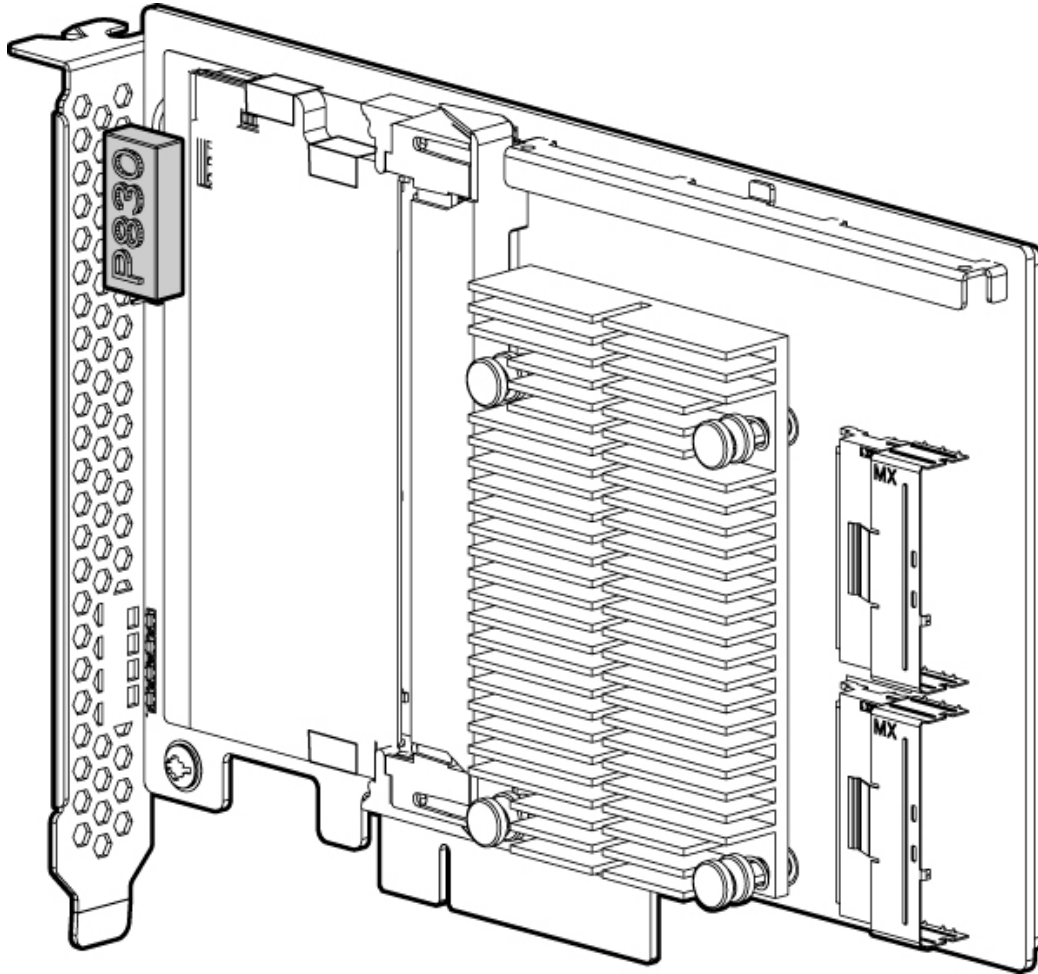# QuickSpecs

Overview

HPE Smart Array P830 Controller

The HPE Smart Array P830 Controller is a full height, half length, 12 Gb/s SAS capable, PCIe 3.0, RAID controller that provides enterprise class storage performance for select HPE ProLiant Gen8 rack servers and tower servers. It features 16 physical SAS/SATA lanes each supporting 12 Gb/s or 6 Gb/s SAS or SATA protocol. Advanced storage functionality, such as Advanced Data Mirroring, Advanced Data Guarding, dual domain, makes it easier to protect the data.

HPE Smart Array P830 Controller

Models

HPE Smart Array P830/4GB FBWC 12Gb 2-ports Int SAS Controller (Extended)	698533-B21

Standard Features

The Smart Array Advantage	The HPE 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 HPE 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.

Consistent Configuration and Management Tools. Most current shipping 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 HPE server storage.

Smart Carrier is used across multiple Hewlett Packard Enterprise 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.

Pre-Failure Warranty means HPE 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 HPE Support Center or refer to your HPE Server documentation.

Key Features

- The P830 Controller supports up to 16 drives without expander; for example on a DL38x Gen8 server that comes with 8 SFF drives can scale their internal storage by adding an additional 8 SFF drive cage connected to Smart Array P830
- Seamless upgrades to and from other HPE Smart Array controllers.
- 16 SAS/SATA physical links distributed across 2 double wide Mini SAS 8i connectors for attachment to internal drive backplanes
- 12 Gb/s SAS performance when used on a DL580 Gen8 with 12 Gb/s devices (HDD or SSD)
- 6 Gb/s SAS technology delivers up to 600 MB/s per physical link.
- 6 Gb/s SATA technology delivers up to 600 MB/s for directly attached SATA drives.
- Mix-and-match SAS and SATA drives. Deploy drive technology as needed to fit the computing environment.
- PCI-e 3.0 8x host interface provides up to 8 GiB/s in each direction
- 4GB battery-backed write cache (not all of which is available for user data)
- Standard on the P830 are RAID 6 ADG, RAID 60 ADG, RAID 1 ADM, Capacity Expansion, mirror split, recombine, and rollback in Online Mode, Drive Erase, Performance Optimization-Degraded Reads and Read Coalescing, Move/Delete any individual LUNS and Online Split Mirror.
- Capable of supporting both legacy and UEFI boot operation on a DL580 Gen8 server
- Recovery ROM protects against ROM corruption
- The HPE SSD Smart Path feature included in the Smart Array software stack improves SSD read for all RAID levels and RAID 0 write operations by optimizing the path to each SSD attached to the controller.
- The HPE SmartCache feature (already included with the P830 controller) is a controller-based read caching solution in a DAS environment that caches the most frequently accessed data ("hot" data) onto lower latency SSDs to dynamically accelerate application workloads.
- The HPE Secure Encryption, available as an option, is a Smart Array controller-based data encryption solution for ProLiant Gen 8 servers that protects sensitive, mission critical data.
- Consistent management software among most current shipping HPE Smart Array products, including HPE Smart Storage Administrator (HPE SSA), Systems Insight Manager (SIM), Array Diagnostic Utility (ADU), and Intelligent Provisioning

Ports

- 16 SAS/SATA physical links distributed across 2 double wide Mini SAS 8i connectors

Standard Features

Performance	• 12 Gb/s SAS (1200 MB/s theoretical bandwidth per physical lane) on a DL580 Gen8 • 6 Gb/s SAS (600MB/s theoretical bandwidth per physical lane) • x8 6 Gb/s SAS physical lane (compatible with 6 Gb/s SATA) • 4 GiBytes 72-bit wide DDR3-1866 Flash Back Write Cache provides up to 14.9 GB/s maximum cache bandwidth • PCI Express Gen3 x8 link width • Read ahead caching • Write-back caching
RAID Levels	• **RAID 6** (Advanced Data Guarding): Supported with a minimum of 4 drives. This allocates two sets of parity data across drives. This level of fault tolerance can withstand a double drive failure without downtime or data loss. • **RAID 60:** Supported with a minimum of 8 drives. This volume is composed of two or more RAID 6 sub-volumes (parity groups) where data is striped across each parity group as if it were a single physical drive. Each RAID 6 parity group can sustain up to two drive failures without incurring data loss. • **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. • **RAID 50:** Supported with a minimum of 6 drives. This volume is composed of two or more RAID 5 sub-volumes (parity groups) where data is striped across each parity group as if it were a single physical drive. Each RAID 5 parity group can sustain a single drive failure without incurring data loss. • **RAID 1 & 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. • **RAID 1 ADM & 10 ADM** (Advanced Data Mirroring): Supported with a minimum of 3 drives. RAID 1 ADM creates redundant copies of the data using 3 drives. RAID 10 ADM stripes data across two or more sets of RAID 1 ADM volumes. This level of fault tolerance can withstand a double drive failure within a RAID 1 ADM volume without downtime or data loss.
Online Management Features	• Online array expansion • Online capacity expansion • Online logical drive extension • Online RAID level migration • Online stripe size migration • Online mirror split, recombine and rollback • Online and high performance offline Rapid Parity Initialization (RPI) • Unlimited global online spare assignment • User selectable expand and rebuild priority • User selectable RAID level and stripe size • User selectable read and write cache sizes • Supports Predictive Spare Activation
Availability	Provides increased server uptime by providing advanced storage functionality: • Online RAID level migration between any RAID levels • Online stripe size migration • Online capacity expansion • Online logical drive extension

Standard Features

- Online active drive replacement
- Online drive firmware upgrade
- Unlimited global online spare

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 Hewlett Packard Enterprise servers 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.

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 on most current shipping Smart Array products make them unique in the industry:

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

HPE SSD SmartPath

The HPE SSD Smart Path feature included in the Smart Array software stack improves Solid State Disk (SSD) read performance by up to 4x. HPE SSD Smart Path chooses the optimum path to the SSD and accelerates reads for all RAID levels and RAID 0 writes.

HPE Smart Array SR SmartCache (optional license)

The HPE Smart Array SR SmartCache feature is a controller-based read and write caching solution in a DAS environment that caches the most frequently accessed data ("hot" data) onto lower latency SSDs to dynamically accelerate application workloads. The SmartCache architecture is flexible and supports any HPE ProLiant Gen10 HDD for bulk storage and SSD as an accelerator. SmartCache is deployed and managed using the HPE Smart Storage Administrator (HPE SSA). SmartCache requires an optional license (see Related Options section below for more information on the license).
For additional information please visit: **http://www.hpe.com/servers/smartcache**.

Standard Features

HPE Smart Array SR Secure Encryption (optional license)

HPE Smart Array SR Secure Encryption is a Smart Array controller-based data encryption solution that protects sensitive, mission critical data. This is an enterprise-class encryption solution for data-at-rest on any drives attached to the HPE Smart Array controllers including data on the controller cache. Secure Encryption requires an optional license per server (see Related Options for more information on the license).

The solution is available for both local and remote key management mode deployments. Local Key Management Mode is focused on single server deployment where there is one Master key per controller that is managed by the user. Remote Key Management Mode is for enterprise wide deployments from just a few servers to thousands of servers.

For more information on please visit: **http://www.hpe.com/servers/secureencryption**

Warranty

The warranty for this device is 3 years parts only.

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 HPE System level this product attaches too

Compatibility

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

Operating Systems	Microsoft Windows Server 2008 R2
	Microsoft Windows Server 2012
	Red Hat Enterprise Linux 5 (x64 & x86)
	Red Hat Enterprise Linux 6 (x64 & x86)
	SUSE Linux Enterprise Server 11 (x64 & x86)
	VMware ESXi 5.0 U2
	VMware ESXi 5.1 U1
	VMware vSphere 5.5
	NOTE: HPE Smart Array controllers are supported by the server operating system. For more information on HPE's server operating systems and virtualization software, please visit: **http://www.hpe.com/info/ossupport**

Software Suite	Most current shipping Smart Array products share a common set of configuration, management and diagnostic tools, including HPE Smart Storage Administrator and HPE 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 HPE server storage.

HPE Systems Insight Manager

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

HPE Smart Storage Administrator

- Comprehensive management for HPE Smart Storage products
- Simplified and intuitive interface and functionality
- Advanced scripting and diagnostic features

For more information please visit: **https://www.hpe.com/us/en/product-catalog/detail/pip.5409020.html**

Service and Support

HPE Support Services

Protect your business beyond warranty with HPE Support Services

HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operational Services to help accelerate your digital transformation. From the onset of your transformation journey, Advisory and Transformational Services focus on designing the transformation and creating a solution roadmap. Professional Services specializes in creative configurations with flawless and on-time implementation, and on-budget execution. Finally, operational services provides innovative new approaches like Flexible Capacity and Datacenter Care, to keep your business at peak performance. HPE is ready to bring together all the pieces of the puzzle for you, with an eye on the future, and make the complex simple.

Recommended Support

HPE Proactive Care* with 24x7 coverage, three year Support Service

HPE Proactive Care gives customers an enhanced call experience. When your products are connected to HPE, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This Service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your HPE servers.
https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf

HPE Proactive Care* with 6 hour call-to-repair commitment, three year Support Service

HPE Proactive Care gives customers an enhanced call experience. When your products are connected to HPE, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This Service combines three years' proactive reporting and advice with our highest level of hardware support - HPE's 24x7, six hour hardware call-to-repair. HPE is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable servers. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your HPE servers.
https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf

NOTE: *HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to make the most of these services and receive all the deliverables.

HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment.
http://www.hpe.com/ww/learn

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with HPE experts, access support resources or collaborate with peers.
Learn more **http://www.hpe.com/support/hpesc**
The HPE 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.
HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.
NOTE: *HPE Support Center Mobile App is subject to local availability

Parts and Materials

Hewlett Packard Enterprise will provide HPE-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.

Service and Support

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Related Services	**HPE Server Hardware Installation** Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. **https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf** **HPE Installation and Startup Service** provides for the installation and startup of HPE technology including BladeSystems, C-Class enclosure, HPE ProLiant c-Class and Integrity server blades, storage blades, SAN switch blades, HPE Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and InfiniBand, as well as the installation of one supported operating system type (Windows® or Linux). **NOTE:** The Smart Array controller is covered under the HPE Service Contract applied to the HPE ProLiant Server. No separate HPE support services need to be purchased. Warranty and Support Services will extend to include HPE options configured with your server or storage device. The price of support service is not impacted by configuration details. HPE sourced options that are compatible with your product will be covered under your server support at the same level of coverage allowing you to upgrade freely. Installation for HPE options is available as needed. To keep support costs low for everyone, some high value options will require additional support. Additional support is only required on select high value workload accelerators, fibre switches, InfiniBand and UPS batteries over 12KVA. See the specific high value options that require additional support **HERE**.
For more information	Visit the Hewlett Packard Enterprise Service and Support **website**.
Extended Option	This controller is an Extended Option. Extended Options provide an extended catalog of products tailored for customers in specific markets or with specific workloads, requiring the utmost in performance or value.

Related Options

HPE Secure Encryption	HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU	Q2F26AAE
	NOTE: HPE Secure Encryption licensing is based on the number of servers requiring encryption for direct attached storage.	
	For more information visit: **http://www.hpe.com/servers/secureencryption**	

Technical Specifications

Dimensions (excluding bracket)	6.6 in x 4.4 in x 0.7 in (16.8 cm x 11.1 cm x 1.8 cm)
Disk Drive and Enclosure Interface - Transfer rate	12 Gb/s SAS (Serial Attached SCSI) capable 6 Gb/s SAS (Serial Attached SCSI) 6 Gb/s SATA (Serial ATA)
SAS Connectors	2 internal x8 Mini-SAS double-wide connector
SAS Port Link Rate	6 Gb/s per physical link supported; 12 Gb/s per physical link capable
PCI Link Rate	PCIe3 x8
Cache Memory Speed	DDR3-1866MHz, 72-bit wide bus at 14.9 GB/s (4 GiBytes cache module)
Physical Drives Supported	Up to 16 physical drives without expander
Logical Drives Supported	Up to 64 logical volumes
Host Memory Addressing	64-bit, supporting greater than 4GiB (or 4.4 GB) server memory space
RAID Support	RAID 6, 60 (Advanced Data Guarding) RAID 5, 50 (Distributed Data Guarding) RAID 1, 10 (Drive Mirroring) RAID 1 ADM, 10 ADM (Advanced Data Mirroring) RAID 0 (Striping)
Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature

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Environment-friendly Products and Approach - End-of-life Management and Recycling	Hewlett Packard Enterprise offers end-of-life **product return, trade-in, and recycling programs**, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.
	The EU WEEE Directive (2012/19/EU) 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 Enterprise web site**. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
04-Jun-2018	Version 3	Changed	SKU description and Service and Support were updated.
31-Mar-2014	Version 2	Changed	Removed SKUs from the Hard Drives section.
18-Feb-2014	Version 1	Created	New QuickSpecs

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