QuickSpecs

Overview

Microchip SmartRAID Controllers for HPE Gen 10 Plus

The Microchip SmartRAID Gen10 Plus Controllers for the HPE ProLiant Gen10 Plus Server supporting 12Gb/s SAS and PCIe 4.0, are ideal for maximizing performance while supporting advanced RAID levels with up to 8 GB flash-backed write cache (FBWC). These tri-mode (SAS/SATA/NVMe) controllers operate in Mixed Mode which combines RAID and HBA operations simultaneously. The SmartRAID Gen10 Plus controller portfolio provides the ability to support internally attached drives . The SmartRAID SR Gen10 Plus Controllers also offer encryption for data-at-rest on any drive with SmartRAID SR Secure Encryption. These controllers provide enterprise-class storage performance, reliability, security and efficiency needed to address your evolving data storage needs.

The SmartRAID SR932i-p Gen10 Plus is the industry's most versatile, highest performing and secure PCIe RAID Adapter for applications ranging from SMB to Enterprise and Mission-Critical applications. The SR932i-p Gen10+ adapter is built around the trusted SmartRAID (SR) storage stack and offers 16-lanes of PCIe Gen 4 host bandwidth with 32 Tri-Mode (SAS/SATA/NVME) lanes supporting up to 32 direct-connected storage devices. The SR932i-p Gen10 Plus adapter is tailored for maximum performance for RAID and HBA applications, enabling up to 46GB/s bi-directional throughput and up to 3.5M IOPs, giving the adapter the necessary capabilities and flexibility to meet the needs of the most demanding applications.

The SmartRAID SR416i-a Gen10 Plus is a versatile, high performance and secure RAID Storage Controller for applications ranging from SMB to Enterprise and Mission-Critical applications. The SR416i-a Gen10+ is built around the trusted SmartArray (SR) storage stack and offers 8-lanes of PCIe Gen 4 host bandwidth with 16 Tri-Mode (SAS/SATA/NVME) lanes supporting up to 16 direct-connected storage devices. The SmartRAID SR416i-a Gen10 Plus adapter is tailored for best-in-class performance and bandwidth for RAID and HBA applications, enabling up to 24GB/s of bi-directional throughput and up to 3.5M IOPs. This Type-a flexible/modular controller occupies a dedicated storage slot without occupying a PCIe expansion slot and provides enterprise-class storage performance, reliability, security and efficiency needed to address your evolving data storage needs.

Additional benefits include:
- (SR932) Unparalleled RAID 5 Write Performance: Up to 12GB/s throughput and up to 850K IOPs
- (SR932) high-speed 144b DDR4 8GB cache with integrated cache protection to accelerate RAID and cache performance
- (SR416) Industry leading RAID5 Write Performance: Up to 6.5GB/s throughput and 550K IOPS
- (SR416) 4GB high-speed DDR4-3200 cache with integrated cache protection to accelerate RAID and cache performance
- Integrated Switchtec™ PCIe switch enabling the highest performance and lowest latency access to NVMe storage devices for HBA and RAID modes

Models

Microchip SmartRAID SR932i-p x32 Lanes 8GB Wide Cache NVMe/SAS 24G Controller for HPE Gen10 Plus	P04220-B21
Microchip SmartRAID SR416i-a x16 Lanes 4GB Cache NVMe/SAS 24G Controller for HPE Gen10 Plus	P12688-B21

Notes:
– An HPE Smart Storage energy pack is required when using Cache based storage controllers. See below for energy pack options.
– RAID or SED do not support intermingling SmartRAID and MegaRAID controllers. Only use SmartRAID configured drives with SmartRAID Smart Storage Administrator.

Kit Contents

Includes controller, documentation information card, warranty statement, and battery required card.

Notes: The HPE Smart Storage Battery is not included in the kit and is required with RAID controllers that include cache.

Hewlett Packard Enterprise

Overview

Compatibility		
SKU	P04220-B21	P12688-B21
Description	SmartRAID SR932i-p Gen10 Plus Controller	SmartRAID SR416i-a Gen10 Plus Controller
HPE ProLiant DL360 Gen10 Plus	✓	✓
HPE ProLiant DL380 Gen10 Plus	✓	✓
HPE ProLiant DL325 Gen10 Plus v2	✓	✓
HPE ProLiant DL345 Gen10 Plus	✓	✓
HPE ProLiant DL365 Gen10 Plus	✓	✓
HPE ProLiant DL385 Gen10 Plus v2	✓	✓
HPE Apollo 4200 Gen10 Plus	✓	

Operating System Support

- **Microsoft Windows Server**
- **Red Hat Enterprise Linux (RHEL)**
- **SUSE Linux Enterprise Server (SLES)**
- **VMware ESXi**
- **Canonical Ubuntu**

Notes: HPE SmartRAID 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**

Storage Management Software Suite

SmartRAID SR Gen10 Plus Controllers
- Smart Storage Administrator (SSA) GUI
- Smart Storage Administrator (SSA) CLI
- Smart Storage Administrator (SSA) Scripting
- HPE Intelligent Provisioning
- UEFI System Utilities (storage configuration)
- UEFI Storage RESTful

Notes: For additional information see the SmartRAID SR Gen10 Plus Guide at: **https://www.hpe.com/info/SmartRAID-Gen10Plus-UG**

Additional Information
SmartRAID SR Gen10 Plus Controllers
For additional information on the features for SmartRAID SR Gen10 Plus Controllers, please see the SmartRAID SR Gen10 Plus User Guide, and SmartRAID SR Secure Encryption Installation and User Guide at:
http://www.hpe.com/info/SmartArrayGen10PLUS-docs

Standard Features

GUI Management Tool
Smart Storage Administrator
The Smart Storage Administrator is a web-based application that enables you to monitor, maintain, troubleshoot, and configure SmartRAID (SR) storage controllers. The Smart Storage Administrator graphical user interface (GUI) helps you to view, create, and manage storage configurations.

- **Monitoring and Configuring:** Smart Storage Administrator enables you to monitor the controllers and configure the drives on the controller. It displays the status of the controller cards, logical drives, and drives on the controller. The device status icons are displayed on their respective pages to notify you in case of drive failures and other events that require your immediate attention. Real-time email notifications on the status of the server are sent based on your alert settings. The system errors and events are recorded and displayed in an event log file. Additionally, you can also import or clear foreign configurations.
  Notes: Limited alerting and monitoring is available via iLO when HPE Agentless Management Service is installed
- **Maintaining:** Using Smart Storage Administrator, you can perform system maintenance tasks, such as updating the controller firmware
- **Troubleshooting:** Smart Storage Administrator displays information related to drive failures, device failures, and so on. It also provides recommendations and displays contextual links, helping you to easily locate the drives/devices that have issues and troubleshoot them. You can also download a complete report of the all the devices and their configurations, properties, and settings and send it to the Support Teams for further troubleshooting.

Please refer to the **Smart Storage Administrator User Guide** for more detailed information.
Notes: The SmartRAID SR storage controller is managed through the HPE Smart Storage Administrator only.

CLI Management Tool
The Smart Storage Administrator Command Line Interface (SSACLI) tool is the command line management software designed for the SmartRAID product line. The SSACLI tool is a command line interface that is designed to be easy to use, consistent, and easy to script. This chapter provides information on how to install and use the SSACLI tool and explains the various features of the SSACLI tool.
Please refer to the **HPE Support Center** for more detailed information.

Know your choices when it comes to HPE ProLiant and data storage

	MR Gen10 Plus Controllers	**SR Gen10 and Gen10 Plus Controllers**
Type	MegaRAID	SmartRAID
GUI Management Tool	✔ MR Storage Administrator	✔ Smart Storage Administrator
CLI Management Tool	✔ StorCLI	✔ SSACLI

Notes: You will not be able to see any SR based controllers in your environment through this management tool. HPE recommends choosing either MR controllers or SR controllers to meet your storage controller needs.

Standard Features

Key Features

- 16-lane (x16) (SR932i-p) or 8-lane (x8) (SR416i-a) PCIe Gen4 host interface
- SR932i-p: 32 Internal Tri-Mode ports (SlimSAS SFF-9402 connectors supporting U.2 and U.3) supporting up to 32 direct-connected SAS/SATA/NVMe devices
- SR416i-a: 16 Internal Tri-Mode ports (SlimSAS SFF-9402 connectors supporting U.2 and U.3) supporting up to 16 direct-connected SAS/SATA/NVMe devices
- Hardware RAID: RAID 0, 1, 1 TP, 10, 10 TP, 5, 6, 50, 60
- Universal Backplane Management (UBM) support – SAS/SATA and NVMe
- SR932i-p: 144b DDR4-3200 8GB high speed DRAM cache with integrated cache protection using HPE Smart Storage Battery solution
- SR416i-a: 4GB 72b DDR4-3200 cache with integrated cache protection using HPE Smart Storage Battery solution
- SR:932i-p: Performance: Up to 46GB/s bi-directional throughput and up to 3.5M IOPs
- SR416i-a: Up to 24GB/s of bi-directional throughput and up to 3.5M IOPs
- Enclosure Management Support – SAS/SATA: SES (SAS expander-based backplanes), SGPIO (direct attached SAS/SATA backplanes)
- Secure boot, secure update, secure debug and attestation
- Data-At-Rest Encryption support using Controller-Based Encryption(CBE) for SAS, SATA and NVMe devices
- SmartCache SSD caching
- Mixed mode and HBA mode support
- Support for up to 238 SSDs/HDDs
- Support for NVMe target devices with Gen 3/4 interfaces (x1, x2, x4, and x8 wide interfaces)
- Support for 64 logical drives/RAID arrays
- Support for 512-byte SAS/SATA/NVMe devices
- Integrated cache protection using HPE Smart Storage Battery solution

Standard Features

Standard Features		
Description	**Microchip SmartRAID SR932i-p x32 Lanes 8GB Wide Cache NVMe/SAS**	**Microchip SmartRAID SR416i-a x16 Lanes 4GB Cache NVMe/SAS 24G**
SKU	P04220-B21	P12688-B21
Ports:		
Internal SAS lanes	32 internal SAS/SATA/NVMe (Tri-mode); (SlimSAS SFF-9402 connectors supporting U.2 and U.3) supporting up to 32 direct-connected SAS/SATA/NVMe devices	16 internal SAS/SATA/NVMe (Tri-Mode); (SlimSAS SFF-9402 connectors supporting U.2 and U.3) supporting up to 16 direct-connected SAS/SATA/NVMe devices
RAID on Chip Controller		
Form Factor:		
Type-a Modular Controller		AROC
PCIe plug-in Controller	FH ½ length PCi-e card	
Host Interface	16-lane PCIe Gen 4	8-lane PCIe Gen 4
Performance:		
Data Transfer Rate	Up to 46GB/s bi-directional throughput and up to 3.5M IOPs	Up to 24GB/s of bi-directional throughput and up to 3.5M IOPs
Cache Size (FBWC)	8GB 144b Wide Cache DDR4-3200 MHz with integrated cache protection using HPE Smart Storage Battery solution	4GB 72b DDR4-3200 MHz with integrated cache protection using HPE Smart Storage Battery solution
Read Ahead Caching	✓	✓
Write-Back Caching	✓	✓
Storage Protocol: 24G SAS	6G SATA, 6G/12G/24G SAS, Gen	6G SATA, 6G/12G/24G SAS, Gen 3/Gen4
Storage Management	Smart Storage Administrator (SSA)	
I/O slot: PCI Express 4.0	x16 link	x8 link
Key Features		
Maximum Physical Drives (up to)	238	238
Maximum Logical Drives (up to)	64	64
RAID: 0/1/5/6/10/50/60/1 TP/10 TP	✓	✓
Mixed Mode: (RAID & HBA)	✓	✓
Boot Mode: Legacy and UEFI	✓	✓
SSD Accelerator	Smart Path	Smart Path
SmartRAID SR Secure Encryption (license)	Optional	Optional
SmartRAID SR SmartCache	Optional	Optional
HPE OneView Support	✓	✓
Controller Based Encryption	✓	✓

Standard Features

Standard Features		
Description	**Microchip SmartRAID SR932i-p x32 Lanes 8GB Wide Cache NVMe/SAS**	**Microchip SmartRAID SR416i-a x16 Lanes 4GB Cache NVMe/SAS 24G**
SKU	P04220-B21	P12688-B21
Other features	- Online capacity expansion and RAID level migration - Dynamic caching algorithm - Hot-plug drive support - Hot spares—global, dedicated, and pooled (including copyback) - Configurable stripe size - Dynamic sector repair - Bootable array support through legacy and uEFI bios - Smart PQI driver with multiple queue and MSI-X support for all supported operating system device drivers - Dynamic adapter power management - Secure boot support for the uEFI host BIOS - Smart Storage Administrator GUI and CLI utilities for configuration, management and diagnosis of SmartRAID controllers	
Certifications	EMC, CE, CNS, CT, FC, IC, KC, VC, EMC Doc, CE, C-tick, FCC, KCC, VCCI, BSMI, UL, EN 60950 and 62368, AU_NZ LoA and SDoC, RoHs, TW and EU	

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 HPE Pointnext operational, which are sold at the HPE System level to which this product attaches.

Required Accessories for SR Storage Controllers

Energy pack Options Sold Separately

HPE 96W Smart Storage Lithium-ion Battery with 145mm Cable Kit	P01366-B21
HPE 96W Smart Storage Lithium-ion Battery with 260mm Cable Kit	P01367-B21
HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit	P02377-B21
HPE Smart Storage Hybrid Capacitor with 260mm Cable Kit	P02381-B21

Notes:
- The Smart Storage 96W Battery supports multiple devices. See server QuickSpecs for compatibility.
- The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 servers or later. Before installing the HPE Smart Storage Hybrid Capacitor verify that the system BIOS meets the minimum firmware requirements to support the hybrid capacitor module.

Standard Features

Fault Prevention
The following features offer detection of possible failures before they occur, allowing preventive action to be taken:
Predictive drive failure detects possible drive failure before it occurs, allowing replacement of the component before failure occurs.
Background surface scan checks drives during inactive periods and automatically remaps bad sectors, ensuring data integrity.
HPE SmartSSD Wear Gauge reports the amount of lifetime remaining on your SSDs.

Fault Recovery
Minimizes downtime, reconstructs data, and facilitates a quick recovery from drive failure
Recovery ROM: This feature protects the user from a firmware image corruption by storing a redundant copy of the firmware image. If the active firmware image becomes corrupt, the controller will use the redundant firmware image and continue operating.
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 detects and corrects data bit errors.

HPE SSD Smart Path
The HPE SSD Smart Path feature included in the SmartRAID 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.

SmartRAID SR SmartCache (optional license)
The SmartRAID 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 or Gen10 Plus HDD for bulk storage and SSD as an accelerator. SmartCache is deployed and managed using the Smart Storage Administrator (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**.

SmartRAID SR Secure Encryption (optional license)
SmartRAID SR Secure Encryption is a SmartRAID 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 SmartRAID 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 Primary 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.
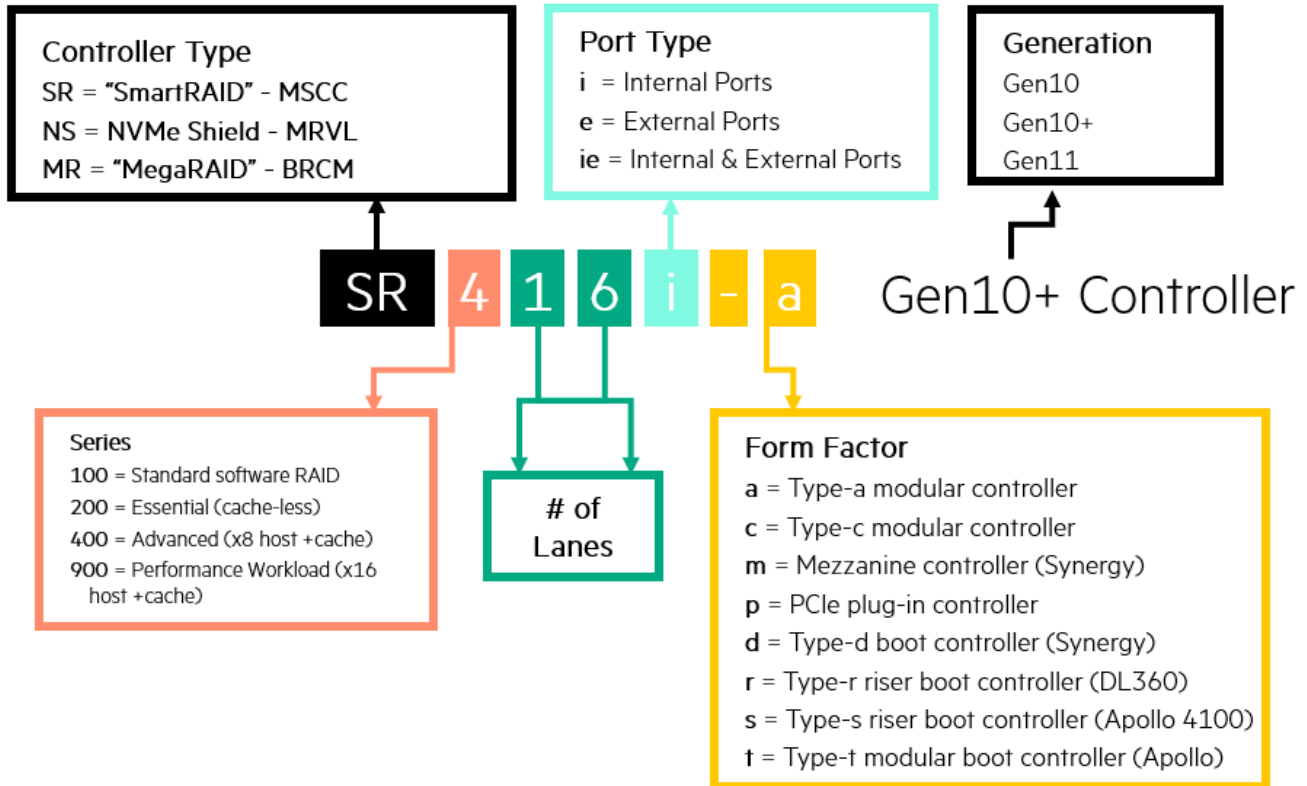For more information on please visit: **http://www.hpe.com/servers/secureencryption**

Standard Features

Naming Framework

The Gen10 controller naming framework is illustrated below to help simplify controller identification.

Service and Support

HPE Pointnext - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services**, focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms

HPE GreenLake brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

Managed services to run your IT operations

HPE GreenLake Management Services provides services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward.
HPE Pointnext Tech Care is available in three response levels. Basic, which provides 9x5 business hour availability and a 2 hour response time. Essential which provides a 15 minute response time 24x7 for most enterprise level customers, and Critical which includes a 6 hour repair commitment where available and outage management response for severity 1 incidents.
https://www.hpe.com/services/techcare

HPE Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

https://www.hpe.com/services/completecare

Service and Support

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.
Notes: *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. 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 QuickSpecs, 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).

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**.

Related Options

SmartRAID SR SmartCache
Single-Server License
Used to purchase a license for one server.

Contains one license per server, a printed license entitlement certificate, end user license agreement, and license key installation card **delivered via physical shipment**. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HPE Software Technical Support Services.

HPE Smart Array SR SmartCache (Single Key/Single Server) LTU	D7S26A

Flexible-Quantity License
Used to purchase multiple licenses with a single activation key.

Contains license(s) for a customer defined quantity of servers, a license entitlement certificate for the quantity of licenses purchased, end user license agreement, and license key installation card **delivered via physical shipment**. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HPE Software Technical Support Services.

HPE Smart Array SR SmartCache (Single Key/Multiple Servers) LTU	D7S27A

Flexible-Quantity Electronic License
Used to purchase multiple licenses with a single activation key.

Contains license(s) for a customer defined quantity of servers, a license entitlement certificate for the quantity of licenses purchased, end user license agreement, and license key installation information **delivered via e-mail**. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HPE Software Technical Support Services.

HPE Smart Array SR SmartCache (Single Key/Multiple Servers) E-LTU	D7S27AAE

Notes: For more information please visit: **http://www.hpe.com/servers/smartcache**

SmartRAID SR Secure Encryption

HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU	Q2F26AAE

Notes: HPE SmartRAID SR 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**
or see the HPE SmartRAID SR Secure Encryption Installation and User Guide at:
http://www.hpe.com/info/SmartArrayGen10-docs

HPE Smart Storage Battery

HPE 96W Smart Storage Lithium-ion Battery with 145mm Cable Kit	P01366-B21
HPE 96W Smart Storage Lithium-ion Battery with 260mm Cable Kit	P01367-B21

Notes
- Smart Array Gen10 controllers are supported by the HPE Smart Storage Battery. This battery supports multiple devices and is sold separately.
- See server QuickSpecs for compatibility.

HPE Smart Storage Hybrid Capacitor

HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit	P02377-B21
HPE Smart Storage Hybrid Capacitor with 260mm Cable Kit	P02381-B21

Notes: The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 servers or later.
Before installing the HPE Smart Storage Hybrid Capacitor, verify that the system BIOS meets the minimum firmware requirements to support the hybrid capacitor module.

Summary of Changes

Date	Version History	Action	Description of Change
04-Oct-2021	Version 3	Changed	SKU Names & Service and Support were updated.
07-Jun-2021	Version 2	Changed	Descriptions were updated
06-Apr-2021	Version 1	New	New QuickSpecs

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