RETIRED: This document has been officially retired, and the base products listed herein are now considered obsolete and are no longer available for sale. Consequently, the information contained within may no longer be current. This document is provided exclusively for reference and informational purposes.

QuickSpecs

Overview

For latest information on this product please use HPE Synergy Networking Adapters QuickSpecs

HPE Synergy 6410C 25/50Gb Ethernet Adapter

The HPE Synergy 6410C 25/50Gb Ethernet Adapter is a key element in HPE composable fabric connecting pools of compute resources to networks with reliable, high-performing 25Gb or 50Gb Ethernet connectivity.

Provisioning and updating Synergy 6410C are simple, reliable and fast using HPE Synergy's software-defined template-driven, frictionless operation. The HPE Synergy Composer automatically delivers proper firmware and driver coordination including staging updates for execution to avoid workload disruption.



HPE Synergy 6410C 25/50Gb Ethernet Adapter

Kit Contents	HPE Synergy 6410C 25/50 Ethernet Adapter Quick install card Product warranty statement
Compatibility - Synergy Compute Module Support	HPE Synergy 480 Gen10 Configure-to-order Compute Module HPE Synergy 480 Gen10 Configure-to-order w/o Drive Bays Compute Module HPE Synergy 480 Gen10 Configure-to-order Expanded Storage Compute Module HPE Synergy 480 Gen10 w/MXM Expanded Storage Compute Module HPE Synergy 660 Gen10 Configure-to-order Compute Module HPE Synergy 660 Gen10 Configure-to-order w/o Drive Bays Compute Module HPE Synergy 660 Gen10 Configure-to-order Expanded Storage Compute Module
Compatibility - Supported Synergy Interconnect Modules	Mellanox SH2200 TAA-compliant Switch Module for HPE Synergy HPE Synergy 40Gb F8 Switch Module

Models

HPE Synergy 6410C 25/50Gb Ethernet Adapter	868779-B21

Standard Features

At a Glance Features	Up to 200 Gb/s of bi-directional Ethernet bandwidth Jumbo Frames Type C mezzanine form factor HPE Sea of Sensors 3D Tunnel Offload(GENEVE, NVGRE and VXLAN) RDMA over Converged Ethernet (RoCE v2, RoCE v1) Single-root input/output virtualization (SR-IOV) IPv6 Acceleration Preboot eXecution Environment (PXE) Wake on Lan (WOL) Checksum & Segmentation Offload VMware NetQueue and Microsoft Virtual Machine Queue (VMQ) Data Plane Development Kit (DPDK) Precision Time Protocol (PTP) Receive-Side Scaling (RSS) Receive-Side Coalescing (RSC) Active Health Systems support Security features - digitally signed firmware components, secure firmware loading, secure firmware update, UEFI secure boot Authentication of digitally signed firmware through Chain of Trust on the NIC Additional Security features include: Device-level Firewall, Audit Logs and Sanitization **NOTE:** DPDK not supported with HPE Virtual Connect SE 40Gb F8 Module **NOTE:** OneView 4.1 or newer is required for support.
Audit Logs	Audit Logs are a forensics capability that provides traceability into authenticated firmware updates by capturing changes in standard system logs.
Authenticated Updates	Authenticated Updates brings cryptographic keys onto the NIC (for HW Authentication) to protect user and configuration data from unauthorized access and verify digitally signed firmware.
Throughput-Theoretical Bandwidth	This adapter delivers 50/100 Gb/s bi-directional Ethernet transfer rate per port (100/200 Gb/s per adapter), providing the network performance needed to improve response times and alleviate bottlenecks.
Device-level Firewall	Device-level Firewall blocks any unmanaged access to memory or storage. This ensures that on-device firmware and configuration data can only be accessed by authorized agents.
DPDK	This adapter supports DPDK with benefit for packet processing acceleration and use in NFV deployments.
Checksum & Segmentation Offload	Normally the TCP Checksum is computed by the protocol stack. Segmentation Offload is technique for increasing outbound throughput of high-bandwidth network connections by reducing CPU overhead. The technique is also called TCP segmentation offload (TSO) when applied to TCP, or generic segmentation offload (GSO).
Form Factor	This adapter is a Type C mezzanine.
HPE Sea Of Sensors 3D	Support for the HPE Sea of Sensors which is a collection of 32 sensors that automatically track thermal activity - heat - across the server. When temperatures get too high, sensors can initiate fans and make other adjustments to reduce energy usage. A significant improvement lies in the ability to apply fan speed increases only to the portion of the system that is rising in temperature, rather than all six fans in unison, which reduces the amount of energy used for cooling.
IPv6	IPv6 uses 128-bit addressing allowing for more devices and users on the internet. IPv4 supported 32-bit addressing.
Jumbo Frames	This adapter supports Jumbo Frames (also known as extended frames), permitting up to a 9,600 byte (KB) transmission unit (MTU) when running Ethernet I/O traffic. This is over six times the size of a standard 1500-byte Ethernet frame. With Jumbo Frames, networks can achieve higher throughput performance

Standard Features

	and greater CPU utilization. These attributes are particularly useful for database transfer and tape backup operations.
Management Support	Provisioning and updating this adapter are quick and consistent using the HPE Synergy template-driven server profiles. Orchestrates reliable adapter firmware updates with an entire HPE Synergy infrastructure from a single tool, HPE Synergy Composer.
Preboot eXecution Environment (PXE)	Support for PXE enables automatic deployment of computing resources remotely from anywhere. It allows a new or existing server to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network.Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.
Receive Side Scaling (RSS)	RSS resolves the single-processor bottleneck by allowing the receive side network load from a network adapter to be shared across multiple processors. RSS enables packet receive-processing to scale with the number of available processors.
RDMA	This adapter supports RoCE v1 and v2. RoCE v2, also sometimes called "Routable RoCE" which adds Concurrent RoCE v1 and v2 support, SR-IOV support, QoS with hierarchical TX scheduling, ECN-based congestion control for RoCE v2. RoCE is an accelerated I/O delivery mechanism that allows data to be transferred directly from the user memory of the source server to the user memory of the destination server bypassing the operating system (OS) kernel. Because the RDMA data transfer is performed by the DMA engine on the adapter's network processor, the CPU is not used for the data movement, freeing it to perform other tasks such as hosting more virtual workloads (increased VM density). RDMA also bypasses the host's TCP/IP stack, in favor of upper layer InfiniBand protocols implemented in the adapter's network processor. The bypass of the TCP/IP stack and the removal of a data copy step reduce overall latency to deliver accelerated performance for applications such as Microsoft Hyper-V Live Migration, Microsoft SQL and Microsoft SharePoint with SMB Direct.
Sanitization	Sanitization (Secure User Data Erase) renders User and configuration data on the NIC irretrievable so that NICs can be safely repurposed or disposed.
Single-Root I/O Virtualization	Single-Root I/O Virtualization (SR-IOV) provides a mechanism to bypass the host system hypervisor in virtual environments providing near metal performance and server efficiency. SR-IOV provides mechanism to create multiple Virtual Functions (VFs) to share single PCIe resources. The device is capable of SR-IOV, and requires Server BIOS support, controller firmware, and OS support.
Secure Boot	Secure Boot safeguards the system and ensures no rogue drivers are being executed on start-up.
Precision Time Protocol (IEEE 1588 PTP)	Synchronization of system clocks throughout a network, achieving clock accuracy in the sub-microsecond range, making it suitable for measurement and control systems.
Tunnel Offload	Minimize the impact of overlay networking on host performance with tunnel offload support for VXLAN, NVGRE and GENEVE. By offloading packet processing to adapters, customers can use overlay networking to increase VM migration flexibility and virtualized overlay networks with minimal impact to performance. HPE Tunnel Offloading increases I/O throughput, reduces CPU utilization, and lowers power consumption. Tunnel Offload supports VMware's VXLAN, Microsoft's NVGRE solutions and Generic Network Virtualization Encapsulation (GENEVE) solutions.
Wake-on-LAN	This adapter provides Wake-on-LAN (WoL) support through the PCI Express bus. A system that supports Wake-on-LAN can remain available to the systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.
Warranty	Maximum: The remaining warranty of the HPE product in which it is installed (to a maximum three-year, limited warranty). Minimum: One year limited warranty. **NOTE:** Additional information regarding worldwide limited warranty and technical support is available at: **http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/index.aspx#.V4e3tPkrJhE**

Service and Support

Service and Support	**NOTE:** This adapter is covered under HPE Support Services/ Service Contract applied to the HPE ProLiant Server or enclosure. No separate HPE Support Services need to be purchased. Most HPE branded options sourced from HPE that are compatible with your product will be covered under your main product support at the same level of coverage, allowing you to upgrade freely. Additional support is required on select workload accelerators, switches, racks and UPS options 12KVA and over. Coverage of the UPS battery is not included under HPE support services; standard warranty terms and conditions apply.
Warranty and Support Services	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 options 12KVA and over. Coverage of the UPS battery is not included under TS support services; standard warranty terms and conditions apply.
Protect your business beyond warranty with HPE Support Services	HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HPE to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support you need for your IT and business. Protect your product, beyond warranty.
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 quick-specs, 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	Visit the Hewlett Packard Enterprise Service and Support **website**.

Technical Specifications

General Specifications	**Network Processor**	Mellanox CX4
	Data Rate	Two ports, each at 50/100 Gb/s bi-directional; 100/200 bi-directional theoretical bandwidth.
	Bus type	PCIe 3.0 x 16
	Form Factor	Type C mezzanine
	IEEE Compliance	802.1p, 802.1Qaz, 802.1Qbb, 802.1AS, 802.3ad, 802.3by, 1588, 802.3-2012, 802.3by-2016, 802.1q
Power and Environmental Specifications	**Power**	14 W typical, 17 W maximum
	Temperature Operating	5°C to 70°C / 41°F to 158°F, Dry bulb
	Humidity Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity. non-condensing.
	RoHS Compliance	6 of 6
Operating System and Virtualization Support	The Operating Systems supported by this adapter are based on the server OS support. Please refer to the OS Support Matrix at **https://www.hpe.com/us/en/servers/server-operating-systems.html**.	
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.	

Summary of Changes

Date	Version History	Action	Description of Change
05-Nov-2018	Version 5	Changed	Overview Information was updated
01-Oct-2018	Version 4	Changed	Overview were revised.
13-Aug-2018	Version 3	Changed	Removed HPE Synergy 40Gb F8 Switch Module
02-Jul-2018	Version 2	Changed	At a glance features updated
04-Jun-2018	Version 1	New	New QuickSpecs



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