Overview

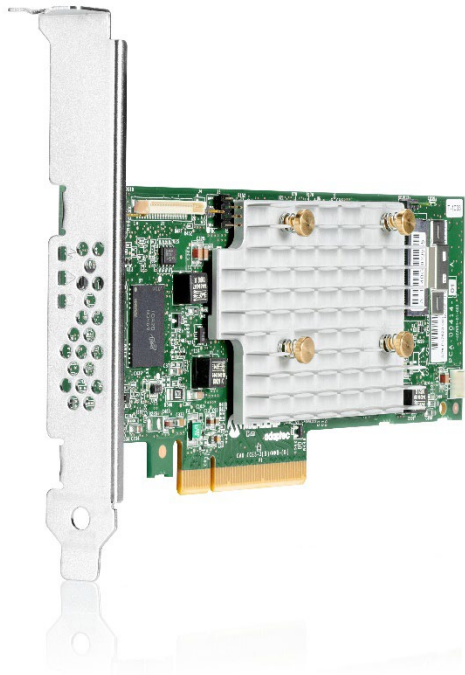### HPE SR Gen11 Storage Controllers

A versatile, simplified, and flexible choice for data centers. HPE offers a choice of HPE SR Gen11 storage controllers based on Microchip® SmartRAID® firmware using SmartROC 3100 and 3200 delivering quality, performance, and security for mission-critical applications.

Standard PCI HH/HL

SR932 Gen11 Key Features

- Tri-mode (24G SAS, 6G SATA, 16G NVMe) Drive Support
- 16-lane (x16) (SR932i-p) PCIe 4.0 host interface
- DMTF Security Protection Data Model (SPDM) supports certificate-based authentication with HPE iLO6.
- Hardware Root of Trust (HWRoT) protects against malicious firmware
- Standard PCI HH/HL and OCP NIC 3.0 form-factors
- Mixed Mode (RAID and/or JBOD) supporting RAID 0,1,5,6,10,50,60,1T/10T
- 144b 8GB DRAM (SR932) supporting read and write cache (FBWC)
- Smart Cache Included
- Data-At-Rest Encryption support
    - Controller-Based Encryption (CBE) supporting Local (LKM) and Remote (RKM) key management
    - Self-Encrypting Drive (SED) supporting Host (HKM) key management
- Support for 32 (SR932) drives without expander
- Support for 64 volumes
- Support for HPE Smart Storage Battery and Hybrid Capacitor (Optional)

Overview

Models

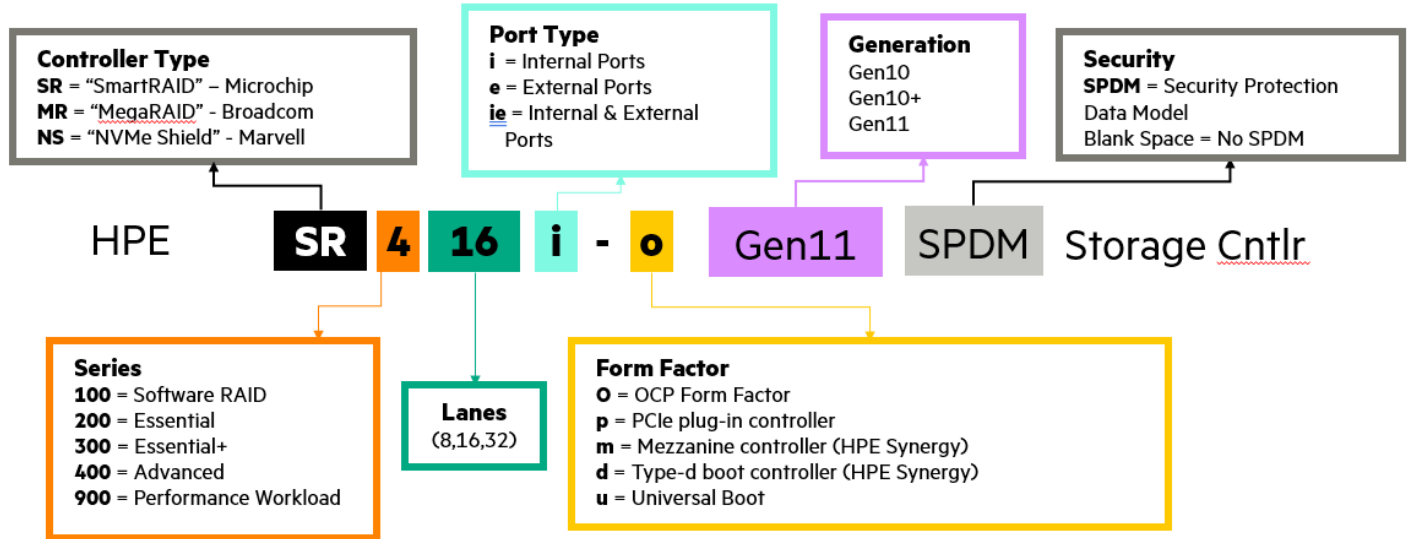|	
HPE SR932i-p Gen11 32 Internal Lanes/8GB Wide Cache SPDM PCI Plug-in Storage Controller	P47184-B21
HPE SR416ie-m Gen11 8 Int 8 Ext Lanes/4GB Cache SPDM Mezzanine Storage Controller	P39959-B21

Naming Framework

The Gen11 controller naming framework is illustrated below to help simplify controller identification.

Controller Type
SR = "SmartRAID" – Microchip
MR = "MegaRAID" - Broadcom
NS = "NVMe Shield" - Marvell

Port Type
i = Internal Ports
e = External Ports
ie = Internal & External Ports

Generation
Gen10
Gen10+
Gen11

Security
SPDM = Security Protection Data Model
Blank Space = No SPDM

HPE   SR 4 16 i - o   Gen11   SPDM Storage Cntlr

Series
100 = Software RAID
200 = Essential
300 = Essential+
400 = Advanced
900 = Performance Workload

Lanes
(8,16,32)

Form Factor
O = OCP Form Factor
p = PCIe plug-in controller
m = Mezzanine controller (HPE Synergy)
d = Type-d boot controller (HPE Synergy)
u = Universal Boot

Standard Features

Description	HPE SR932i-p Gen11 SPDM Storage Cntlr
SKU	P47184-B21
Ports	4x8 SlimSAS
Storage Lanes	X32
Form Factor	PCIe FH/HL
ASIC	Microchip SmartROC 3200pe
Host Interface	X16 PCIe 4.0
Cache Size (FBWC)	8GB
Read Ahead Caching	✓
Write-back Caching	✓
Storage Protocol	6G SATA, 24G SAS, 16G NVMe
Max Drives (no expander)	32
Max Drives (with expander)	238
Max Volumes	64
RAID:	0/1/5/6/10/50/60/1T/10T
Mixed Mode: (RAID & HBA)	✓

Feature	Description
SSD Accelerator	Smart Path
Array Features	- Expand Array - Move Drives - Shrink Array - Spare Management (dedicated and shared)
Volume Features	- Extend Logical Drive - Background Surface Scan - Instant Secure Erase - Migrate RAID/Stripe Size - Modifying Cache Write Policy - Move Logical Drive - Re-enable Failed Logical Drive
Other Features	- Dynamic caching algorithm - Hot-plug drive support - Dynamic sector repair - SmartCache - Bootable array support through UEFI BIOS - Smart PQI driver with multiple queues and MSI-X support - Secure boot support for the UEFI BIOS - Smart Storage Administrator GUI and CLI utilities support - DRAM ECC detects and corrects data bit errors. - Redundant ROM Image, protects against firmware corruption - SSD Wear Gauge - SMART Predictive Drive Failure
HPE OneView Support	Managed Mode
Kit contents	Includes storage controller, information card, warranty statement, and storage controller battery cable.

Standard Features

Optional 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:
− An HPE Smart Storage energy pack is optional
− Moving volumes or SED locked drives between SR and MR controllers is not supported.

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.

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

Notes: HPE SR 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

HPE SR Gen11 Storage Controllers
- Smart Storage Administrator (SSA) GUI
- Smart Storage Administrator (SSA) CLI
- Smart Storage Administrator (SSA) Scripting
- HPE Intelligent Provisioning
- UEFI System Utilities
- iLO Redfish

Standard Features

Additional Information
HPE SR Gen11 Storage Controllers
For additional information on the features for the HPE SR Gen11 Storage Controllers, please see the HPE SR Gen11 User Guide at:
https://www.hpe.com/support/sr-gen11-ug

Also see storage controller management overview at: **https://www.hpe.com/info/scmo**

And storage encryption overview at**: https://www.hpe.com/info/sceo**

Smart Storage Administrator (SSA) Management Tools

SSA GUI Management Tool
The Smart Storage Administrator is a Graphical User Interface (GUI) that enables you to monitor, maintain, troubleshoot, and configure SmartRAID (SR) storage controllers. The GUI displays the status of the controller, volumes, and drives. Additionally the tool offers an Array Diagnostic Report, and a SmartSSD Wear Gauge Report.
For more information visit: **https://www.hpe.com/support/SSA-UG**

SSA CLI Management Tool
The Smart Storage Administrator Command Line Interface (SSA CLI) tool is the command line management software designed for the SR product line. The SSACLI tool is designed to be easy to use, consistent, and easy to script.
For more information visit: **https://www.hpe.com/support/SSACLI-UG**

SSA Scripting Management Tool
The Smart Storage Administrator Scripting (SSASCRIPTING) is a command line scripting tool designed for the SR product line. The SSASCRIPTING tool is designed to capture, create, and clone the current SmartRAID configuration using INI or XML format.
For more information visit: **https://www.hpe.com/support/SSACLI-UG**

Know your choices when it comes to HPE storage controller management tools.

	MR Gen11 Controllers	**SR Gen11 Controllers**
Type	MegaRAID	SmartRAID
GUI Management Tool	✔ MR Storage Administrator	✔ Smart Storage Administrator
CLI Management Tool	✔ StorCLI	✔ SSA CLI / SSASCRIPTING

Standard Features

HPE SR Secure Encryption (optional license)

HPE SR Secure Encryption is a controller-based data encryption solution that protects sensitive, mission critical data. This is an enterprise-class encryption solution for data-at-rest on any volume attached to the SmartRAID controllers including data in the controller cache. Secure Encryption requires an optional license per server.

The solution is available for both local (LKM) and remote (RKM) key management. LKM is focused on single server deployment where there is one key per controller that is managed by the user. RKM is for enterprise-wide deployments from just a few servers to thousands of servers.

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

For more information please visit:
- **https://www.hpe.com/psnow/doc/c04318075**
- **https://www.hpe.com/servers/secureencryption**
- **https://www.hpe.com/info/SCEO**
- **https://www.hpe.com/support/SR-Gen11-UG**

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

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**

Service and Support

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

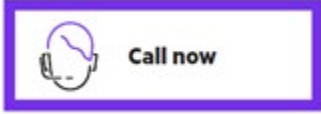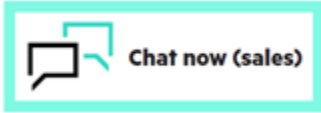Visit the Hewlett Packard Enterprise Service and Support **website**.

Summary of Changes

Date	Version History	Action	Description of Change
05-Dec-2022	Version 1	New	New QuickSpecs

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