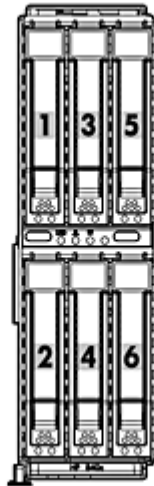# QuickSpecs

Overview

Do you need a direct attached or shared storage solution within your BladeSystem enclosure?

Direct attached storage
The SB40c Storage Blade delivers direct attached storage for c-Class servers, with support for up to six hot plug small form factor (SFF) SAS or SATA hard disk drives. The enclosure backplane provides a PCI Express connection to the adjacent c-Class server blade and enables high performance storage access without any additional cables. The SB40c Storage Blade features an onboard Smart Array P400 controller with 256 MB battery-backed write cache, for increased performance and data protection.

Shared storage
Use HP LeftHand P4000 Virtual SAN Appliance (VSA) software to turn the SB40c into an iSCSI SAN for use by all severs in the enclosure and any server on the network. HP LeftHand VSA software is installed in a virtual machine on a VMware ESX host server adjacent to the SB40c. HP LeftHand P4000 VSA turns the SB40c into a scalable and robust iSCSI SAN, featuring, storage clustering for scalability, Network RAID for storage failover, thin provisioning, snapshots, remote replication, and cloning. Expand capacity within the same enclosure or to other Bladesystem enclosures by adding additional SB40c Storage Blades and HP LeftHand VSA licenses. A cost effective bundle of the SB40c Storage Blade and a HP LeftHand P4000 VSA license makes purchasing convenient. If storage needs increase, add HP P4300 or P4500 systems externally and manage everything via a single pane of glass.

1. Hard Drive Bay 1
2. Hard Drive Bay 2
3. Hard Drive Bay 3

4. Hard Drive Bay 4
5. Hard Drive Bay 5
6. Hard Drive Bay 6

What's New

- Adding support for HP 900GB 6G SAS 10K 2.5in DP ENT HDD

Overview

At A Glance

- **Storage Controller**:
  - Smart Array P400 controller with 256 MB cache, supports RAID 0/1/5/6 (ADG).
- **Internal Drive Support**:
  - Supports up to six (6) SAS or SATA Universal hot plug hard disk drives
  - Mix SAS and SATA drives in the same SB40c
- **Form Factor**:
  - Half-height c-Class storage blade
- **Warranty**:
  - Protected by HP Services and a worldwide network of HP Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply. SATA hard drives have a one year warranty. SAS hard Drives have a three year warranty.

Models

HP SB40c Storage Blade	411243-B21
HP SB40c Configure-to-order Storage Blade	434879-B21
HP SB40c Storage Blade w/(4) 300GB 10K SAS 2.5-inch ENT HDD Bundle	AP762A
HP SB40c Storage Blade and HP LeftHand VSA bundle	AT459A

NOTE: Includes the SB40c Storage Blade and a single LeftHand P4000 VSA license. LeftHand VSA software is installed in a virtual machine on a VMware ESX host server adjacent to the SB40c.
NOTE: Includes 1 yr 9x5 software support for LeftHand P4000 VSA software.
NOTE: LeftHand P4000 VSA is supported on VMware ESX 3.0.2, 3.5, ESX i version 3.5 and ESX 4.0
For detailed deployment information, see the HP LeftHand P4000 VSA in an HP BladeSystem environment solution guide:
http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c01729139/c01729139.pdf

Product Highlights

Key Features	Features of the SB40c include:
	SFF (SAS/SATA) support - Delivering data transfer rates up 3 Gb/s for SAS and 1.5 Gb/s for SATA

- Support for up to six (6) hot plug SFF SAS or SATA Universal drives in a half-height blade
- Internal Smart Array P400 controller with 256 MB DDR2 BBWC
- Simple configuration and setup with HP's Array Configuration Utility (ACU)
- Easy to maintain and troubleshoot with industry standard management tools including HP System Insight Manager
- Use with HP LeftHand Virtual SAN Appliance software to create a robust shared storage environment inside BladeSystem enclosures

Mix and Match of Hard Drive Types	A benefit of SAS and SATA is the use of a common physical connection which allows for both drive types to be supported by the same storage device. This common backplane allows customers the choice of using SAS and/or SATA, allowing customers to choose the reliability of SAS or the lower cost of SATA for tiered storage.
Universal hot plug Hard Drive	Form factor is for use across multiple HP ProLiant servers, disk enclosures and storage systems. With compatibility across many enterprise platforms, you are free to deploy and re-deploy these drives to quickly deliver increased storage capacity, migrate data between systems, and easily manage spare drives.
LED Indicators	Front panel LEDs indicate drive activity and system health status.
Density	The SB40c fits into a half height bay on the BladeSystem c3000 and c7000 Enclosure.
Fault Tolerance	Using the internal Smart Array P400 controller with 256 MB DDR2 BBWC, the SB40c can be configured for RAID levels 0, 1, 1 + 0, 5, and 6 (RAID ADG)
Manageability	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 the HP server storage.

Product Highlights

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 ProLiant Storage System and newer HP storage enclosures.

Operating Systems

Microsoft Windows Server 2003, 2008
Windows 2008 R2 and SP2
HP-UX 11i v3, HP-UX 11i v2 (when configured to HP Integrity Server Blades only)
OpenVMS 8.4 (when configured with HP Integrity Server Blades only)
Red Hat Enterprise Linux
SUSE LINUX Enterprise Server
VMware
Solaris

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.

Software Suite

Systems Insight Manager

- Powerful server and server options/storage manager tool
- Monitors over 1,200 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 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 offline for all supported Operating Systems and runs online for Windows and Linux. For online configuration of NetWare, use CPQONLIN

HP Option ROM Configuration for Arrays (ORCA)

- A simple method for managing logical drives during system power up by pressing F8 during POST
- Allows the ability to create arrays, logical drives, and assign an online spare drive
- Allows the ability to view and delete logical drives
- Allows the ability to select the boot controller or advanced array configurations use ACU

Product Highlights

HP Array Diagnostic Utility (ADU)

- In depth diagnostic and reporting utility for all Smart Array controllers
- Runs offline for all supported Operating Systems, and runs online for Windows and Linux

Service and Support, HP Care Pack, and Warranty Information

Warranty	Protected by HP Services and a worldwide network of HP Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply.
	Hard drive Pre-Failure Warranty: When used with any one of the Smart Array Family controllers and monitored under HP Systems Insight Manager (v4.20 or later), HP hard drives are supported by a Pre-Failure (replacement) Warranty. SATA hard drives have a one year warranty.

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. Partner with HP Technology Services to boost availability and avoid costly downtime by mitigating technology-related business risks. To help take the worry out of deploying, supporting and managing your storage technologies, we've designed a portfolio of service options that are as flexible, scalable and affordable as our 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 certain 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. In the new world of business technology, when your technology has to work for your business to work, who can you trust to make your technology work? HP Technology Services, the trusted business technology experts who manage your technology in action, because when technology works, business works.
http://www.hp.com/hps/storage

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

Service and Support, HP Care Pack, 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   3-Year HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. HP Services engineers deliver reactive onsite hardware support and over-the-phone software support around-the-clock.

HP Install Storage Blade Service   HP Install Storage Blade Service provides initial hardware installation of your HP Storage Blade (System configuration is not included).

Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #
434879-B21	HP BLc SB40c Mod X Storage Blade	3-Year HP Support Plus 24	HA110A3-87F	
		HP 3y 4h 13x5 BLcSB40c StrgBlade HW Supp		UF206E
411243-B21	HP BLc SB40c Storage Blade Opt Kit	3-Year HP Support Plus 24	HA110A3-87F	
		HP 3y 4h 24x7 BLcSB40c StrgBlade HW Supp		UF207E
AP762A	SB40c w/ (4) 300GB SAS SFF bundle	3-Year HP Support Plus 24	HA110A3-87F	
		HP 3y 6h 24x7 CTR SB40c StrgBlade HWSupp		UF208E
		HP Install Storage Blade Service	HA113A1-5LQ	UF213E

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

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure (OS + ICE)   HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure provides basic hardware and software installation of your c-class BladeSystem. This service includes service planning, deployment, Installation verification tests (IVT) and a customer orientation session.

HP Entry Storage Data Migration Service for Windows   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

Service Name	Care Pack Services Product # and Band	Alternate Care Pack Service Product #
HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure (OS + ICE)	HA114A1-5N9	UF817E
HP Entry Storage Data Migration Service for Windows	Contact your HP sales rep or Channel Partner for assistance	Contact your HP sales rep or Channel Partner for assistance

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

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. www.hp.com/learn/storage

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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.ww2.hp.com/services/cache/77318-0-0-225-121.html

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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 - Factory Integrated Models (North America Only)

Step 1: SB40c Storage Blade Configuration

Models

HP SB40c Storage Blade	411243-B21
HP SB40c Configure-to-order Storage Blade	434879-B21
HP SB40c Storage Blade w/(4) 300GB 10K SAS 2.5-inch ENT HDD Bundle	AP762A
HP SB40c and LeftHand P4000 VSA bundle	AT459A

NOTE: Includes the SB40c Storage Blade and a single LeftHand P4000 VSA license. LeftHand VSA software is installed in a virtual machine on a VMware ESX host server adjacent to the SB40c.
NOTE: Includes 1 yr 9x5 software support for LeftHand P4000 VSA software.
NOTE: LeftHand P4000 VSA is supported on VMware ESX 3.0.2, 3.5 and ESX i version 3.5

QuickSpecs

HP SB40c Storage Blade

Options

c-Class Mezzanines	HP PCI Express Mezzanine pass-thru card for HP BladeSystem	431643-B21
	NOTE: Required to support the HP SB40c Storage Blade (P/N 411243-B21) with HP c-Class BladeSystem full-height server blades	

Support for up to six Hard Drives	**SAS Hot Plug SFF Enterprise (ENT) Drives**	
	HP 900GB 6G SAS 10K SFF DP HDD	619291-B21
	HP 600GB 6G SAS 10K SFF DP HDD	581286-B21
	HP 450GB 6G SAS 10K SFF DP HDD	581284-B21
	HP 300GB 6G SAS 10K SFF DP HDD	507127-B21
	HP 146GB 6G SAS 10K SFF DP HDD	507125-B21
	HP 146GB 6G SAS 15K SFF DP HDD	512547-B21
	HP 72GB 6G SAS 15K SFF DP HDD	512545-B21

NOTE: SAS drives have a 3 year warranty.
NOTE: Please see the for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

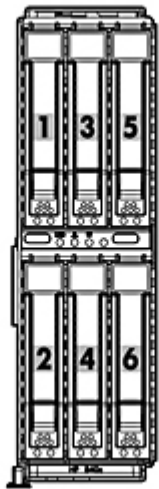|	
HP 500GB 6G SAS 7.2K rpm SFF DP Midline HDD	507610-B21
HP 1TB 6G SAS 7.2K rpm SFF DP Midline HDD	605835-B21

NOTE: Midline SAS drives have a 1 year warranty. Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

SFF SATA Hot Plug Entry (ETY) Drives

HP 1TB 3G SATA 7.2K 2.5in MDL HDD	625609-B21
HP 500GB 3G SATA 7.2K SFF MDL HDD	507750-B21
HP 160GB 3G SATA 7.2K SFF MDL HDD	530888-B21
HP 120GB 3G SATA SFF MDL SSD	572073-B21
HP 60GB 3G SATA SFF MDL SSD	572071-B21

NOTE: SATA drives have a 1 year warranty. Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)

NOTE: Go to the HP Hard Drive Compatibility table for complete drive compatibility information (http://www.hp.com/products/harddiskdrives). Using hard drives in unsupported configurations will result in voiding the warranty and could result in damage to the drive and/or loss of data.

Storage

1-6   6 x SFF SAS or SATA Universal hot plug hard drive bays

Hard Drives

SAS Hot Plug SFF Enterprise (ENT) Drives

Quantity Supported	Position Supported	Controller
6	1-6	Smart Array P400 Controller

SFF Serial-ATA (SATA) Hard Drive

Quantity Supported	Position Supported	Controller
6	1-6	Smart Array P400 Controller

QuickSpecs

Technical Specifications

HP SB40c Storage Blade	Dimensions (HxWxD)	2.19 x 7.154 x 20.058 in (5.56 x 18.17 x 50.95 cm)
	Weight (unloaded)	8 lb (3.63 kg)
	Weight (loaded)	11 lb (4.99 kg)
	Protocol Support	3 Gb/s SAS 1.5 Gb/s SATA
	O/S Support	Defined by specific HP array controller or SAS/SATA adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or adapter
	LED Indicators	UID System Health LED
	Drive LED Indicators (on drive trays)	Drive LED (top) - On-line/Activity Drive Failure LED (bottom) - Drive Fault/Locate
	Relative Humidity (non-condensing)	Operating 10% to 90% Shipping 5% to 95%
	Temperature Range	Operating 50° to 94° F (10° to 35° C°) Shipping -22° to 140° F (-30° to 60° C)

NOTE: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

	Power Consumption	12V/8A

Smart Array P400 Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR2-533MHz with provides up to 4.2 GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4 GB/s maximum bandwidth.
	Cache Memory	40-bit 256 MB cache; ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical drives
	Maximum Logical Drive Capacity	greater than 2 TB
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6 with ADG (Advanced Data Guarding) RAID 5 (Distributed Data Guarding) RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature

Technical Specifications

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.

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