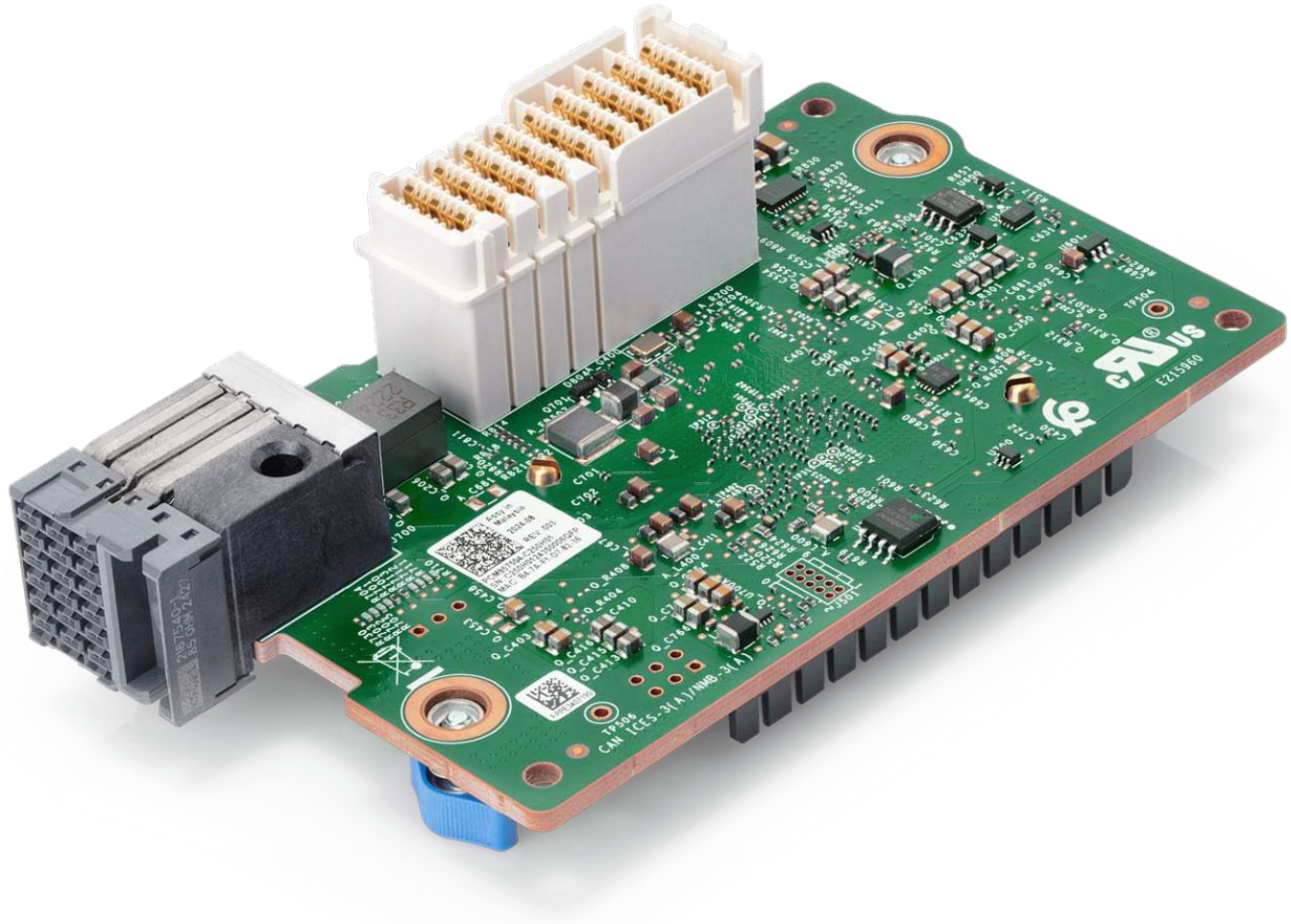
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HPE Synergy Networking Adapters QuickSpecs

HPE Synergy Networking Adapters are key elements of the HPE composable fabric, connecting pools of compute resources to networks with reliable, high-performance Ethernet connectivity.

Provisioning and updating HPE Synergy networking adapters is simple, reliable, and fast with HPE Synergy software-defined, template-driven, frictionless operations. HPE Synergy Composer automatically coordinates the appropriate firmware and drivers, including staging updates for execution to avoid workload disruption.

Overview



HPE Synergy Networking Adapters

Overview

XXXXXX**-X21** is SKU designation formed by a common six digit part number and a **-X21** suffix that identifies a SKU that is available across multiple server family lines. Refer to the table below to find the SKU suffix that applies to the specific server product line this option can be ordered with.

-B21	-H21	-K21
COMPUTE Server Line	**SPECIALIZED COMPUTE Server Line**	**STORAGE Line**
– HPE Cloudline CL2100/CL2200/CL2800/CL3100/CL4100/CL5200/CL5800 Servers – HPE Composable Cloud for ProLiant DL – HPE ProLiant BL460c/BL660c Servers – HPE ProLiant DL20/DL160/DL180 Servers – HPE ProLiant DL325/DL360/DL380/DL385/DL560/DL580 Servers – HPE ProLiant DX360/DX380 Servers – HPE ProLiant MicroServer – HPE ProLiant for Microsoft Azure Stack – HPE ProLiant ML30/ML110/ML350 Servers – HPE Synergy 480/660 Systems – HPE ProLiant DX170r/DX190r, DX2000 Servers – HPE ProLiant DX560 Gen10 server – HPE ProLiant DX4200 Gen10 server	– HPE Apollo 35/40/70 Systems – HPE Apollo 2000/6000 Servers – HPE XL170r/XL190r/XL270d (Apollo 6500) Gen10 Server for BlueData Software – HPE Converged System 300/500/700/750 – HPE Edgeline Systems and Servers – HPE Integrity BL860c i6/BL870c i6/BL890c i6 Server Blades – HPE Integrity MC990 X Server – HPE Integrity rx2800 i6 Server – HPE Integrity Superdome – HPE SGI 8600 System – HPE Solutions for SAP HANA (TDI)	– HPE Apollo 4200 Gen9/Gen10 Servers – HPE Apollo 4200 Gen10 LFF Server for BlueData Software – HPE Apollo 4510 Gen10 System – HPE D2220sb/D2500sb Storage Blade – HPE D3000/D6020/D8000 Disk Enclosures – HPE Scalable Object Storage with Scality RING – HPE SimpliVity 2600 – HPE SimpliVity 325/380 Gen10 – HPE Storage File Controllers – HPE StoreEasy 1460/1560/1650/1660/1860 **Notes:** Disclaimer - This may not be a complete listing of applicable servers

Standard Features

Models

HPE Synergy 4820C 10/20/25Gb Converged Network Adapter

Description	SKU
HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	876449-B21
HPE Synergy 6820C 25/50Gb Converged Network Adapter	P02054-B21
HPE Synergy 6310C 25/50Gb Ethernet Adapter	P64724-B21

Kit Contents			
SKU	876449-B21	P02054-B21	P64724-B21
Description	HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	HPE Synergy 6820C 25/50Gb Converged Network Adapter	HPE Synergy 6310C 25/50Gb Ethernet Adapter
Quick install card	√	√	√
Product warranty statement	√	√	√

Server Support Table			
SKU	876449-B21	P02054-B21	P64724-B21
Description	HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	HPE Synergy 6820C 25/50Gb Converged Network Adapter	HPE Synergy 6310C 25/50Gb Ethernet Adapter
HPE Synergy 660 Gen10 Compute Module	√	√	
HPE Synergy 480 Gen10 Compute Module	√	√	
HPE Synergy 480 Gen10 Plus Compute Module	√	√	
HPE Synergy 480 Gen11 Compute Module	√	√	√
HPE Synergy 480 Gen12 Compute Module			√

Operating System and Virtualization Support

The Operating Systems supported by this adapter are based on the server OS support matrix. Please refer to the OS Support Matrix at: https://www.hpe.com/us/en/servers/server-operating-systems.html

Standard Features

Related Options

Please refer to the table below for supported synergy interconnect modules:

Options			
SKU	876449-B21	P02054-B21	P64724-B21
Description	HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	HPE Synergy 6820C 25/50Gb Converged Network Adapter	HPE Synergy 6310C 25/50Gb Ethernet Adapter
HPE Virtual Connect SE 40 Gb F8 Module for HPE Synergy	√		
HPE Synergy 40 Gb F8 Switch Module	√		
HPE Synergy 20 Gb Interconnect Link Module	√		
HPE Synergy 10 Gb Interconnect Link Module	√		
HPE Synergy 10 Gb Pass-Thru Module	√		
Mellanox SH2200 TAA-compliant Switch Module for HPE Synergy	√	√	
HPE VC SE 100 Gb F32 Module	√	√	√
HPE Synergy 50 Gb Interconnect Link Module	√	√	√

Notes: 4820C/6820C: Storage personality must be disabled on a NIC intended for a 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 DPDK with storage mode. Yes, DPDK with VC interconnects. In addition, binding of a kernel driver and the DPDK driver to two different PFs is not possible – regardless the adapter advertising multiple PFs per port.

Standard Features

Features			
SKU	876449-B21	P02054-B21	P64724-B21
Description	HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	HPE Synergy 6820C 25/50Gb Converged Network Adapter	HPE Synergy 6310C 25/50Gb Ethernet Adapter
Audit Logs	√	√	√
Authenticated Updates	√	√	√
Checksum & Segmentation Offload	√	√	√
CNSA 1.0 / 2.0			√
Configuration Utilities	√	√	√
DPDK	√	√	√
HPE Sea Of Sensors 3D	√	√	√
HW Root of Trust			√
IPv6	√	√	√
iSCSI (Hardware)	√	√	
iSCSI (Software)	√	√	√
FCoE	√	√	
Jumbo Frames	9,600 KB	9,600 KB	9,600 KB
Management Support	√	√	√
Message Signaled Interrupt (MSI-X)	√	√	√
Network Adapter Teaming	√	√	√
Network Partitioning (NPAR)			√
Synergy Physical Functions	8 per port	8 per port	8 per port
NVMe-oF Ready	√	√	√ **Notes:** NVMe/TCP supported only on Linux
Optimized for Virtualization	√	√	√
Precision Time Protocol (IEEE 1588 PTP)	√	√	
Preboot eXecution Environment (PXE)	√	√	√
RDMA	RoCE V1 RoCE V2 *WARP	RoCE V1 RoCE V2 *iWARP	RoCE V2
Receive Side Scaling (RSS)	√	√	√
Sanitization	√	√	√
Secure Boot	√	√	√
Server Integration	√	√	√
Single-Root I/O Virtualization	√	√	√
SPDM 1.1			√
TCP/UDP/IP	√	√	√

Standard Features

Tunnel Offload	√	√	√
VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)	√	√	√
Wake-on-LAN	√	√	√
Notes: *iWARP and RoCE cannot be enabled on the same port			

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.
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 forensic 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 allows for unattended OS installations.

Standard Features

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.

iSCSI Offload

iSCSI is a protocol for transporting SCSI storage commands across Ethernet network. The encapsulation of the commands into the TCP/IP packets is offloaded to the adapter instead of being processed by the host operating system, thus saving CPU cycles for other tasks.

NVMe-oF

Non-Volatile Memory Express (NVMe) is a streamlined set of commands that allow communication to NVMe-enabled storage or memory devices. NVMe is optimized and supports only non-rotating memory such as SSDs for Flash storage.

NVMe over Ethernet Fabrics (NVMe-oF), which enables the transmission of NVMe storage commands embedded in TCP/IP packets across a lossless Ethernet network.

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.

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.

Standard Features

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 it 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), permit 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.

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.

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.

Standard Features

Network Partitioning (NPAR)

Network Partitioning (NPAR) allows 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.

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, 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 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 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 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.

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 a mechanism to create multiple Virtual Functions (VFs) to share single PCIe resources.

TCP/UDP/IP

TCP/IP offloading techniques including TCP/IP, UDP checksum offload (TCO) move 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

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.
Minimum: Three-year limited warranty.
Notes: Additional information regarding worldwide limited warranty and technical support is available at:
https://support.hpe.com/hpesc/public/docDisplay?docLocale=en_US&docId=sf000053995en_us

Service and Support

For the most up-to-date information on HPE Services, please refer to the HPE Services – Supplemental QuickSpecs, which provides a comprehensive and regularly updated overview of available services.

Technical Specifications

Specifications			
SKU	876449-B21	P02054-B21	P64724-B21
Description	HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	HPE Synergy 6820C 25/50Gb Converged Network Adapter	HPE Synergy 6310C 25/50Gb Ethernet Adapter
Network Processor	Marvell QL45604	Marvell QL45604	Broadcom BCM57504
Data Rate	2 ports, each at 10/20/25Gb	2 ports, each at 25/50Gb	2 ports, each at 25/50Gb
Bus Type	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 4.0 x16
Power	14W max	14W max	22W max
IEEE Compliance	802.1p, 802.1Qaz, 802.1Qbb, 802.1AS, 802.3ad, 802.3by, 1588, 802.3-2012, 802.3by-2016, 802.1q	802.1p, 802.1Qaz, 802.1Qbb, 802.1AS, 802.3ad, 802.3by, 1588, 802.3-2012, 802.3by-2016, 802.1q	802.1p, 802.1Qaz, 802.1Qbb, 802.1AS, 802.3ad, 802.3by, 802.3-2012, 802.3by-2016, 802.1q
Temperature	**Operating** 5° to 70°C (41° to 158°F) **Non-Operating** -40° to 70° C (-40° to 158° F)		
Humidity	**Operating** 10% to 90% non-condensing **Non-operating** 5% to 95% non-condensing		

No 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
21-Sep-2026	Version 14	Changed	QuickSpecs maintenance updates.
02-Feb-2026	Version 13	Changed	HPE Rebranding applied
28-Jul-2025	Version 12	Changed	Update survey link.
05-May-2025	Version 11	Changed	Add 6310C Ethernet adapter and remove OBS adapter SKUs
04-Dec-2023	Version 10	Changed	Service and Support Section was updated
01-May-2023	Version 9	Changed	Updated interoperability with Gen10 Plus and Gen11 compute
15-Aug-2022	Version 8	Changed	Standard Features Section was updated
06-Jun-2022	Version 7	Changed	Obsolete Skus were removed
15-Nov-2021	Version 6	Changed	Service and Support Section was updated
02-Mar-2020	Version 5	Changed	Platform Information Section was updated
07-Oct-2019	Version 4	Updated	Updated standard features & compatibility sections
03-Sep-2019	Version 3	Changed	Add 6820C adapter
06-May-2019	Version 2	Changed	Update glossary and technical specifications
02-Apr-2019	Version 1	New	New QuickSpecs

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