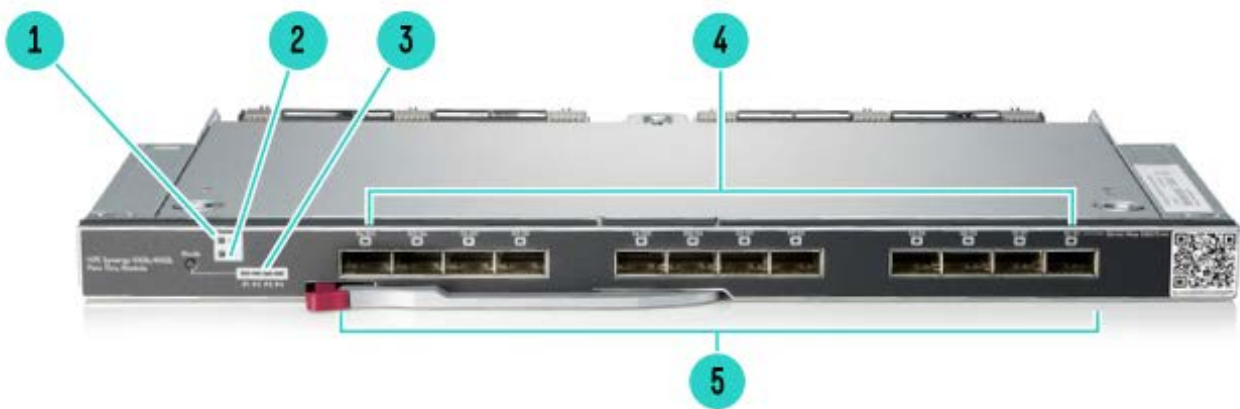## Overview

HPE Synergy 10Gb Pass-Thru Module

The HPE Synergy 10Gb Pass-Thru Module is designed for the HPE Synergy 12000 Frame for customers requiring a non-blocking, one -to-one connection between each Synergy Compute Module and the network. The pass-thru module provides 12 uplink ports that can accept SFP+ connectors using a QSFP+ to SFP+ adapter.

The HPE Synergy 10Gb Pass-Thru Module can support 10Gb connections on a port by port basis. Optical as well as Direct Attach Copper (DAC) cables are also supported. Both standard Ethernet as well as Converged Enhanced Ethernet (CEE) traffic to an FCoE capable switch is possible when using the appropriate HPE Synergy Converged Network Adapter.

HPE Synergy 10Gb Pass-Thru Module

1. UID LED
2. Module Status/Health LED
3. Mode LED
4. Ethernet port link status and speed LEDs
5. Uplink ports that accept QSFP+ to SFP+ adapter to support SFP+ transceivers and Direct Attach Cables (DAC)

At A Glance

Performance:
- 12 direct Synergy Compute Module to network connections
- Auto-sense 10Gb operation on a port by port basis
- Supports standard Ethernet as well as Converged Enhanced Ethernet
- Supports HPE Synergy Ethernet Converged Network Adapters

Management:
- No management required – automatic discovery be HPE Synergy Composer
- Module performance monitored by the HPE Synergy Composer
- Hardware diagnosis, error reporting, and firmware updates through HPE Synergy Composer

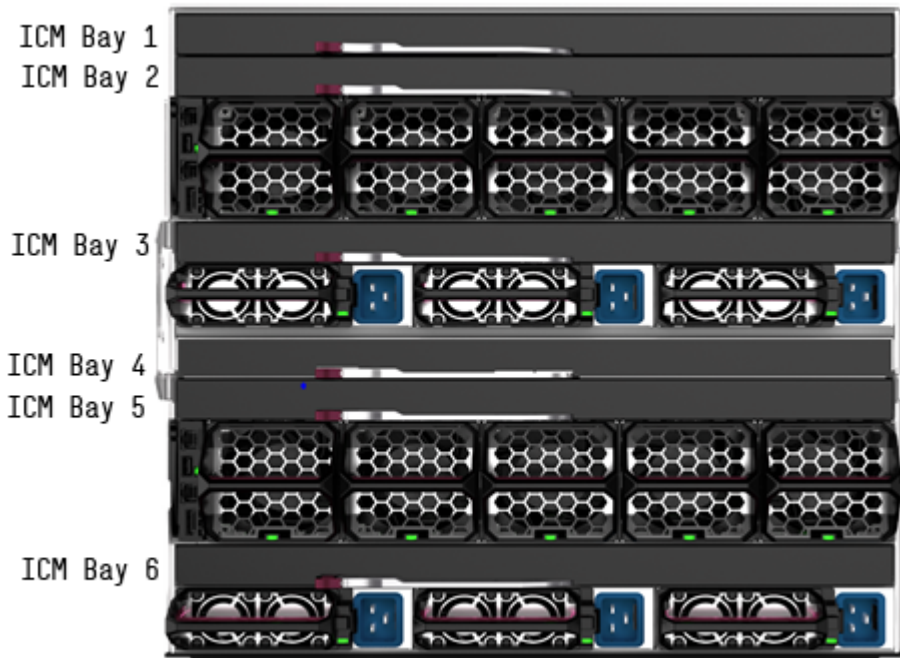### Compute Module to HPE 10Gb Pass-Thru Module Port Mapping

Faceplate	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12

Hewlett Packard Enterprise

Overview

Port												
PTM in Odd Bay (1,3,5)	CM6	CM12	CM5	CM11	CM4	CM10	CM3	CM9	CM2	CM8	CM1	CM7
PTM in Even Bay (2,4,6)	CM12	CM6	CM11	CM5	CM10	CM4	CM9	CM3	CM8	CM2	CM7	CM1

NOTE: CM – Compute Module

HPE Synergy 12000 Frame - Rear View

Models and Options

Models

HE Synergy 10Gb Pass-Thru Module 799330-B21

Compatibility

Compatibility

HPE Synergy 10Gb Pass-Thru Module supports the following hardware.

HPE Synergy Compute Modules	**HPE Synergy Compute Modules**

HPE Synergy Compute Modules
- HPE Synergy 480 Gen9 Configure-to-order Compute Module
- HPE Synergy 480 Gen9 Configure-to-order w/o Drive Bays Compute Module
- HPE Synergy 480 Gen9 Configure-to-order Expanded Storage Compute Module
- HPE Synergy 660 Gen9 Configure-to-order SAS Compute Module
- HPE Synergy 660 Gen9 Configure-to-order SATA Compute Module
- HPE Synergy 660 Gen9 Configure-to-order with Expanded Storage Compute Module

HPE Network Adapters

Converged Network Adapter:
- HPE Synergy 2820C 10Gb Converged Network Adapter
- HPE Synergy 3820C 10/20Gb Converged Network Adapter

NOTE: Consult individual compute module TechSpecs for specific adapter support.

Supported Configurations

Cabling and Transceivers

SFP+ cables connected to QSFP+ to SFP+ Adapter:
- HP BladeSystem c-Class QSFP+ to SFP+ Adapter
  NOTE: One HP BladeSystem c-Class QSFP+ to SFP+ Adapter is required for each QSFP+ port to connect 10Gb DAC cables to the HPE Synergy 10Gb Pass-Thru Module.
- HP BladeSystem c-Class Small Form-Factor Pluggable 1m 10GbE Copper Cable
- HP BladeSystem c-Class Small Form-Factor Pluggable 3m 10GbE Copper Cable
- HP BladeSystem c-Class Small Form-Factor Pluggable 5m 10GbE Copper Cable

NOTE: The above cables have been tested and verified to work with the HPE 10Gb Pass-Thru Module. However, the module will accept cables from any vendor. Hewlett Packard Enterprise does not guarantee

Compatibility

the performance of non HPE cables and users may receive a warning message via the CLI when a non-verified cable has been inserted.

Transceivers:

- HPE BladeSystem c-Class QSFP+ to SFP+ Adapter
- HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- HPE 10GBase-T SFP+ Transceiver

NOTE: One HPE QSFP+ to SFP+ adapter is required for each QSFP+ port to connect 10Gb transceivers to the HPE Synergy 10Gb Pass-Thru Module
NOTE: Only HPE transceivers listed above may be used in the HPE 10Gb Pass-Thru Module.

Service and Support

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.

NOTE: The HPE Synergy 10Gb Pass-Thru Module is covered under the HPE Support Service(s) applied to the HPE Synergy 12000 frame. No separate HPE Support Service(s) need to be purchased.

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

Service and Support

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 coaching.

Deploy and integrate

HPE Synergy First Frame Installation and Start-up - Provides for hardware installation (HPE Synergy compute modules, Storage Modules, Virtual Connect modules, Interconnect Link Modules, Fibre Channel Modules, Frame Link Modules, pass through 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 Start-up Service - Add additional frames to your HPE Synergy First Frame Startup service or expand your existing HPE Synergy Infrastructure.

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.

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.

Warranty

HPE Synergy 10Gb Pass-Thru Module Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: **http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/index.aspx**

Service Coverage

HPE Synergy 10Gb Pass-Thru Module includes 3 years 9x5 Next Business Day hardware support. If you have requirements for longer durations of service, quicker response times or more comprehensive services, HPE Support Services for the HPE Synergy 12000 Frame are available to uplift or extend your coverage

Related Options

Cables and Transceivers

SFP+ Direct attached cables

HP BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable	487652-B21
HP BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable	487655-B21
HP BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable	537963-B21

NOTE: QSFP+ to SFP+ adapter required for each QSFP+ port to connect SFP+ cables/transceivers

Transceivers

HP BladeSystem c-Class QSFP+ to SFP+ Adapter	720193-B21
HP BladeSystem c-Class 10Gb SFP+ SR Transceiver	455883-B21
HP BladeSystem c-Class 10Gb SFP+ LR Transceiver	455886-B21
HP 10GBase-T SFP+ Transceiver	813874-B21

Technical Specifications

Shipping Dimensions	**Length**	19.45 in (494 mm)	
	Width	15.55 in (395 mm)	
	Height	5.75 in (145 mm)	
Shipping Weight		3.2 kg (7.0 lbs)	
Product Specifications Hardware	**Performance**	240 Gbps external port bandwidth per module at 10Gb	
	Connectors and Cabling	Uplink Ports	12 QSFP+/SFP+ Modules
		Management	Mini-USB Management
	Network Transfer Rate	10 Gbps port (20,000 Mbps full duplex)	
	LED Indicators	UID LED	Blue light on module is activated. Blue light off module is deactivated.
		Mode LED	Green lights
		Health LED	Solid Amber: The pass-thru module is powered off. Green: The pass-thru module is powered up, and all ports match. Flashing Amber: Fault exists.
		Ethernet port	Green Link is 10G Flashing blue QSFP+ indicator Red configuration error
	Product Dimensions	Length	10.5 in (267.7 mm)
		Width	7.5 in (192.79 mm)
		Height	1.1 in (27.94mm)
	Product Weight	1.6 kg (3.97 lbs)	

Environmental Ranges

Temperature Range

Specification	10°C to 40°C (50°F to 104°F)*

Temperature Range**

Operating	10°C to 40°C (50°F to 104°F)
Shipping	Shipping -40°C to 70°C (-40°F to 158°F)
Storage	-30°C to 60°C (-22°F to 140°F)
Maximum wet bulb temperature	38.7°C (101.66°F)

Relative Humidity (noncondensing)***

Operating	5% to 95%
Shipping	5% to 95%

NOTE: All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048m (10,000 ft) or 70 KPa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.

NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

Power Specification   12V @ 10A (124 W max)

Technical Specifications

Safety and Compliance	**Safety Certifications**	UL/CUL Recognition to UL/CSA 60950-1 TUV to EN 60950-1 CB report and certificate to IEC 60950-1 with all country deviations CE Marking

Electromagnetic Emissions Certifications FCC Part 15 Class A	FCC Part 15 Class A EN 55022 Class A (CISPR22 Class A) VCCI Class A CE Marking

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: **http://www.hpe.com/info/recycle**. To recycle your product, please go to: **http://www.hpe.com/info/recycle** or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) 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 at: **http://www.hpe.com/info/recycle**. 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.

Summary of Changes

Date	Version History	Action	Description of Change
18-Nov-2016	From Version 5 to 6	Changed	Models and Options section was updated.
26-Aug-2016	From Version 4 to 5	Changed	Modules and Options and Service and Support sections were updated.
29-Jul-2016	From Version 3 to 4	Changed	QuickSpecs updated.
06-Jun-2016	From Version 2 to 3	Changed	Overview, Compatibility, Service and Support, Related Options, and Technical Specifications sections were updated.
		Added	SKUs were added in Related Options Sections: 799330-B21, 487652-B21, 487655-B21, 537963-B21, 720193-B21, 455883-B21, 455886-B21, 813874-B21.
11-Dec-2015	From Version 1 to 2	Changed	Sections in QuickSpecs were updated.

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