firmware on the tape library drives will allow more than 2 tape drives to be attached to a switch.	
SAS cables for tape drives	2M External Mini-SAS (SFF8088) to Mini-SAS (SFF8088) 1x SAS Cable	AE470A
	NOTE: Use this cable to connect HP StorageWorks SAS external tape devices to HP SAS controllers with external Mini-SAS (SFF8088) connectors.	
	4M External Mini-SAS (SFF8088) to Mini-SAS (SFF8088) 1x SAS Cable	AE465A
	NOTE: Use this cable to connect HP StorageWorks SAS external tape devices to HP SAS controllers with external Mini-SAS (SFF8088) connectors.	
	2M External Mini-SAS (SFF8088) 1x to Mini-SAS (SFF8088) 4x fanout SAS Cable	AN975A
	NOTE: Use this cable to connect HP StorageWorks MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	

Solutions Components

4M External Mini-SAS (SFF8088) 1x to Mini-SAS (SFF8088) 4x fanout SAS Cable

AN976A

NOTE: Use this cable to connect HP StorageWorks MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.

For more information on tape products, see: www.hp.com/go/tape

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

NOTE: Server Blade Interconnect Limited Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

HP services provide total care and support expertise with committed response designed to meet your IT and business needs.

Service and Support and Warranty Information

HP Care Pack Services

Scalable, Flexible, Dependable. Like your storage.

Your storage is evolving. Get scalable support that evolves with it. HP Care Pack Services is an easy-to-buy, easy-to-use portfolio of packaged services covering your lifecycle needs. You can rely on our highly skilled, HP certified professionals to offer a breadth of expertise across leading storage technologies, and work side by side with you for optimal results. Push services beyond expectations and choose support that meets the changing needs of your business with the same reliability, scalability and flexibility you demand of your storage.

Protect your business beyond the warranty

Standard warranty protects against product defects and some causes of downtime. HP Care Pack Services helps you proactively guard against unplanned downtime which can reduce your productivity and profitability. By using a standard approach to warranty uplifts, such as HP Care Pack Services, customers can be more sure of consistency of operations for both mission-critical and standard business computing.

Extending warranties with HP Care Pack Services

The key to normalizing the warranty of combined solutions-is making service uplift simple: HP Care Pack Services. This portfolio of predefined packages, extending across the entire IT lifecycle, offering consulting, education, technical support, optimization, risk assessment, and more. It's entirely flexible allowing customers to extend the cover to the precise level of support required. Customer's standard hardware warranty, for example, can be upgraded to next-business-day response, to same-day coverage, or even to a committed six-hour call-to-repair service available 24 hours every day of the week.

- Provide consistent, predictable levels of support across your entire department or business
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Are available whenever and wherever you do business

For many products, post-warranty HP Care Pack Services are available when your original warranty has expired. Choose the support levels that meet your business requirements, from basic to mission-critical. <http://www.hp.com/hps/storage>

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

Service and Support and Warranty Information

Recommended Services	HP Care Pack Services recommended for optimal satisfaction of all deployments of your product.																												
	3-Year HP Support Plus 24	<p>24x7x365 hardware and software services - plus cost-saving software updates and more</p> <p>HP Support Plus 24 helps you increase performance and availability with comprehensive, consistent hardware and software services. Working with your IT team, HP Services engineers deliver onsite hardware support and over-the-phone software support around-the-clock 365 days per year. Service coverage encompasses HP products and selected multivendor hardware and software.</p> <p>In addition, this convenient HP Care Pack packaged service makes software updates available to you at substantial savings.</p> <p>Choose Support Plus 24 when you need to:</p> <p>Improve uptime with responsive hardware and software services available anytime Cost-effectively obtain expert 24x7 multivendor hardware and software 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</p>																											
	HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure (OS + ICE)	HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure (OS + ICE)																											
	<table border="1"> <thead> <tr> <th>Product Number</th> <th>Product Name</th> <th>Service Name</th> <th>Care Pack Services Product # and Band</th> <th>Alternate Care Pack Services Product #</th> </tr> </thead> <tbody> <tr> <td>AJ864A</td> <td>HP StorageWorks 3Gb SAS BL Switch (CTO Only)</td> <td>3-Year HP Support Plus 24</td> <td>HA110A3-9LZ</td> <td>-</td> </tr> <tr> <td>-</td> <td>-</td> <td>HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure</td> <td>HA114A1-5N9</td> <td>UF817E</td> </tr> <tr> <td>AJ865A</td> <td>HP StorageWorks 3Gb SAS BL Switch - Dual Pack</td> <td>3-Year HP Support Plus 24</td> <td>HA110A3-4CS</td> <td>-</td> </tr> <tr> <td>-</td> <td>-</td> <td>HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure</td> <td>HA114A1-5N9</td> <td>UF817E</td> </tr> </tbody> </table>	Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #	AJ864A	HP StorageWorks 3Gb SAS BL Switch (CTO Only)	3-Year HP Support Plus 24	HA110A3-9LZ	-	-	-	HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure	HA114A1-5N9	UF817E	AJ865A	HP StorageWorks 3Gb SAS BL Switch - Dual Pack	3-Year HP Support Plus 24	HA110A3-4CS	-	-	-	HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure	HA114A1-5N9	UF817E			
Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #																									
AJ864A	HP StorageWorks 3Gb SAS BL Switch (CTO Only)	3-Year HP Support Plus 24	HA110A3-9LZ	-																									
-	-	HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure	HA114A1-5N9	UF817E																									
AJ865A	HP StorageWorks 3Gb SAS BL Switch - Dual Pack	3-Year HP Support Plus 24	HA110A3-4CS	-																									
-	-	HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure	HA114A1-5N9	UF817E																									



Service and Support and Warranty Information

Related Services	Services that will enhance the user experience in many product deployments.				
	HP SAN Solution Service	<p>Get your SAN implementation right - right from the start.</p> <p>Storage has become essential to the growth and agility of your business. That's why choosing an HP SAN as your data management solution is a smart business decision. But your SAN can deliver the results you need only if it is implemented correctly and integrated with your business.</p> <p>SAN installation, startup, and integration call for specialized expertise in planning and design, hardware configuration, network software installation, and operability verification. Your SAN needs to be configured for high performance and availability. And it needs to be integrated with your applications, management environment, and business processes.</p>			
	HP Data Migration Service	<p>Minimize the risks involved in transferring data to your HP StorageWorks SAN.</p> <p>You need to move your critical enterprise data to your new HP StorageWorks SAN platform. And you need to accomplish that without losing data. And without interrupting your ongoing business operations.</p> <p>HP Data Migration Service helps you lessen the risk of data loss, minimize threats to data integrity, and avoid productivity-sapping performance slowdowns during data transport. A highly experienced HP Services storage specialist works with you to rapidly and securely migrate mission-critical business information across your data center or around the globe - regardless of the complexity of your environment.</p>			
	HP Proactive BladeSystem Service	<p>HP Proactive BladeSystem Service helps you improve the ongoing management and utilization of your HP blade technology and tools in order to provide the reliability and the cost-effective performance your business expects. It covers HP blade servers, storage, network and SAN devices, as well as the HP blade management software suite included in the HP blade enclosure. This proactive service leverages HP's global delivery organization with its experienced technical experts who help IT organizations manage and maintain their IT infrastructures to be more cost-effective and change-ready.</p>			
	Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #
	-	-	HP SAN Solution Service	Contact your HP sales rep or Channel Partner for assistance	Contact your HP sales rep or Channel Partner for assistance
	-	-	HP Data Migration Service	Contact your HP sales rep or Channel Partner for assistance	Contact your HP sales rep or Channel Partner for assistance
	-	-	HP Proactive BladeSystem Service	HE805A1	Contact your HP sales rep or Channel Partner for assistance

Service and Support 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>

Remote Support Technology (RST)-HP Remote Support Pack

Taking a more proactive approach to IT support, the HP Remote Support pack plug-in module easily integrates with HP Systems Insight Manager to provide a powerful, unified "single pane of glass" solution for onsite and remote management.

HP Remote Support Pack enhances HP Systems Insight Manager with intelligent event diagnosis plus the automatic submission of hardware event notifications securely to HP support, including acknowledgment and status returns. It adds remote configuration collections to allow the delivery of assessment and proactive services for your SAN storage and HP-UX environments.

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. <http://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>

Technical Specifications

General Specifications	Communications Processor	MPC8343a running at 400MHz	
	Data path	3G SAS x2 to Server Blade 3G SAS x4 to SAS drives; 1.5G x4 to SATA drives	
	Dimensions (L xW)	1.1" tall, 7.584" wide, and 10.548" deep	
	Weight	5.2 lbs	
Power and Environmental Specifications	Operating	Temperature	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305m (1.8°F per every 1000ft) above sea level to a maximum of 3050m (10,000ft), no direct sustained sunlight. Maximum rate of change is 10°C/Hr (18°F/Hr). The upper limit may be limited by the type and number of options installed.
		Humidity (non-condensing)	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Power requirement	40Watts (Max), 3Watts (Min)	
	Emissions Classifications		

© Copyright 2009 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Windows and Microsoft are registered trademarks of Microsoft Corp., in the U.S. 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.

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