

Adquisición de componentes para actualización de hardware de servidores del Data Center

JCE-CCC-CP-2025-0006

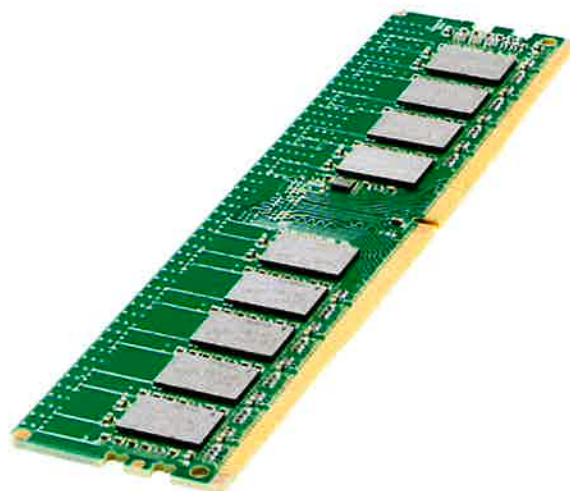
FORMULARIO DE ACLARACIONES TÉCNICA

ITEM	CANT	PRODUCTO SOLICITADO	PRODUCTO OFERTADO
1	96	Componentes para servidores HPE DL580 Gen10	Componentes ofertados
		Memoria RAM: 128 GB DDR4-2933. Compatible con servidores HP DL580 Gen10. P11040-B21	Se oferta memoria RAM 128GB DDR4. Incluye garantía de 3 años. P11040-B21
2	8	Tarjeta Fibre Channel: Conectividad de dos puertos a 32GB. Q0L12A	Se oferta Tarjeta Fibre Channel de dos puertos a 32 GB. Incluye garantía de 3 años. Q0L12A
3	8	Tarjeta de red: Dos puertos a 25GB. Módulos SFP28 incluidos. 817753-B21	Se oferta Tarjeta de red de dos puertos a 10/25GB, también se incluyen los módulos SFP28 para cada tarjeta. Se incluye garantía de 3 años. 817753-B21
4	2	Riser kit: HPE DL580 Gen10 9-slot. Con 6 x 8/3 x 16 secondary Riser Kit. 872340-B21	Se oferta Riser kit HPE DL580 Gen10 9-slot con 6 x 8/3 x 16 secondary Riser. Incluye garantía de 3 años. 872340-B21



HPE DDR4 Smart Memory

HPE 128GB (1x128GB) Quad Rank x4 DDR4-2933 CAS-21-21-21 Load Reduced Smart Memory Kit (P11040-B21)



Overview

Has your server been configured with the memory it needs to perform as its role expands over time?

HPE DDR4 Smart Memory is designed for small to large enterprise customers with a significant need for performance and capacity, along with a desire to manage total cost of ownership. HPE DDR4 Smart Memory enables total server memory optimization, runs at top throughput speed, and is among the most power-efficient memory available. In addition to performance and efficiency, HPE DDR4 Smart Memory also delivers on reliability. Only the highest-quality DRAM modules are selected from top suppliers. Now more than ever, DRAM quality is critical, as data center trends such as server virtualization, cloud computing, and the use of large database applications have increased the need for higher-capacity memory with greater up-time. HPE DDR4 Smart Memory undergoes rigorous qualification and testing processes that unlock memory performance features available only with HPE servers.

Features

High Performance

HPE DDR4 Smart Memory 3200 MT/s provides improvements in bandwidth in comparison to DDR4 2933 MT/s memory modules.

HPE DDR4 Smart Memory delivers improvements in latency at 3200 MT/s in comparison to DDR4 2933 MT/s memory modules.

High Reliability

Hewlett Packard Enterprise tests and qualifies HPE DDR4 Smart Memory modules on all HPE server platforms to deliver the highest level of signal integrity.

HPE DDR4 Smart Memory prevents unnecessary DIMM replacement and reduces server downtime with advanced memory error detection technology.

HPE uses the highest quality materials for its DDR4 server memory, reducing issues that may affect signal integrity and increasing system reliability.

HPE provides server memory that performs above industry standards, enabling customers to increase the performance of their servers without having to increase the amount of memory purchased.

Technical specifications

HPE 128GB (1x128GB) Quad Rank x4 DDR4-2933 CAS-21-21-21 Load Reduced Smart Memory Kit

Product Number	P11040-B21
DIMM type	Load Reduced Smart Memory (LRDIMM)
DIMM capacity	8 GB, 16 GB, 32 GB, 64 GB, 128 GB, 256 GB
DIMM rank	Quad Rank
DIMM native speed	2933 MT/s
Voltage	1.2 V
Platform supported	HPE Compute Mainstream Platforms, see QuickSpecs for more information
Product dimensions	8.89 x 19.05 x 1.91 cm
Weight	0.45 KG



For additional technical information, available models and options, please reference the QuickSpecs

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HPE GreenLake

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PSN1011637459WWEN, April, 2025.



HPE SN1610Q 32Gb Fibre Channel Host Bus Adapter

HPE SN1610Q 32Gb 2-port Fibre Channel Host Bus Adapter (R2E09A)



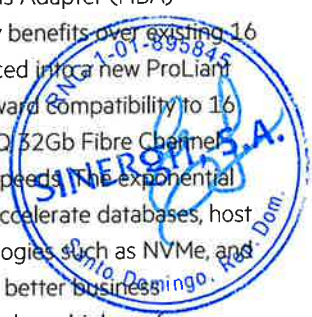
What's new

- NVMe protocol
- Hardware root of trust
- Improve bandwidth, latency, and I/O performance

Overview

Are you looking for an upgrade path to improve Storage Area Network performance for your ProLiant servers?

The HPE SN1610Q 32Gb Fibre Channel Host Bus Adapter (HBA) provides significant I/O performance and security benefits over existing 16 Gb SAN solutions. Even if the SN1610 is introduced into a new ProLiant server, the Fibre Channel standard enables backward compatibility to 16 Gb infrastructure. Additionally, the HPE SN1610Q 32Gb Fibre Channel HBA is forward compatible to 64 Gb and future speeds. The exponential effect of newer servers and infrastructure helps accelerate databases, host more virtual machines, support emerging technologies such as NVMe, and reduce total cost of ownership. The HBA delivers better business outcomes across multiple industry verticals that rely on high-performance, data-intensive, and reliable connectivity from servers to storage.



Features

32 Gb High Performance Bandwidth, Lower Latency, and Higher Number of I/Os

HPE SN1610Q 32Gb Fibre Channel HBA offers higher bandwidth than older HBAs to allow for faster travel from source to destination targets.

Lower latency enables the transition from one action to the next action transaction. With 32,000,000,000 (billion) bits traveling per second, even small improvements to latency can have large impacts at scale.

Performance up to 2 million IOPS.

Database and Data-Intensive Applications Improved Performance with Fibre Channel.

Fibre Channel is designed to support block-based data structures found in most databases and their associated applications — enterprise resource planning (ERP), reservation systems, financial and insurance, medical, and large virtual server deployments.

The adapter improves database transactional performance, enables faster business decisions with better data mining, and hosts more VMs.

The newer NVMe protocol strips away many of the older, unused SCSI commands and builds a more memory-friendly protocol (think storage arrays with SSDs) offering much lower latency and quicker responses to data transactions

Lower Total Cost of Ownership and Investment Protection

Migrating from 16 Gb HBAs reduces cabling and power consumption while improving overall performance.

SAN design allows component generations to be mixed, meaning older and newer products are automatically supported. If an end-to-end SAN upgrade is not possible, it is possible to upgrade different portions of the SAN to match budgets.

SAN design supports two generations forward compatibility: 32 Gb HBA today would function properly with 64 Gb and 128 Gb components in the future. Future deployments could place high I/O functions on faster-performing products while leaving lower performing functions on lower-performing products.

Fibre Channel Remains the Most Secure Protocol for Transporting Data

Designed to only transmit data to other Fibre Channel devices on a SAN, the protocol excludes IP addresses removing access from outside entities and vulnerabilities.

Hardware root of trust is built into the HPE SN1610Q 32Gb Fibre Channel HBA that prevents unsigned firmware from being downloaded into the adapter making sure that only secure firmware is downloaded.



Technical specifications**HPE SN1610Q 32Gb 2-port Fibre Channel Host Bus Adapter**

Product Number	R2E09A
Platform supported	HPE ProLiant ML and DL Gen10 and Gen10 Plus servers;HPE ProLiant ML and DL Gen11 Servers ;HPE Alletra Storage Server 4110;HPE Alletra Storage Server 4120;HPE Alletra Storage Server 4140
Data rate	32 Gb per second
Bus type	PCIe 4.0
Form factor	2U
Power	12.3W Max -No SFP
Server type supported	HPE ProLiant platforms. Please refer to the Server QuickSpecs for more information.
Compatible operating systems	Red Hat®, Linux® SUSE Linux, VMware®, Microsoft®, Windows®. Visit www.hpe.com/storage/spock for the latest available information on Operating System support.
Product dimensions (metric)	68.9 x 167.6 mm
Weight	Dual Port: 120 g
Warranty	Three-year limited warranty, parts exchange next business day delivery. For more warranty information refer to http://www.hpe.com/storage/warranty
Connector type	SFP+
Supported cables	Shortwave, 50 micron, fiber optic up to 100 meters



For additional technical information, available models and options, please reference the QuickSpecs

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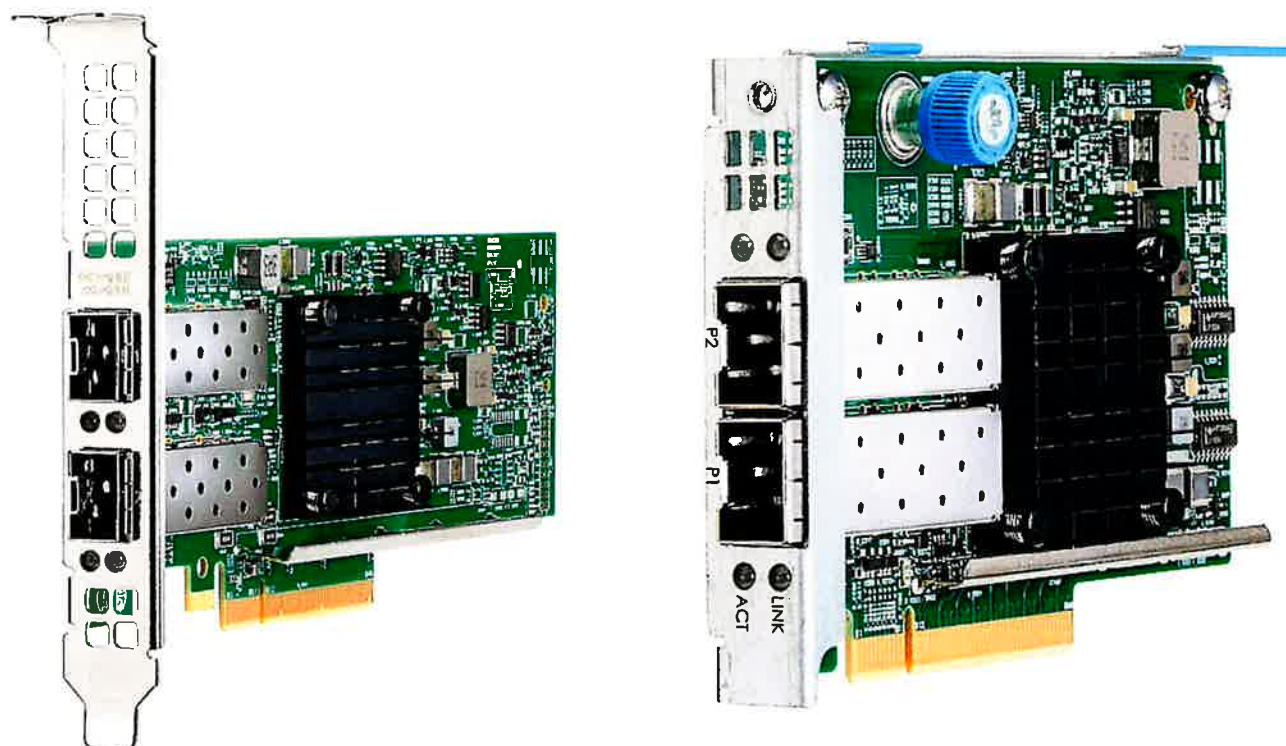
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PSN1012087640WWEN, April, 2025.

Overview

HPE Ethernet 10/25Gb Adapters

HPE ProLiant DL, ML and Apollo

The HPE Ethernet 10/25Gb Adapters are ideal for high performance computing, server virtualization, security, server consolidation, and other applications requiring highest throughput.



Overview

Models

HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter	817709-B21
HPE Ethernet 10/25Gb 2-port SFP28 BCM57414 Adapter	817718-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter	817749-B21
HPE Ethernet 10/25Gb 2-port SFP28 MCX4121A-ACUT Adapter	817753-B21
HPE Ethernet 10/25Gb 2-port SFP28 QL41401-A2G Adapter	867328-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter	867334-B21
Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P08443-B21
Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P08458-B21

Kit Contents

SKU	817709-B21	817718-B21	817749-B21
Description	HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter	HPE Ethernet 10/25Gb 2-port SFP28 BCM57414 Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter
Quick install card	✓	✓	✓
Product warranty statement	✓	✓	✓
Low profile bracket		✓	

SKU	817753-B21	867328-B21	867334-B21
Description	HPE Ethernet 10/25Gb 2-port SFP28 MCX4121A-ACUT Adapter	HPE Ethernet 10/25Gb 2-port SFP28 QL41401-A2G Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter
Quick install card	✓	✓	✓
Product warranty statement	✓	✓	✓
Low profile bracket	✓	✓	

SKU	P08443-B21	P08458-B21
Description	Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE
Quick install card	✓	✓
Product warranty statement	✓	✓
Low profile bracket	✓	





Overview

Servers Support

SKU Description	817709-B21 HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter	817718-B21 HPE Ethernet 10/25Gb 2-port SFP28 BCM57414 Adapter	817749-B21 HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter	817753-B21 HPE Ethernet 10/25Gb 2-port SFP28 MCX4121A- ACUT Adapter
HPE ProLiant ML350 Gen10		✓		✓
HPE ProLiant DL20 Gen10				
HPE ProLiant DL120 Gen10	✓	✓	✓	✓
HPE ProLiant DL160 Gen10	✓	✓	✓	✓
HPE ProLiant DL180 Gen10	✓	✓	✓	✓
HPE ProLiant DL325 Gen10	✓	✓	✓	✓
HPE ProLiant DL360 Gen10	✓	✓	✓	✓
HPE ProLiant DL380 Gen10	✓	✓	✓	✓
HPE ProLiant DL385 Gen10	✓	✓	✓	✓
HPE ProLiant DL560 Gen10	✓	✓	✓	✓
HPE ProLiant DL580 Gen10	✓	✓	✓	✓
HPE Apollo 2000 - XL170r Gen10	✓	✓	✓	✓
HPE Apollo 2000 - XL190r Gen10	✓	✓	✓	✓
HPE Apollo 4500 - XL450 Gen10	✓	✓	✓	✓
HPE Apollo 6000 - XL230k Gen10		✓		✓
HPE Apollo 6500 - XL270d Gen10			✓	



Overview

Servers Support

SKU	867328-B21	867334-B21
Description	HPE Ethernet 10/25Gb 2-port SFP28 QL41401-A2G Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter
HPE ProLiant ML350 Gen10	✓	
HPE ProLiant DL20 Gen10	✓	✓
HPE ProLiant DL120 Gen10	✓	✓
HPE ProLiant DL160 Gen10	✓	✓
HPE ProLiant DL180 Gen10	✓	✓
HPE ProLiant DL325 Gen10	✓	✓
HPE ProLiant DL360 Gen10	✓	✓
HPE ProLiant DL380 Gen10	✓	✓
HPE ProLiant DL385 Gen10	✓	✓
HPE ProLiant DL560 Gen10	✓	✓
HPE ProLiant DL580 Gen10	✓	✓
HPE Apollo 2000 - XL170r Gen10	✓	✓
HPE Apollo 2000 - XL190r Gen10	✓	✓
HPE Apollo 4500 - XL450 Gen10	✓	✓
HPE Apollo 6000 - XL230k Gen10	✓	
HPE Apollo 6500 - XL270d Gen10	✓	✓

Servers Support

SKU	P08443-B21	P08458-B21
Description	Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE
HPE ProLiant ML350 Gen10	✓	✓
HPE ProLiant DL20 Gen10		
HPE ProLiant DL120 Gen10		
HPE ProLiant DL160 Gen10		
HPE ProLiant DL180 Gen10		
HPE ProLiant DL325 Gen10		
HPE ProLiant DL360 Gen10	✓	✓
HPE ProLiant DL380 Gen10	✓	✓
HPE ProLiant DL385 Gen10		
HPE ProLiant DL560 Gen10	✓	✓
HPE ProLiant DL580 Gen10		
HPE Apollo 2000 - XL170r Gen10		
HPE Apollo 2000 - XL190r Gen10		
HPE Apollo 4500 - XL450 Gen10		
HPE Apollo 6000 - XL230k Gen10		
HPE Apollo 6500 - XL270d Gen10		



Standard Features

Standard Features Table

SKU	817709-B21	817718-B21	817749-B21	817753-B21
Description	HPE Ethernet 10/25Gb 2-port FLR- SFP28 BCM57414 Adapter	HPE Ethernet 10/25Gb 2-port SFP28 BCM57414 Adapter	HPE Ethernet 10/25Gb 2-port FLR- SFP28 MCX4121A- ACFT Adapter	HPE Ethernet 10/25Gb 2-port SFP28 MCX4121A- ACUT Adapter
Audit Logs	✓	✓		
Authenticated Updates	✓	✓	✓	✓
Checksum & Segmentation Offload	✓	✓	✓	✓
Configuration Utilities	✓	✓	✓	✓
Device-level Firewall	✓	✓	✓	✓
DPDK	✓	✓	✓	✓
HPE Sea Of Sensors 3D	✓	✓	✓	✓
HW Root of Trust	✓-Hardware and Firmware	✓-Hardware and Firmware		
IPv6	✓	✓	✓	✓
iSCSI/FCoE				
Jumbo Frames	9,600 KB	9,600 KB	9,600 KB	9,600 KB
LED Indicators	✓	✓	✓	✓
Management Support	✓	✓	✓	✓
Message Signaled Interrupt (MSI- X)	✓	✓	✓	✓
Network Adapter Teaming	✓	✓	✓	✓
Network Partitioning (NPAR)	✓	✓		
NEBS	✓	✓		
Optimized for Virtualization	✓	✓	✓	✓
Preboot eXecution Environment (PXE)	✓	✓	✓	✓
RDMA	✓- RoCE V1 and V2	✓- RoCE V1 and V2	✓- RoCE V1 and V2	✓- RoCE V1 and V2
Receive Side Scaling (RSS)	✓	✓	✓	✓
Sanitization	✓	✓	✓	✓
Secure Boot	✓	✓	✓	✓
Server Integration	✓	✓	✓	✓
Single-Root I/O Virtualization	✓	✓	✓	✓
TCP/UDP/IP	✓	✓	✓	✓
Tunnel Offload	✓-VXLAN / NVGRE / GENEVE	✓-VXLAN / NVGRE / GENEVE	✓-VXLAN / NVGRE / GENEVE	✓-VXLAN / NVGRE / GENEVE
VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)	✓	✓	✓	
Wake-on-LAN	✓		✓	



Standard Features

Standard Features Table

SKU	867328-B21	867334-B21
Description	HPE Ethernet 10/25Gb 2-port SFP28 QL41401-A2G Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter
Audit Logs	✓	✓
Authenticated Updates	✓	✓
Checksum & Segmentation Offload	✓	✓
Configuration Utilities	✓	✓
Device-level Firewall		
DPDK	✓	✓**
HPE Sea Of Sensors 3D	✓	✓
HW Root of Trust	✓-Firmware	✓-Firmware
IPv6	✓	✓
iSCSI/FCoE		✓**
Jumbo Frames	9,600 KB	9,600 KB
LED Indicators	✓	✓
Management Support	✓	✓
Message Signaled Interrupt (MSI-X)	✓	✓
Network Adapter Teaming	✓	✓
Network Partitioning (NPAR)		
Optimized for Virtualization	✓	✓
Preboot eXecution Environment (PXE)	✓	✓
RDMA	✓-RoCE V1 and V2, iWarp*	✓-RoCE V1 and V2, iWarp*
Receive Side Scaling (RSS)	✓	✓
Sanitization		
Secure Boot	✓	✓
Server Integration	✓	✓
Single-Root I/O Virtualization	✓	✓
TCP/UDP/IP	✓	✓
Tunnel Offload	✓-VXLAN / NVGRE / GENEVE	✓-VXLAN / NVGRE / GENEVE
VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)	✓	✓
Wake-on-LAN		✓

Notes: **Storage personality must be disabled on NIC intended for DPDK workload. DPDK and Storage modes cannot be used concurrently on current generation CNA NICs. HPE Recommends using 2 separate NICS for Storage (Control Plane), and DPDK (Data Plane) workloads for the optimal high availability configuration

*No iWarp and ROCE on the same port



QuickSpecs

Standard Features

Standard Features Table

SKU	P08443-B21	P08458-B21
Description	Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE
Card Type/Profile	Stand up	Stand up
ASIC/Chip	Intel E810-XXVAM2	Intel Ethernet Controller E810-CAM1
PCIe Version	PCIe 4.0 x8	PCIe 4.0 x16
Power Requirement	Typical: 8.9 W Maximum: 9.7 W	Typical: 14.2W Maximum: 16.7W
UEFI PXE Boot	✓	✓
Legacy BIOS PXE Boot	✓	✓
Wake-on-LAN (WOL)		
Internet Protocol (IP)	✓	✓
IPv4, IPv6		
Auto Negotiation	✓	✓
iSCSI Remote Boot	iSCSI boot supported (UEFI), iSCSI acceleration only supported with TCP acceleration	iSCSI boot supported (UEFI), iSCSI acceleration only supported with TCP acceleration
Tunnel Offload	VXLAN, GENEVE, and NVGRE	VXLAN, GENEVE, and NVGRE
RDMA¹	iWARP, RoCEv2	iWARP, RoCEv2
Receive Side Scaling (RSS)	✓	✓
VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)	✓	✓
NPAR		
Single Root I/O Virtualization (SR-IOV)	256VFs/port, 2k Total	256VFs/port, 2k Total
Data Plane Development Kit (DPDK)	✓	✓
Root of Trust	HW	HW
Authenticated Updates	✓	✓
Secure Boot	✓	✓
Audit Log		
Sanitization	✓	✓

Notes: ¹ HPE recommends using identical network adapters on both ends of the RoCE connection to avoid interoperability issue



QuickSpecs

Standard Features**802.1Q VLANs**

IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the adapter to be separated into multiple virtual NICs for added network segmentation and enhanced security and performance. VLANs increase security by isolating traffic between users. Limiting the broadcast traffic to within the same VLAN domain also improves performance.

Active Health System

Supports HPE Active Health System - monitors and records changes in the server hardware and configuration enabling customers to have accurate information that will assist in diagnosing problems and delivering rapid resolution when server failures occur.

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.

Auto-negotiation

Automatically senses the speed of the device to which it is attached. It also automatically configures for half or full duplex, depending on the duplex mode of the switch, hub, or router connected to the adapter.

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).

Configuration Utilities

The adapter ships with a suite of operating system-tailored configuration utilities that allow the user to enable initial diagnostics and configure adapter teaming. This includes a patented teaming GUI for Microsoft Windows operating systems. Additionally, support for scripted installations of teams in a Microsoft Windows environment allow for unattended OS installations.

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.

DMA Coalescing

Supports DMA Coalescing, the incoming data packets and interrupts associated with these DMA calls are intelligently batched to keep the system devices in lower power states.

DPDK

DPDK with benefit for packet processing acceleration and use in NFV deployments.

Fibre Channel over Ethernet (FCoE)

Combines the functionality of an industry-standard NIC with an industry-proven Fibre Channel to seamlessly converge the traffic over a shared lossless Ethernet network.

HPE Sea of Sensors3D

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.



Standard Features

HW Root of Trust

Root of Trust enables a chain of trust for Authenticating updates to firmware via signature validation. This blocks installation of rogue or corrupted firmware and ensures that the executing firmware is trusted.

Interrupt Coalescing

Interrupt coalescing (interrupt moderation) groups multiple packets, thereby reducing the number of interrupts sent to the host. This process optimizes host efficiency, leaving the CPU available for other duties.

IPv6

IPv6 uses 128-bit addressing allowing for more devices and users on the internet. IPv4 supported 32-bit addressing.

iWARP RDMA

Delivers RDMA on top of the pervasive TCP/IP protocol. iWARP RDMA runs over standard network and transport layers and works with all Ethernet network infrastructure. TCP provides flow control and congestion management and does not require a lossless Ethernet network. iWARP is a highly routable and scalable RDMA implementation.

Jumbo Frames

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 five times the size of a standard 1500-byte Ethernet frame. With Jumbo Frames, networks can achieve higher throughput performance and greater CPU utilization. These attributes are particularly useful for database transfer and tape backup operations.

LED Indicators

LED indicators show link integrity and network activity for easy troubleshooting.

Load Balancing

Transmit Load Balancing (TLB) and Switch-assisted Load Balancing (SLB) are two advanced features that customers can use to build a bigger pipe for improved networking bandwidth. These port-bonding techniques enable users to install up to four dual-port HPE 361T adapters (total of 8 ports) in a HPE ProLiant server and aggregate their throughput up to a theoretical maximum of 16 Gigabits per second full-duplex transmissions.

Message Signaled Interrupt (MSI-X)

Message Signaled Interrupt provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores.

Network Adapter Teaming

NIC teaming helps IT administrators increase network fault tolerance and increased network bandwidth, the team of adapters can work together as a single virtual adapter, providing support for several different types of teaming enabling IT administrators to optimize availability, improve performance and help reduce costs.

Network Fault Tolerance (NFT)

Network Fault Tolerance, sometimes called "failover" or "NIC Redundancy," allows for the installation of multiple server adapters so that the active device can be backed up by a redundant adapter to improve availability. The Hewlett Packard Enterprise teaming utility also allows users to specify that when a failed adapter is fixed and replaced, the original adapter resumes its function as the primary network connection.

Network Partitioning (NPAR)

Network Partitioning (NPAR) allowing administrators to configure a 10 Gb port as four separate partitions or physical functions. Each PCI function is associated with a different virtual NIC. To the OS and the network, each physical function appears as a separate NIC port.



Standard Features

Optimized for Virtualization

I/O Virtualization support for VMware NetQueue and Microsoft VMQ helps meet the performance demands of consolidated virtual workloads.

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.

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.

RDMA

Remote Direct memory Access (RDMA) 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 protocols include RoCEv1, RoCEv2 and iWARP. All of these protocols reduce overall latency to deliver accelerated performance for applications such as Microsoft Hyper-V Live Migration, Microsoft SQL and Microsoft SharePoint with SMB Direct.

Receive Flow Steering (RFS)

Receive Flow Steering (RFS) acceleration improves processing efficiency by steering received packets to the CPU core that is running the application that consumes those packets. Aligning I/O processing to the CPU core running the application improves cache efficiency, CPU utilization, throughput and latency.

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.

Sanitization

Sanitization (Secure User Data Erase) renders User and configuration data on the NIC irretrievable so that NICs can be safely repurposed or disposed.

Secure Boot

Secure Boot safeguards the system and ensures no rogue drivers are being executed on start-up.

Server Integration

The adapter is a validated, tested, and qualified solution that is optimized for HPE ProLiant servers. Hewlett Packard Enterprise validates a wide variety of major operating systems drivers with the full suite of web-based enterprise management utilities including HPE Intelligent Provisioning and HPE Systems Insight Manager that simplify network management. This approach provides a more robust and reliable networking solution than offerings from other vendors and provides users with a single point of contact for both their servers and their network adapters.



Standard Features

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.

TCP/UDP/IP

TCP/IP offloading techniques including: TCP/IP, UDP checksum offload (TCO) moves the TCP and IP checksum offloading from the CPU to the network adapter. Large send offload (LSO) or TCP segmentation offload (TSO) allows the TCP segmentation to be handled by the adapter rather than the CPU.

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.

VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)

VMware NetQueue is technology that significantly improves performance of 10 Gigabit Ethernet network adapters in virtualized environments. Windows Hyper-V VMQ (VMQ) is a feature available on servers running Windows Server 2008 R2 with VMQ-enabled Ethernet adapters. VMQ uses hardware packet filtering to deliver packet data from an external virtual machine network directly to virtual machines, which reduces the overhead of routing packets and copying them from the management operating system to the virtual machine.

Wake-on-LAN

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.

Notes: Additional information regarding worldwide limited warranty and technical support is available at:

<http://h17007.www1.hp.com/us/en/enterprise/servers/warranty/index.aspx#.V4e3tPkrJhE>



Service and Support

Service and Support

Notes: 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 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

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



Technical Specifications

Technical Specifications Table

SKU	817709-B21	817718-B21	817749-B21	817753-B21
Description	HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter	HPE Ethernet 10/25Gb 2-port SFP28 BCM57414 Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter	HPE Ethernet 10/25Gb 2-port SFP28 MCX4121A-ACUT Adapter
Network Processor	Broadcom BCM57414 (BCM957414A4142CC)	Broadcom BCM57414 (BCM957414A4142CC)	Mellanox ConnectX-4 Lx (MCX4121A-ACAT)	Mellanox ConnectX-4 Lx (MCX4121A-ACAT)
Data Rate	2 port, each at 10/25Gb	2 port, each at 10/25Gb	2 port, each at 10/25Gb	2 port, each at 10/25Gb
Bus Type	PCIe 3.0X8	PCIe 3.0X8	PCIe 3.0X8	PCIe 3.0X8
Form Factor	FlexibleLOM	Stand up	FlexibleLOM	Stand up
Power	9.04W typical 14W maximum	9.84W typical 14W maximum	10.5W typical 14W maximum	8.4W typical 9.7W maximum
IEEE Compliance	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad, 802.1AB, 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3az, 802.3AS, 802.1Qau	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad, 802.1AB, 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3az, 802.3AS, 802.1Qau	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad/LACP, 802.1AB(LLDP), 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3az, 802.3AS, 802.1Qau, 1588, 802.1p QoS	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad/LACP, 802.1AB(LLDP), 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3az, 802.3AS, 802.1Qau, 1588, 802.1p QoS
Temperature	Operating 5° to 60° C (41° to 140° F) Non-Operating -40°C to 70°C / -40°F to 158°F			
Humidity	Operating 10% to 90% non-condensing Non-operating 5% to 95% non-condensing			
SKU	867328-B21	867334-B21		
Description	HPE Ethernet 10/25Gb 2-port SFP28 QL41401-A2G Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter		
Network Processor	Marvell QL41401-A2G (FastLinQ 41000)	Marvell QL41401L-A2G (FastLinQ 41000)		
Data Rate	2 port, each at 10/25Gb	2 port, each at 10/25Gb		
Bus Type	PCIe 3.0 x8	PCIe 3.0 x8		
Form Factor	Stand up	FlexibleLOM		
Power	12.6 W typical 14.6 W maximum	11.9 W typical 13.5 W maximum		
IEEE Compliance	802.1p, 802.1Qaz, 802.1Qbb, 802.1AS, 802.3ad, 802.3by, 1588, 802.3-2012, 802.3by-2016, 802.1q, 802.1Q	802.3by, 802.1Qau, 802.1Qaz, 802.1Qbb, 802.1Qbg, 802.3az 802.1AS, 802.3ad, 1588, 802.1Q		
Temperature	Operating 5° to 60° C (41° to 140° F) Non-Operating -40°C to 70°C / -40°F to 158°F			
Humidity	Operating 10% to 90% non-condensing Non-operating 5% to 95% non-condensing			





Technical Specifications

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>

Related Option

Please refer to link for supported cables and transceivers. - [Link](#)

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
18-Apr-2022	Version 14	Changed	Removed SKUs P13188-B21 no longer on Gen10
01-Nov-2021	Version 13	Changed	SKUs were added and Overview section was updated.
02-Aug-2021	Version 12	Changed	SKUs were added and Overview section was updated.
07-Jun-2021	Version 11	Changed	Add SKUs P13188-B21
15-Mar-2021	Version 10	Changed	Update RSS on CX4, removed EOL Gen9 Platforms
17-Aug-2020	Version 9	Changed	SKUs Descriptions were updated
01-Jun-2020	Version 8	Changed	Update power on 621SFP28, 622FLR
10-Jun-2019	Version 7	Changed	Add Network Adapter Teaming for 640 NICs
06-May-2019	Version 6	Changed	Update table format, glossary and technical specifications
04-Feb-2019	Version 5	Changed	Removed 6500 Gen10 support on 640SFP28
05-Nov-2018	Version 4	Changed	Technical Specifications Section was updated
15-Oct-2018	Version 3	Changed	Recommended Extended labels were removed
01-Oct-2018	Version 2	Changed	Platform Information & Standard Features sections were updated
13-Aug-2018	Version 1	New	New QuickSpecs



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HPE Networking Transceiver Options

HPE 25Gb SFP28 SR 100m Transceiver (845398-B21)



Overview

Technical specifications

HPE 25Gb SFP28 SR 100m Transceiver

Product Number	845398-B21
Type	SFP28
Maximum distance	100 m
Product dimensions	13.8 x 55.7 x 11.9 mm
Weight	19.2 g



For additional technical information, available models and options, please reference the QuickSpecs

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Defective Media Retention is optional and allows you to retain Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

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HPE GreenLake edge-to-cloud platform is HPE's market-leading as-a-Service offering that brings the cloud experience to apps and data everywhere – data centers, multi-clouds, and edges – with one unified operating model, on premises, fully managed in a pay per use model.

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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.

Image may differ from the actual product
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