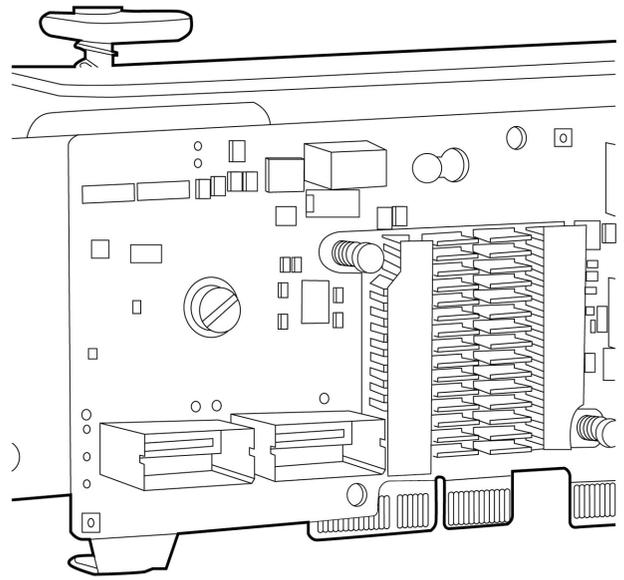
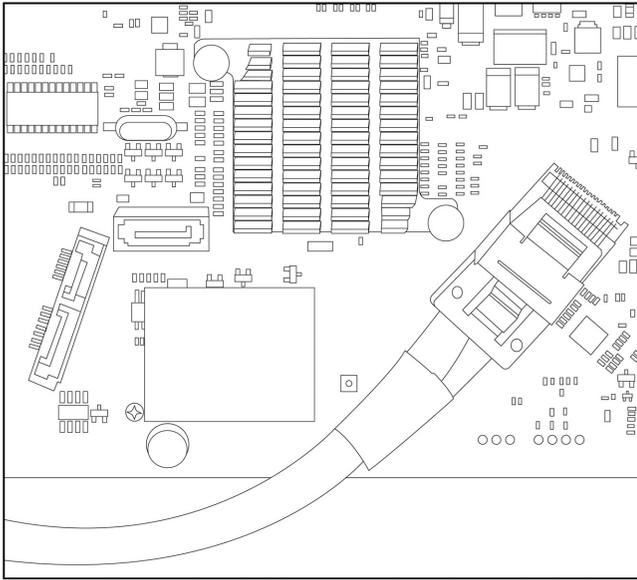


Overview

HP Dynamic Smart Array is a RAID solution combining a storage host bus adapter (HBA) and proprietary software components. Eliminating most of the hardware RAID controller components and relocating advanced RAID algorithms from a hardware-based controller into device driver software lowers the total solution cost, while still maintaining comparable RAID protection and full compatibility with Smart Array disk format, configuration utilities, and management/monitoring software.

The Dynamic Smart Array controllers share the same easy and consistent UI with standup Smart Array controllers, thus making storage management and deployment easier for IT workers.



Models

HP Dynamic Smart Array RAID Controllers HP Dynamic Smart Array B120i Controller

Embedded on system board

HP Dynamic Smart Array B320i Controller
NOTE: Daughter card with HP ProLiant BL420c Gen8.

Embedded on PCI riser or daughter card

Standard Features

HP Dynamic Smart Array B120i & B320i

HP's innovative design and integration work of 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 through:

Data Compatibility among all models of Smart Array controllers allows simple and easy upgrades any time needs for higher performance, capacity, and availability increase. Even successive generations of Smart Array controllers understand the data format of other Smart Array Controllers.

Built on embedded controller. HP Dynamic Smart Array controllers provide critical data protection at a lower cost to customers by building the RAID algorithms into device driver software.

Performance and data protection innovation. HP has extended the support of SATA Solid State Disks into the Dynamic Smart Array B120i Controller and support of SAS and SATA Solid State Disks into the Dynamic Smart Array B320i for enhanced performance.

SmartDrive Carrier form factor is for use across HP ProLiant Gen8 servers. 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.

Standard configuration and management across all controllers. The Dynamic Smart Array controllers share the same easy and consistent UI with Smart Array controllers, thus making storage management and deployment easier for IT workers.

Pre-Failure Warranty means HP 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

- Optional 512MB Flash Backed Write Cache (FBWC) (BL420c Gen8, DL160 Gen8, DL360e Gen8, DL380e Gen8, ML350e Gen8)
- System memory used as read cache
- Smart Array RAID engine running in OS driver
- RAID functionality requires driver to be downloaded from HP website for Linux and VMware
- Support for migration of drives to P-Series controllers
- RAID 0, 1, 1+0, Optional RAID 5
- Windows, Linux and VMware support
- Online drive flash support
- Array Configuration Utility (ACU), Systems Insight Manager, and Array Diagnostic Utility (ADU)

Ports

B120i	Up to 6 SATA drives NOTE: NO SAS supported.
B320i	Up to 8 SATA drives; NOTE: SAS supported with optional SAS License key.

Standard Features

Performance

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

B120i

- Up to 6Gb/s SATA drive support (600MB/s bandwidth per physical link)
- x2 6Gb/s SATA physical links (compatible with 3Gb/s SATA)
- **NOTE:** Two SATA ports will be running at 6Gb/s and remaining ports will be running at 3Gb/s.
- 512 MB 40-bit wide DDR3-800MHz flash backed write cache
- write back caching with FBW

B320i

- Up to 6Gb/s SATA or SAS drive support (600MB/s bandwidth per physical link)
 - x8 6Gb/s SATA or SAS physical links (compatible with 3Gb/s SATA)
 - 512 MB 40-bit wide DDR3-800MHz flash backed write cache
 - write back caching with FBWC
-

Capacity

Given the increasing need for high performance and rapid capacity expansion, the HP Dynamic Smart Array Controllers offer:

- Up to 32TB of total internal storage with 8 x 4TB LFF SATA hard drives
 - Up to 9.6TB of total internal storage 8x 1.2TB SFF SAS hard drives (B320i with SAS license)
-

Availability

Provides increased server uptime by providing advanced storage functionality:

- Online RAID level migration (between any RAID level/with FBWC)
 - Online drive firmware upgrade
 - 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 and Reporting Technology first developed at HP detects possible hard disk failure before it occurs, allowing replacement of the hard drive before a real 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.
-

Fault Tolerance

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

- **RAID 5** (Distributed Data Guarding): Supported with a minimum of 3 drives. This allocates one set of parity data across drives. This level of fault tolerance can withstand a single drive failure without downtime or data loss.
 - RAID5 is available on the B120i/B320i with 512MB FBWC
 - **RAID 1, 1+0, 10** (Drive Mirroring): Supported with a minimum of 2 drives. This allocates half of the drive array to the data and the other half to the mirrored data, providing two copies of the data.
-

Standard Features

Fault Recovery

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

- DRAM ECC detects and corrects data bit errors.
 - Flash Backed Write Cache upgrade provides indefinite data retention.
-

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 from B-series to P-series controllers
-

Warranty

The warranty for this device is based on the server warranty as it is embedded and part of the server.

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.

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

Compatibility

Server Compatibility

For up to date compatibility, please see the following URL for complete Smart Array 1 Controller compatibility and support information:

<http://h18006.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html>

Operating Systems

Microsoft Windows 2012 Server (64 bit)

Microsoft Windows 2008 Server R2 (64 & 32 bit)

Red Hat Enterprise Linux 5 (64 & 32 bit)

Red Hat Enterprise Linux 6

SUSE Linux Enterprise Server 10 (64 & 32 bit)

SUSE Linux Enterprise Server 11 (x64 & x86) (64 & 32 bit)

VMware ESX 4.1 u2

VMware ESXi 4.1 u2

VMware ESXi 5.0, 5.0 u1, 5.0 u2, ESXi 5.1

NOTE: Please refer to the server QuickSpecs for full support.

NOTE: For more Linux OS support & certification information, please visit our the ProLiant & BladeSystem Server Linux matrix: <http://h18004.www1.hp.com/products/servers/linux/hplinuxcert.html>

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 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.

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

Service and Support

HP Technology Services

HP Technology Services offers you technical consultants and support expertise to solve your most complex infrastructure problems. We help keep your business running, boost availability, and avoid downtime.

Protect your business beyond warranty with HP Care Pack Services

When you buy HP Options, it's also a good time to think about what level of service you may need. HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

HP Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help you deliver high levels of application availability through proactive service management and advanced technical response.

Here is the support service recommendation from the Foundation Care and Proactive Care portfolio. For customized support service solution, HP can work with you to tailor a service solution for your unique support requirements using broader services portfolio of Foundation Care and Proactive Care.

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

Recommended Services

3-Year HP 24x7 4 hour Response, Proactive Care

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you

OR

3-Year HP 24x7 4 hour Response, HP Collaborative Support

Provides problem resolution support across the stack of HW, firmware, and HP and 3rd party SW. In case the issue is with 3rd party SW, HP does known issue resolution. If HP cannot solve the issue, it will contact the third-party vendor and create a problem incident on your behalf

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-8232ENW.pdf>

HP Installation of ProLiant Add On Options Service

This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware or software is installed smoothly, efficiently, and with minimal disruption of your IT and business operations

Service and Support

Related HP Care Pack Services to enhance your HP product experience

Related Services

3-Year HP 24x7 4 hour Response, Proactive Care

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you

OR

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

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

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

3-Year HP 6-hour Onsite Call-to-Repair, HP Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request to the HP Global Solution Center, and basic software problem diagnosis, fault isolation, and resolution if available to HP.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-8232ENW.pdf>

HP Proactive Select Service

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>

Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more

<http://www.hp.com/go/insightremotesupport>

HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

*HP' Support Center Mobile App is subject to local availability

Parts and materials

HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Supplies and consumable parts will not be provided as part of this service; standard warranty terms and conditions apply. Parts and components that have exceeded their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual or the technical product data sheet will not be provided, repaired or replaced as part of this service.

Service and Support

Warranty / Service Coverage

For ProLiant servers and storage systems, this service covers HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

For more information

To learn more on services for HP ESSN Options, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant> or www.hp.com/services/bladeSystem

Related Options

HP Optional Upgrades

HP Dynamic Smart Array Cache options

HP 512MB B-series 36 inch Dynamic Smart Array Flash Backed Write Cache for ML/DLs 631922-B21

HP 512MB B-series Dynamic Smart Array Flash Backed Write Cache with 24 inch Cable 676473-B21

HP Smart Array SAS License Key - for B320i only

HP SAS License Key No Media 1 Svr 1yr 24x7 Support for B320i BC393A

NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).

HP SAS License Key No Media Flex 1yr 24x7 Support for B320i BC393B

NOTE: This part number can be used to purchase multiple licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).

HP SAS License Key No Media E-LTU 1yr 24x7 Support for B320i BC393AAE

NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customer will receive a license entitlement certificate via email. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).

Technical Specifications

HP Dynamic Smart Array B120i Controller	Dimensions	Embedded
	Disk Drive Interface - Transfer rate	Up to 6Gb/s SATA (Serial ATA)
	Connectors	6 internal SATA connectors
	Server Interface	x4 PCIe 2.0
	SATA Speed	6Gb/s SATA links
	Cache Memory	Zero Memory RAID has no cache memory optional 40-bit 512MB ECC protected Flash Backed Write Cache (FBWC)
	Logical Drives Supported	Up to 8 logical volumes (6 physical drives)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	Hot Plug Support	Yes
	RAID Support	RAID 0 (Striping), RAID 1 (Mirroring) RAID 1+0 (Striping & Mirroring) RAID 5 with optional 512MB FBWC NOTE: 512 MB cache is required to enable RAID 5 support NOTE: NO SAS supported.

HP Dynamic Smart Array B320i Controller	Dimensions	Embedded
	Disk Drive Interface - Transfer rate	Up to 6Gb/s SATA (Serial ATA)
	Connectors	2 internal x4 connectors
	Server Interface	x4 PCIe 2.0
	Speed	6Gb/s SAS links
	Cache Memory	Zero Memory RAID has no cache memory optional 40-bit 512MB ECC protected Flash Backed Write Cache (FBWC)
	Logical Drives Supported	Zero Memory, Up to 2 logical volumes (6 physical drives)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	Hot Plug Support	Yes
	RAID Support	RAID 0 (Striping), RAID 1 (Mirroring) RAID 1+0 (Striping & Mirroring) RAID 5 with optional 512MB FBWC NOTE: 512 MB cache is required to enable RAID 5 support NOTE: SAS mode requires purchase of SAS license key. For more information please visit www.hp.com/go/saslicense

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.

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