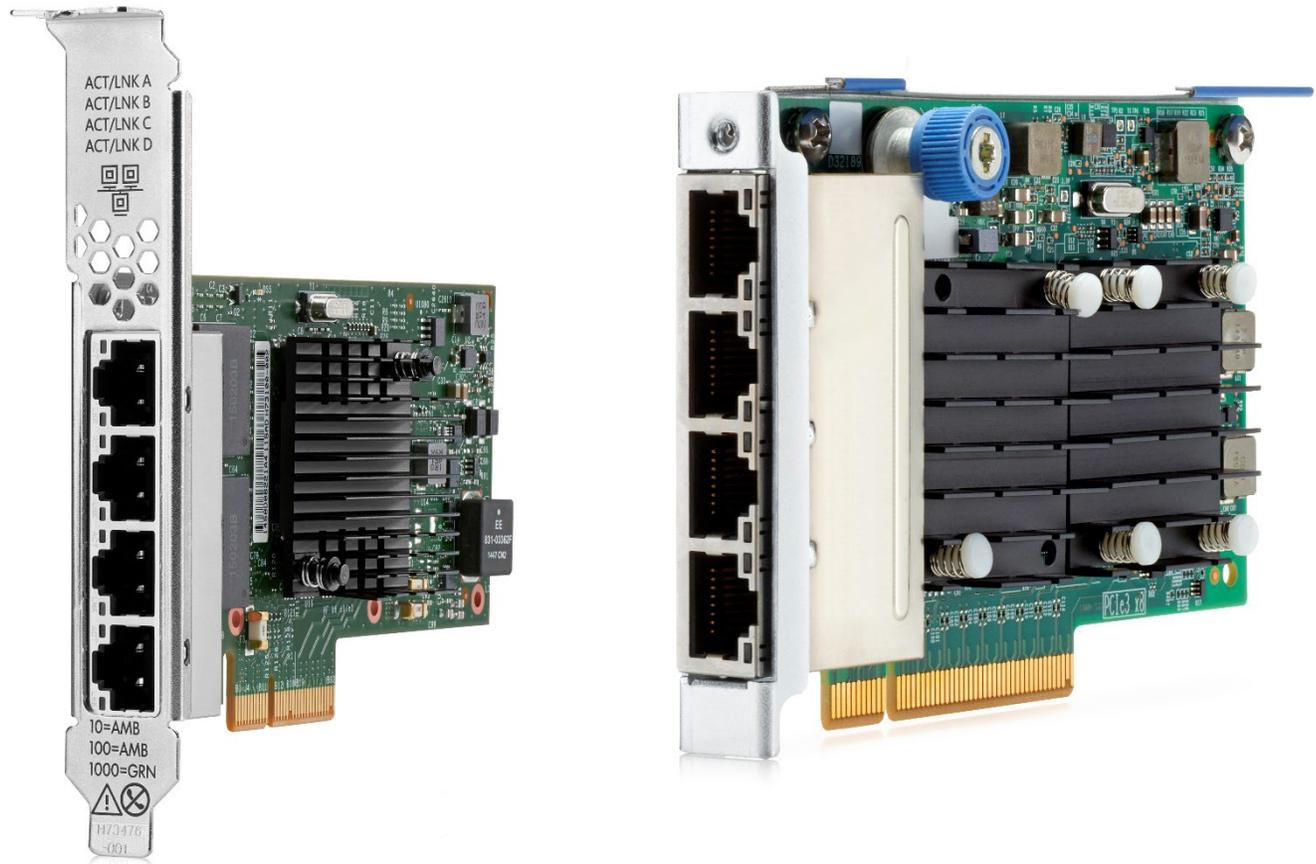


Overview

HPE Ethernet 1Gb Adapters

HPE ProLiant DL, ML & Apollo

The HPE Ethernet 1Gb adapters deliver full line-rate performance across all ports with low power consumption, providing Ethernet connectivity ideal for virtualization, security, server consolidation, and network segmentation.



Models

HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	629135-B22
HPE Ethernet 1Gb 4-port BASE-T BCM5719 Adapter	647594-B21
HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter	665240-B21
HPE Ethernet 1Gb 4-port BASE-T I350-T4V2 Adapter	811546-B21
HPE Ethernet 1Gb 2-port BASE-T BCM5720 Adapter	615732-B21

Overview

Platform Information

Kit Contents

Table 1			
SKU	629135-B22	647594-B21	665240-B21
Description	HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port BASE-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter
Quick install card	√	√	√
Product warranty statement	√	√	√
Low profile bracket		√	

Table 2		
SKU	615732-B21	811546-B21
Description	HPE Ethernet 1Gb 2-port BASE-T BCM5720 Adapter	HPE Ethernet 1Gb 4-port BASE-T I350-T4V2 Adapter
Quick install card	√	√
Product warranty statement	√	√
Low profile bracket	√	√



Overview

Servers Support

Table 1				
SKU	629135-B22	647594-B21	665240-B21	811546-B21
Description	HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port BASE-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port FLR-T I350- T4V2 Adapter	HPE Ethernet 1Gb 4-port BASE-T I350- T4V2 Adapter
HPE ProLiant DL20 Gen9	√	√	√	√
HPE ProLiant DL360 Gen9				
HPE ProLiant DL380 Gen9				
HPE Apollo 4200 Gen9		√	√	√
HPE Apollo 6500 XL270d Gen9		√		√
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 ProLiant ML30 Gen10		√		√
HPE ProLiant ML110 Gen10		√		√
HPE ProLiant ML350 Gen10		√		√
HPE Apollo 6000 XL230k Gen10		√		√



Overview

Table 2

SKU	615732-B21
Description	HPE Ethernet 1Gb 2-port BASE-T BCM5720 Adapter
HPE ProLiant DL20 Gen9	√
HPE ProLiant DL360 Gen9	
HPE ProLiant DL380 Gen9	
HPE Apollo 4200 Gen9	√
HPE Apollo 6500 XL270d Gen9	√
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 ProLiant ML30 Gen10	√
HPE ProLiant ML110 Gen10	√
HPE ProLiant ML350 Gen10	√
HPE Apollo 6000 XL230k Gen10	√



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 Disclaimer: This may not be a complete listing of applicable servers



Standard Features

Standard Features Tables

Table 1				
SKU	629135-B22	647594-B21	665240-B21	811546-B21
Description	HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port BASE-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter	HPE Ethernet 1Gb 4-port BASE-T I350-T4V2 Adapter
Active Health System	√	√	√	√
Auto-negotiation	√	√	√	√
Configuration Utilities	√	√	√	√
DMA Coalescing				
HPE Sea Of Sensors 3D	√	√	√	√
Jumbo Frame	9,000 KB	9,000 KB	9,500 KB	9,500 KB
LED Indicators	√	√	√	√
Load Balancing	√	√		
Message Signaled Interrupt (Extended) (MSI-X)	√	√	√	√
Network Adapter Teaming	√	√	√	√
Optimized for Virtualization	√	√	√	√
Preboot eXecution Environment (PXE)	√	√	√	√
TCP/UDP/IP	√	√	√	√
Precision Time Protocol (IEEE 1588 PTP)	√	√	√	√
Server Integration	√	√	√	√
VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)	√	√		
Wake-on-LAN	√			



Standard Features

SKU	615732-B21
Description	HPE Ethernet 1Gb 2-port BASE-T BCM5720 Adapter
Active Health System	√
Auto-negotiation	√
Configuration Utilities	√
DMA Coalescing	
HPE Sea Of Sensors 3D	√
Jumbo Frame	9,000 KB
LED Indicators	√
Load Balancing	√
Message Signaled Interrupt (Extended) (MSI-X)	√
Network Adapter Teaming	√
Optimized for Virtualization	√
Preboot eXecution Environment (PXE)	√
TCP/UDP/IP	√
Precision Time Protocol (IEEE 1588 PTP)	√
Server Integration	√
VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)	√
Wake-on-LAN	



Standard Features

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.

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.

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.

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.

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.

Jumbo Frames

Jumbo Frames (also known as extended frames), permitting up to a 9,500 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 (Extended)(MSI-X)

Message Signaled Interrupt (Extended) 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

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.

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.

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.

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 (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.hpe.com/us/en/enterprise/servers/warranty/index.aspx#.V4e3tPkrJhE>



Service and Support

HPE Services

No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.

<https://www.hpe.com/services>

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No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

<https://www.hpe.com/services/consulting>

HPE Managed Services

HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

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Operational services

Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.

<https://www.hpe.com/services/operational>

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

<https://www.hpe.com/services/complecare>

HPE Tech Care Service

HPE Tech Care Service is the operational support service experience for HPE products. The service goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

<https://www.hpe.com/services/techcare>



Service and Support

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:

<https://www.hpe.com/services/lifecycle>

For a list of the most frequently purchased services using service credits, see the [HPE Service Credits Menu](#)

Other Related Services from HPE Services:

HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.

<https://www.hpe.com/services/training>

Defective Media Retention

An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

Parts and Materials

HPE 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.

How to Purchase Services

Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at <https://ssc.hpe.com/portal/site/ssc/>



Service and Support

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.

<https://support.hpe.com/hpesc/public/home/signin>

Consume IT On Your Terms

HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"

<https://www.hpe.com/us/en/contact-hpe.html>

For more information

<http://www.hpe.com/services>



Technical Specifications

Technical Specifications Tables

Table 1				
SKU	629135-B22	647594-B21	665240-B21	811546-B21
Description	HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port BASE-T BCM5719 Adapter	HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter	HPE Ethernet 1Gb 4-port BASE-T I350-T4V2 Adapter
Bus Type	PCIe 2.0X4	PCIe 2.0X4	PCIe 2.0X4	PCIe 2.0
Data Rate	4 port, each at 1Gb (Also support 10/100Mbps)	4 port, each at 1Gb (Also support 10/100Mbps)	4 port, each at 1Gb (Also support 10/100Mbps)	4 port, each at 1Gb (Also support 10/100Mbps)
Form Factor	FlexibleLOM	Stand up	FlexibleLOM	Stand up
IEEE Compliance	802.3, 802.3ab, 802.3u, 802.3x, 802.3ad, 802.1q, 802.3az, 1588, 802.1as	802.3, 802.3ab, 802.3u, 802.3x, Dynamic 802.3ad, 802.1q, 802.3az, 1588, 802.1as	802.3, 802.3ab, 802.3u, 802.3x, 802.3ad, 802.1q, 802.3az, 1588, 802.1as	802.3, 802.3ab, 802.3u, 802.3x, 802.3ad, 802.1q, 802.3az, 1588, 802.1as, 802.1p
Network Processor	Broadcom BCM5719 (BCM5719A0KFBG)	Broadcom BCM5719 (BCM5719A0KFBG)	Intel® I350 (I350-T4V2)	Intel® I350 (I350-T4V2)
Power	5.5W max	4.3W max 1.0W min	5.5W max	5.5W max
Temperature	Operating 0° to 55°C (32° to 131°F) Non-Operating -65° to 85° C (-85° to 185° F)			
Humidity	Operating 10% to 90% non-condensing Non-operating 5% to 95% non-condensing			



Technical Specifications

Table 2

SKU	615732-B21
Description	HPE Ethernet 1Gb 2-port BASE-T BCM5720 Adapter
Bus Type	PCIe 2.0x1
Data Rate	2 port, each at 1Gb (Also support 10/100Mbps)
Form Factor	Stand up
IEEE Compliance	802.3, 802.3ab, 802.3u, 802.3x, 802.3ad, 802.1q, 802.3az, 1588, 802.1as, 802.1p
Network Processor	Broadcom BCM5720 (BCM5720A0KFBG)
Power	2.2W max 1.7W min
Temperature	Operating 0° to 55°C (32° to 131°F) Non-Operating -65° to 85° C (-85° to 185° F)
Humidity	Operating 10% to 90% non-condensing Non-operating 5% to 95% non-condensing

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.



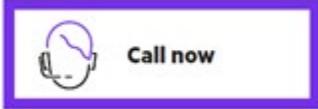
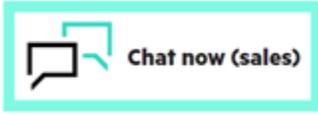
Summary of Changes

Date	Version History	Action	Description of Change
04-Dec-2023	Version 11	Changed	Service and Support Section was updated
15-Nov-2021	Version 10	Changed	Service and Support Section was updated
17-Aug-2020	Version 9	Changed	SKUs Descriptions were updated
20-Jan-2020	Version 8	Changed	Platform Information section was updated
06-May-2019	Version 7	Changed	Update table format, general glossary and technical specification
04-Feb-2019	Version 6	Changed	Add support 10/100Mbps
05-Nov-2018	Version 5	Changed	Technical Specifications Section was updated
15-Oct-2018	Version 4	Changed	Platform Information, Standard Features & Technical Specifications Sections were updated
01-Oct-2018	Version 3	Changed	Platform Information & Standard Features Sections were updated
13-Aug-2018	Version 2	Changed	Platform Information Section was Updated
02-Jul-2018	Version 1	New	New QuickSpecs



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