

Overview

HPE Synergy 12Gb SAS Connection Module

The HPE Synergy 12Gb SAS Connection Module connects Synergy Compute Modules to in-frame storage resources. In conjunction with the Synergy D3940 Storage Module, the Synergy SAS Connection Module connects composable direct attached storage for up to 10 compute modules in a single frame.

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 12Gb SAS Connection Module dynamically creates virtual JBODs for any compute module in the HPE Synergy 12000 Frame, remaps connections, or changes personality, all done with stored profiles. The Connection Module provides in-frame connectivity between Synergy compute modules and up to up to five storage modules. Two Connection Modules can be added to each HPE Synergy 1200 Frame providing redundant paths to the storage modules.

Each 12Gb SAS module provides twelve internal SAS ports each consisting of four 12GB/s SAS channels, ensuring a non-blocking fabric even when connected storage modules are fully populated with solid-state disks (SSDs).



1. UID LED
 - Off—Normal
 - Solid blue—Being identified
 - Blinking blue—Firmware is being updated
2. Module Status LED
 - Off—Not powered up
 - Green—Healthy
 - Blinking amber—Error, there is a problem with the module
3. Handle release
4. Module extraction handle

Overview

At A Glance

- Hot Pluggable 12Gb/s SAS Connection Module for HPE Synergy 12000 Frame
- Dual Domain direct attached SAS architecture supported with Synergy D3940 Storage Modules containing two (2) I/O adapters
- Twelve internal blade bay ports each containing 4x 12Gb/s SAS links
- Managed with HPE Synergy Composer and OneView version 3.0 or later

Models

HPE Synergy 12Gb SAS Connection Module Configuration

Models HPE Synergy 12Gb SAS Connection Module with 12 Internal Ports 755985-B21

Configuration Rules

1. The HPE Synergy 12Gb SAS Connection Module supports connections between Synergy Compute Modules and the HPE Synergy D3940 Storage Module in the same HPE Synergy 12000 Frame.
2. Synergy 12Gb SAS Connection Modules are only supported in HPE Synergy 12000 Frame interconnect module bays (ICM bays) 1 and 4.
3. Two (2) HPE Synergy 12Gb SAS Connection Modules are required in the same HPE Synergy 12000 Frame for redundancy. Single SAS connection module configurations are supported as non-redundant.
4. If implementing a non-redundant configuration, a SAS connection module placed in ICM bay 1 will connect to storage modules placed in module bays 1, 3 and 5. A SAS connection module placed in ICM bay 4 will connect to storage modules placed in module bays 7, 9 and 11.
5. A maximum of two (2) HPE Synergy 12Gb SAS Connection Modules are supported per HPE Synergy 12000 Frame, supporting up to five (5) HPE Synergy D3940 SAS Storage Modules per Frame.
6. When configuring a frame with dual SAS connection modules, dual I/O adapters are required in each HPE Synergy D3940 Storage Module
7. Any configurations with either dual I/O adapters in a single storage module or greater than three (3) HPE Synergy D3940 Storage Modules in a single frame must include dual 12Gb SAS Connection modules.
8. The threshold for requiring a second 12 Gb SAS Connection Module drops to two storage modules in configurations with three or more full height compute modules in the same frame.

Related Options

Other Components	HPE Smart Array P542D/2GB FBWC 12Gb Mezzanine SAS Controller	759557-B21
	NOTE: Each compute module which is to access the D3940 Storage Module must include a Smart Array P542D controller populated in mezzanine slot 1.	
	Configure-to-order	
	HPE Synergy D3940 12Gb SAS CTO Drive Enclosure with 40 SFF (2.5in) Drive Bays	835386-B21
	Build-to-order	
	HPE Synergy D3940 12Gb SAS Drive Enclosure with 40 SFF (2.5in) Drive Bays	755984-B21
Storage Module Options	HPE Synergy D3940 Redundant I/O Adapter	757323-B21
	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. Storage Modules with the second I/O adapter installed require that the Synergy Frame be configured with dual 12 Gb SAS Connection Modules.	
HPE Synergy Services	NOTE: See HPE Support Services Central for additional services at http://www.hpe.com/info/cpc	
	HPE Synergy Proactive Care Services	
	HPE 3 Year Proactive Care 24x7 Synergy 12Gb SAS Connection Module Service	H0XZ4E
	HPE 3 Year Proactive Care 24x7 with CDMR Synergy 12Gb SAS Connection Module Service	H0XZ6E
	HPE 3 Year Proactive Care Advanced 24x7 Synergy 12Gb SAS Connection Module Service	H0XZ7E
	HPE 3 Year Proactive Care Advanced 24x7 with CDMR Synergy 12Gb SAS Connection Module Service	H0XZ9E
	Deployment/Installation & Start-up Services	
	HPE Factory Express Synergy Initial Frame Package 4 Service	HA454A1-300
	HPE Factory Express Synergy Add-on Frame Package 4 Service	HA454A1-301
	HPE Synergy First Frame Startup Service	U8JM3E
HPE Synergy Additional Frame Startup Service	U8JM4E	

Service and Support and Warranty Information

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

HPE 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.

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 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: HPE Synergy with OneView embedded helps enable infrastructure automation and is integrated with tools such as those from Chef, Puppet, and Docker, to enable rapid bare metal provisioning. With DC-IA, HPE service experts provide advice, support, best practices, for these tools that work with OneView to help create a fast, agile, and reliable automated IT environment. With this approach, customers can deploy faster. DC-IA delivers support to customers to enable infrastructure as code and agile processes as part of the service. Customers schedule quarterly reviews and reports with HPE Center of Expertise, as well as having access to these experts when needed, for automation development and code

Service and Support and Warranty Information

coaching.

Deploy and integrate

HPE Factory Express Initial Frame Service for Synergy

Factory Express allows a customers' configurations to be pre-configured in the HPE Integration center with an implementation project manager to manage the deployment end to end. The project manager will act as a single point of contact to coordinate the build, delivery and onsite installation and commissioning of the solution. In addition to the configuration and deployment activities, your HPE Synergy configuration goes through comprehensive testing and a detailed documentation package on the configuration and settings of the delivered solution will be provided.

HPE Factory Express Synergy Additional Frame Service for Synergy

Add additional frames to your HPE Synergy Factory Express service or expand your existing HPE Synergy Infrastructure.

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.

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.

<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA5-3259ENW.pdf>

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.

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa3-8855enw.pdf>

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.

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 and Warranty Information

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.

**For more
information**

Additional Support Services can be found at HPE Support Services Central
<http://www.hpe.com/info/cpc>

Technical Specifications

General Specifications	Data path	12Gb/s SAS x 12 internal ports connecting Synergy compute and storage resources
	Dimensions	11.05" x 1.08" x 16.92"
	Weight	5.9 lbs

Power and Environmental Specifications	Temperature	Operating	10° to 35°C (50° to 95°F)
		Non-operating	-30° to 60°C (-22° to 140°F)
	Relative Humidity	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
	Power Requirements		22 Watts (Minimum) 32 Watts (Maximum)

NOTE: Operating temperature has an altitude derating of 1.8° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

NOTE: For detailed environmental and other installation requirements, please see the “HPE Site Planning Guide” at <http://www.hpe.com/support>



[hpe.com/qref/synergy12gbsas](http://www.hpe.com/qref/synergy12gbsas)

Summary of Changes

Date	Version History	Action	Description of Change
18-Nov-2016	From Version 3 to 4	Changed	Service and Support section was updated.
05-Aug-2016	From Version 2 to 3	Changed	Overview, Models, Related Options, and Technical Specifications sections were updated. URL 's updated to hpe.com.
31-March-2016	From Version 1 to 2	Changed	Overview and Technical Specifications sections were updated.
		Added	SKUs added in Overview section: 759557-B21, 835386-B21, 755984-B21, 757323-B21., HOXZ4E, HOXZ6E, HOXZ7E, HOXZ9E, HA454A1-300, HA454A1-301 , U8JM3E, U8JM4E.
1-Dec-2015	Version 1	Created	New QuickSpecs



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