

Overview

HPE Smart Storage Batteries

The HPE Smart Storage Battery is a lithium-ion, low-halogen centralized backup source and is required to back up the write cache content onto flash memory on the HPE Smart Array Gen9 and newer storage controllers in case of an unplanned server power loss. The battery is also the backup power source for HPE NVDIMMs and allows any data in flight on the DRAM to be moved to the non-volatile NAND flash. Only one battery is required per server as it can support multiple devices.

HPE Smart Array Hybrid Capacitors

The HPE Smart Storage Hybrid Capacitor is a battery-free technology for power storage that provides data protection for cached data while eliminating costs and environmental impact of lithium-ion batteries.

For those running HPE Gen10 servers, the HPE Smart Hybrid Capacitor is a centralized backup power source supporting multiple controllers where the NAND flash memory on HPE Smart Array Performance Class controllers and the HPE Smart Hybrid Capacitor work together to save cached data in the event of unplanned server power loss.

When the hybrid capacitor module detects power loss it keeps critical parts of the controller active long enough to allow data to be copied from the onboard controller cache to the flash memory.

Please note, although the hybrid capacitor module is mechanically compatible with the 96W Smart Storage Battery (P01366-B21 and P01367-B21), the module cannot be used in combination with the Smart Storage Battery. In most cases, only a single Smart Storage Battery or a single Smart Hybrid Capacitor can be used per system. Please check your server platform QuickSpecs for details.

Models

Batteries

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 12W Smart Storage Battery	782961-B21

Hybrid Capacitors

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.

HPE Smart Storage Battery Key Features

- Supports HPE Smart Array P-class controllers and HPE NVDIMMs
- Supports up to 24 devices
- Low halogen
- Lithium-ion

HPE Hybrid Capacitor Key Features

- High reliability, even in higher temperature environments
- No batteries, not a Class 9 Dangerous Good product (no hazardous material disposal, no battery shipping requirements)
- A single module supports up to three (3) Smart Array Controllers
- Charges to full capacity in ~3 minutes after discharge

Overview

- Capable of operating in higher temperatures with no impact to service life
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Standard Features

HPE Smart Storage Battery	
Pack Power	7.2 Volts - 10.8 Watt-hour
Shelf Life	Stored at 25 degrees Celsius, shelf life is 15 months (26-30% State of Charge) Stored at 45 degrees Celsius, shelf life is 6 months (26-30% SOC)
Dimension	139 mm (length) x 19.5mm (width) x 29mm (height)
Server Support	Please see platform QuickSpecs for server support.

HPE Hybrid Capacitor	
Voltage	2.5-3.6v
Discharge/charge	Full capacity in aprox. 3 minutes after discharge
Maintenance	Maintenance-free
Operating Temperature	10° to 60°C environment
Storage Temperature	10° C to 35 °C, less than 65% relative humidity
	Notes: Sudden temperature change or high humidity may cause deterioration of its characteristics.
Shelf Life	When stored at 10 ~ 35°C and less than 65% relative humidity, shelf life is 20 months minimum. (100% State of Charge)
Relative Humidity	65% or less (non-condensing) for storage
Operating Altitude	from sea level, of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft).
Non-operating Altitude	Up to 15,240m (50,000 feet) above sea level
Leakage Current	<2.0 uA in Ship/Storage mode
Safety Conformance or Certifications	UL, CB, KCC, CE
EMC (Class A)	FCC 47 CFR Part 15 Subpart B and AS/NZS CISPR 32
Unit Dimensions (WxDxH)	5.46" (138.65mm)x1.13"(28.8mm)x0.76"(19.36mm)
Unit Weight	P02377-B21 - 85g (+5/-10) P02381-B21 - 90g (+5/-10)
Firmware Support Minimum requirements	HPE servers with Intel processors (BIOS) Min version: 2.00 HPE servers with AMD processors (BIOS) Min version: 1.40 HPE Smart Array SR controllers (firmware) Min version: 1.90 HPE Smart Array MR controllers (firmware) Min version: 24.23.0-0041
Server Support	Please see platform QuickSpecs for server support.

HPE 96W Smart Storage Battery or Smart Storage Hybrid Capacitor?

	96W Battery	Smart Storage Hybrid Capacitor
Gen 10 or newer	Yes	Yes
Controller Support	Yes	Yes
NVDIMM Support	Yes	No
Max. Device Support	Up to 24 NVDIMM and/or Smart Array Controllers	Up to 3 HPE Smart Array Controllers
Discharge to > Charge	Hours	Minutes
Operating Environments	Climate controlled environments	Higher temperature environments such as NEBs, ASHRAE, or Telco
Class 9 Dangerous Goods	Yes	No

Notes:
The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 servers or newer. Before installing the

Standard Features

hybrid capacitor module, verify that the system BIOS meets the minimum firmware requirements to support the capacitor pack.

Not for use with Server that use NVDIMMs.

For more information on updating firmware, see the Intelligent Provisioning User Guide on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/intelligentprovisioning/docs>).

To get the latest firmware and software updates, download the Service Pack for ProLiant (SPP) from the Hewlett Packard Enterprise website (<http://www.hpe.com/servers/spp/download>).

Material Safety Data Sheet

Hewlett Packard Enterprise provides battery Material Safety Data Sheets (MSDS) and other battery product information sheets as a service to its customers. For more information please visit:

<https://www.hpe.com/us/en/about/environment/msds-specs.html#.WIDLu2bruUk>

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, which are sold at the HPE System level this product attaches too.

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.

Recommended Services

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

Service and Support

<https://www.hpe.com/services/completecure>

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 Hewlett Packard Enterprise 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 ServicesHPE 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
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Service and Support

support [HERE](#).

For more information

Visit the Hewlett Packard Enterprise Service and Support [website](#).

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.

Related Options

HPE Smart Array 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/Multiple Servers) LTU

D7S27A

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) E-LTU

D7S27AAE

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.

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

HPE Smart Array SR Secure Encryption

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

Q2F26AAE

For use with SmartRAID SR controllers only.

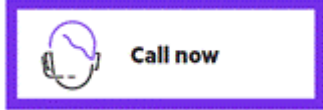
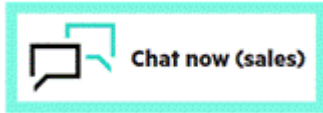
Notes: HPE Smart Array SR Secure Encryption licensing is based on the number of servers requiring encryption for direct attached storage.

For more information visit: <http://www.hpe.com/servers/secureencryption>

Date	Version History	Action	Description of Change
06-Mar-2023	Version 7	Changed	Merged Batteries and Hybrid Capacitors
16-Jan-2023	Version 6	Changed	Obsolete SKUs were removed
04-Oct-2021	Version 5	Changed	Service and Support Section was updated
18-Jan-2021	Version 4	Changed	Related Options section was updated
04-Mar-2019	Version 3	Changed	Related Options section was updated
05-Feb-2018	Version 2	Added	Added 12W Battery SKUs and Gen9 compatibility
04-Dec-2017	Version 1	Added	New QuickSpecs.

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