

### Overview

#### HPE D3940 Storage Module

The HPE Synergy D3940 Storage Module is a 40 Small Form Factor (SFF) drive bay module integrated into HPE 12000 Synergy frames. Through the HPE Synergy 12Gb SAS Connection Module it provides composable direct attached storage for up to 10 compute modules in a single frame. Synergy storage is optimized for software-defined storage such as Scalify Object Storage, HPE StoreVirtual VSA, VMWare VSAN, Microsoft Storage Spaces, and Hadoop solutions.

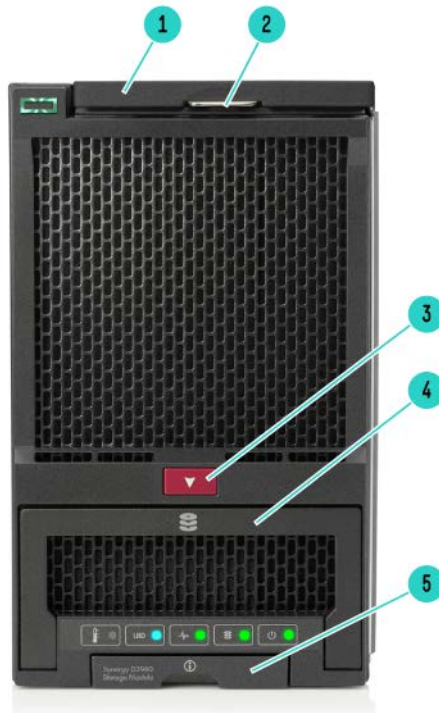
HPE Synergy is a single infrastructure of physical and virtual pools of compute, storage, and fabric resources, and a single management interface that allows IT to instantly assemble and re-assemble resources in any configuration. As the foundation for the New Style of Business infrastructure, HPE Synergy eliminates hardware and operational complexity so IT can precisely deliver infrastructure to applications faster and with greater flexibility.

The HPE Synergy D3940 Storage Module connects to compute modules within the frame through the Synergy 12 Gb SAS Connection Module. Synergy D3940 Storage Modules support a family of 12 G SAS or 6 G SATA HDD and SSD Smart Drives. Synergy storage supports a variety of workloads by permitting multiple drive types to be configured in the same storage module. Any number of drive bays can be composed with any compute module allowing for efficient utilization of available drives. Synergy storage can scale to 200 SFF drives with five storage modules in a single HPE Synergy 12000 Frame. Adding a second I/O adapter and second connection module provides a redundant path to SAS drives inside the Storage Module, ensuring high availability. The modular design of the Storage Module allows it to slide out from the Frame to service drives or I/O adapters without interrupting operation of other drives within the module. The Synergy D3940 Storage Module is optimized for solid state using a high performance SAS connection with sixteen 12 Gb/s SAS lanes. This allows integrated Synergy storage to deliver as much as 8 times the bandwidth of other JBOD options reaching up to 2M IOPs\*.

The HPE Synergy D3940 Storage Module provides a large, efficient pool of storage resources which can be allocated to meet changing server workloads and business needs. Synergy Storage enables industry leading bandwidths and performance. Within the frame, an administrator is able to create virtual JBODs for any compute module in the enclosure, remap connections, or change personalities; all done with stored profiles. Together, the D3940 Storage Module and 12Gb SAS Connection Module fully integrate with HPE Synergy hardware and software; integrating with power, cooling, compute, fabric and is managed and configured with HPE Synergy Composer. The D3940 Storage Module provides leading storage density and flexibility to configure storage to meet business needs. A modular design simplifies serviceability and can be configured with dual HPE Synergy 12Gb SAS Flexible Storage I/O Adapter for high availability

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Overview



**Synergy D3940 Storage Module Components**

- |  |                            |
|--|----------------------------|
| 1. Storage Module Handle               | 4. Drive Drawer Handle     |
| 2. Storage Module Handle Release Latch | 5. Product Information Tag |
| 3. Drive Drawer Handle Release Latch   |                            |



**Synergy D3940 Storage Module LED Panel Information**

- |                                    |                  |
|------------------------------------|------------------|
| 1. Drawer Open                     | 4. Health Status |
| a. Solid Green – Drawer is closed  |                  |
| b. Flashing Green – Drawer is open |                  |
|                                    | 5. Drive Status  |

## Overview

- c. Flashing Amber – Thermal warning, close the drive drawer
  2. UID
    - a. Solid Blue – One or more drives are being located.
    - b. Flashing Blue – Firmware flash is in progress
    - c. Off – No drives are being located
  3. Health Status
    - a. Solid Amber – One or more drives failed
    - b. Flashing Amber – One or more drives are predicted to fail
    - c. Flashing Green – One or more drives are rebuilding or transforming
    - d. Solid Green – One or more drives are members of a logical drive
    - e. Off – No drives are configured by a RAID controller.
6. Drawer Power

## Product Highlights

### Key Features

#### Features of the D3940 include:

- Support for between eight (8) and forty (40) hot plug SFF SAS/SATA/SAS SSD/SATA SSD disk drives in a half-height double-width storage module
- Delivering data transfer rates up to 12 Gb/s for 12G and 6G SAS, SATA, SAS SSD, SATA SSD
- Simple configuration and setup with HPE Synergy Composer
- Easy to maintain and troubleshoot with industry standard management tools including HPE System Insight Manager
- Use with HPE StoreVirtual VSA software to create a robust shared storage environment inside and across Synergy Frames
- Protected by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. Three-year parts limited global warranty. Certain restrictions and exclusions apply

### Mix and Match of Hard Drive Types

HPE Synergy D3940 Storage Module supports mixing of different drive types (SAS/SATA, SSD/HDD) in a single enclosure with a minimum configuration of at least eight (8) drives.

**NOTE: A composed logical array can be created across only one drive type.**

### Universal hot plug Hard Drive

Small Form Factor (SFF) drives in Smart Carriers are for use across multiple HPE ProLiant servers, disk enclosures and storage systems. 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.

### LED Indicators

Front panel LEDs indicate drive activity and system health status.

**NOTE: See diagram above for LED indicator locations and codes**

### Density

The HPE Synergy D3940 Storage Module occupies two half height bays in the HPE Synergy 12000 Frame. With each frame supporting up to five D3940 Storage Modules, this delivers a total potential density of up to 24 SF drives per RU.

### Fault Tolerance

The HPE Synergy D3940 Storage Module can be configured with two I/O modules as well as with dual HPE Synergy 12Gb SAS Connection Modules in the frame for failover. The HPE Synergy 12000 Frame includes hot-swappable redundant power and cooling components to ensure the availability of the operating environment.

### Manageability

The HPE Synergy D3940 Storage Module delivers fluid pools of storage resources to be composed, deployed and provisioned simply and quickly within a composable infrastructure environment. Deployment via templates and profiles and ongoing management is done through the Synergy Composer and HPE OneView version 3.0 and later.

### Operating Systems

As supported by HPE Synergy Compute Modules

**NOTE: For more information on The Hewlett Packard Enterprise Certified and Supported ProLiant Servers and Compute Modules for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/supportos>.**

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## Service and Support, HPE Care Pack, and Warranty Information

### Warranty

Protected by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. The D3940 Storage Module has three-year limited global warranty (3-3-3). Certain restrictions and exclusions apply. Drives installed in the D3940 are under separate warranty.

Hard drive Pre-Failure Warranty: When used with any one of the Smart Array Family controllers and monitored under HPE Systems Insight Manager (v4.20 or later), Hewlett Packard Enterprise hard drives are supported by a Pre-Failure (replacement) Warranty.

**NOTE: Some HPE hard drives have a one year warranty.**

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**Service and Support** HPE Technology Services offers you a rich portfolio of consulting and support services designed to add value to our core products and solutions. We have the know-how and experience to put technology to work for you. We work closely with you, as your strategic partner, leveraging our full services portfolio to make sure that everything works to help optimize your enterprise.

Choose from services aligned to our product offerings and lifecycle. From proactive onsite services to innovative support when your products are connected to Hewlett Packard Enterprise, you choose the precise level of attention and support your business demands.

### HPE Technology Services for HPE Synergy

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

### Protect your business beyond warranty with HPE Support Services

Hewlett Packard Enterprise support services offer complete care and support expertise with committed response choices that are designed to meet your IT and business needs.

**HPE Foundation Care services** offer scalable reactive support-packages for HPE Synergy and software. You choose the type and level of service that is most suitable for your IT and business needs.

**HPE Proactive Care** keeps your system stable and reliable helping to prevent problems and reduce outages through proactive service management and enhanced technical response.

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**Advise, transform, integrate, support, automate, and flex** **HPE Technology Services** helps you get the most out of what you have today and transition to HPE Synergy, a composable infrastructure, at your pace and from wherever you are on the journey.

**Start with the HPE Transformation Workshop to** ensure that your business and IT organizations collaborate, define the topline strategy for composable, software-defined, cloud-ready infrastructure and kick-start your projects confidently. This workshop clarifies your business requirements and the issues that IT and operations teams must resolve in order to meet these requirements. A detailed executive briefing or high-level report summarizes the strategies, high-level plan and functional requirements.

**HPE Modernization and Migration Services** helps you choose the right platform for the right workload at the right cost and evolve your IT infrastructure, processes and organization taking advantage of “on-hybrid infrastructure” innovations such as composable, converged, software-defined, technologies. Hewlett Packard Enterprise experts advise, transform, integrate and implement for platform refresh, datacenter consolidation virtualization, migration and automation projects.

**HPE Flexible Capacity** is a pay per use model for on premise infrastructure. This offers needed HPE

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## Service and Support, HPE Care Pack, and Warranty Information

Synergy capacity in the datacenter, plus a buffer of additional capacity. As HPE Synergy will be a dynamic environment, this provides enough room to grow your environment, but only pay for actual metered use. Technology transitions and refresh can be built in, infrastructure and services are billed monthly, enabling you to align costs to business use.

**HPE Datacenter Care-Infrastructure Automation (DC-IA)** is an extension to HPE Datacenter Care and delivers enterprise-grade support, advice, guidance and best practices for infrastructure automation. The service also includes Enterprise editions of automation tools including Enterprise Chef and selected others. The DC-IA Center of Excellence (CoE) is staffed with highly trained experts who have specific expertise on integrating Chef with HPE OneView.

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### Deploy and integrate

**HPE Synergy First Frame Installation and Startup** – Provides for hardware installation (HPE Synergy compute modules, Storage Modules, Virtual Connect modules, Interconnect Link Modules, Fibre Channel Modules, Frame Link Modules, and HPE Synergy D3940 Storage Modules) and software startup for the first frame of your HPE Synergy deployment. Additional frames can be added using the HPE Synergy Additional Frame Installation and Startup Service.

**HPE Synergy Additional Frame Installation and Startup Service** – Add additional frames to your HPE Synergy First Frame Startup service or expand your existing HPE Synergy Infrastructure.

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### Optimized Support

Choose the right support to maximize uptime, free up your resources, and achieve improved value—as you get the most out of the existing IT assets while accelerating time-to-revenue.

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

Builds and incorporates on Proactive Care and also gives customers personalized technical and operational advice from an assigned, local Account Support Manager for personalized technical collaboration, flexible access to specialist skills to help optimize business critical IT, and Critical Incident Management to help so the business is not affected if there is a system or device outage. This recommendation provides 24x7 coverage with four-hour response for hardware and Basic Software Support and Collaborative Call Management for selected non-HPE software that offers two-hour callback for supported software issues.

<http://www8.hp.com/h20195/v2/GetPDF.aspx/4AA5-3259ENW.pdf>

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### Standard Support

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

Hardware and software support services designed specifically for your technology with rapid access to Advanced Solution Center specialists for start to finish case management plus proactive reports and recommendations for firmware and software management and best practice advice. This recommendation provides 24x7 coverage with four-hour response for hardware and Basic Software Support and Collaborative Call Management for selected non-HPE software that offers two-hour callback for supported software issues.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

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### HPE Education

Training your IT staff is critical to help drive the value of HPE Synergy with increased efficiencies and better business outcomes. Training is key to the transformation and management of HPE Synergy.

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### Parts and Materials

Hewlett Packard Enterprise will provide Hewlett Packard Enterprise-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

## Service and Support, HPE Care Pack, and Warranty Information

by Hewlett Packard Enterprise due to malfunction.

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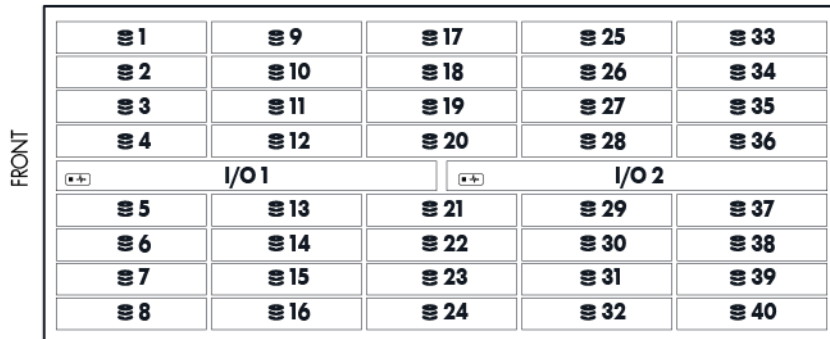
**For more  
information**

Additional Support Services can be found at HPE Support Services Central  
<http://ssc.hp.com>

**Configuration Information - Factory Integrated Models (North America Only)**

**HPE Synergy D3940 Storage Module Configuration**

- Models** HPE Synergy D3940 Configure-to-order Storage Module  
HPE Synergy D3940 Build-to-order Storage Module
- Storage Module Options** HPE Synergy D3940 I/O Adapter  
**NOTE: A single I/O adapter is included with each Synergy D3940 Storage Module. This option is for a second I/O adapter for redundancy.**
- HPE Hard Drives** HPE Synergy D3940 Storage Modules support all SAS and SATA HDDs and SSDs currently certified in HPE Smart Carriers.  
Drive types and sizes may be mixed within the D3940 Storage Module, but logical grouping of drives must be across identical drives.  
Maximum storage capacity will vary depending upon drive size and RAID type applied.  
**NOTE: For Technical Specifications and additional information on SAS drives:**  
[http://h18000.www1.hp.com/products/QuickSpecs/12244\\_div/12244\\_div.html](http://h18000.www1.hp.com/products/QuickSpecs/12244_div/12244_div.html)  
(Worldwide)  
**NOTE: Using hard drives in unsupported configurations will result in voiding the warranty and could result in damage to the drive and/or loss of data.**



Drive Quantity Supported	Position Supported	Controller
8 - 40	1 - 40	Smart Array P542D Controller



## Associated Products

- Other Components    HPE Smart Array P542D/2GB FBWC 12Gb Mezzanine SAS Controller  
**NOTE: Each compute module which is to access the D3940 Storage Module must include a Smart Array P542D controller populated in mezzanine slot 1.**
- HPE Synergy 12G SAS Connection Module  
**NOTE: At least one SAS Connection Module must be populated per Synergy 12000 Frame in either ICM bay 1 or ICM bay 4 to provide connection between Synergy D3940 Storage Modules and Synergy Compute Modules.**

## Technical Specifications

<b>HPE Synergy D3940 Dimensions (DxWxH)</b>	D3940: 60.96 cm x 12.7 cm x 21.59 cm (24 in. x 5 in. x 8.5 in.)
<b>Storage Module</b>	IO Adapter: 20.32 cm x 11.43 cm x 1.91 cm (8 in. x 4.5 in. x .75 in.)
<b>Weight (unloaded)</b>	D3940: 9.39 kg (20.7 lbs) I/O Adapter: 0.59 kg (1.3 lbs)
<b>Weight (loaded)</b>	D3940: 21.18 kg (46.7 Lbs) – using .29 kg (.65 lb) average weight for SFF HDD with Smart Carrier. Actual fully populated weight may vary depending on SFF drives used.  Dual I/O Adapters: 1.18 kg (2.6 lbs)
<b>Protocol Support</b>	12 Gb/s SAS 6 Gb/s SAS
<b>O/S Support</b>	Defined by specific HPE array controller or SAS/ adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or adapter
<b>LED Indicators</b>	UID Health Status LED Drawer Open / Temperature LED Drive Status LED Drawer Power LED
<b>Drive LED Indicators (on drive trays)</b>	Drive LED (top) - On-line/Activity Drive Failure LED (bottom) - Drive Fault/Locate
<b>Relative Humidity (non-condensing)</b>	Operating: 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing Non-operating: 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing
<b>Temperature Range</b>	Operating: 10° to 35°C (50° to 95°F) Non-operating: -30° to 60°C (-22° to 140°F)
<b>Power Consumption</b>	500 Watts, Maximum
<b>P542D Smart Array Controller with HPE Synergy Storage I/O module (single or pair)</b>	
<b>Disk Drive and Enclosure Interface</b>	12 Gb SAS (Serial Attached SCSI)
<b>SAS Connectors</b>	Sixteen (16) 12 Gb/s SAS physical links distributed equally across 2 x4 internal ports and 2 x4 external ports
<b>Cache Memory Speed</b>	DDR3-1866 MHz, 72-bit wide bus at 14.92 GB/s (2 GB cache module).
<b>SAS Speed</b>	x16 12 Gb SAS
<b>Cache Memory</b>	2 GB embedded flash-backed write cache; ECC protection, battery-backed, and transportable
<b>Logical Drives Supported</b>	Up to 64 logical drives
<b>Maximum Logical Drive Capacity</b>	404 TB SAS/SATA
<b>Host Memory Addressing</b>	64-bit, supporting compute module memory space greater than 4 GB (4.4 GB)
<b>RAID Support</b>	RAID 6, 60 (Advanced Data Guarding)

## Technical Specifications

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

## Summary of Changes

Date	Version History	Action	Description of Change
1-Dec-2015	Version 1	Created	New QuickSpecs



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