

Overview

HPE Ethernet 1Gb 4-port 331T Adapter

The HPE Ethernet 1Gb 4-Port 331T Adapter features the next generation of Ethernet integration, offering a single chip solution that reduces power requirements and optimizes I/O slot utilization. It delivers full line-rate performance across all ports with low power consumption.

The HPE 331T is ideal for virtualization, security, server consolidation, network segmentation, and other applications requiring maximum throughput and port density. The total aggregate throughput of 8 Gb meets the needs of customers desiring high bandwidth.

The HPE 331T supports advanced features such as Large Send and Receive offload capability, TCP checksum and segmentation, VLAN tagging, MSI-X, jumbo frames, IEEE 1588, and virtualization features such as VMware NetQueue and Microsoft VMQ.

Support for HPE Sea of Sensors 3D Technology enhances server performance while reducing energy use and expense.



HPE Ethernet 1Gb 4-port 331T Adapter

Platform Information

Models

HP Ethernet 1Gb 4-port 331T Adapter

647594-B21

Kit Contents HPE FlexFabric 10Gb 2-port 533FLR-T Adapter
 Quick install card
 Product warranty statement

**Compatibility -
Supported Servers**

- HPE ProLiant DL20 Gen9 Server
- HPE ProLiant DL60 Gen9 Server
- HPE ProLiant DL80 Gen9 Server
- HPE ProLiant DL120 Gen9 Server
- HPE ProLiant DL160 Gen9 Server
- HPE ProLiant DL180 Gen9 Server
- HPE ProLiant DL360 Gen9 Server
- HPE ProLiant DL360 Gen10 Server
- HPE ProLiant DL380 Gen9 Server
- HPE ProLiant DL380 Gen10 Server
- HPE ProLiant DL560 Gen9 Server
- HPE ProLiant DL580 Gen9 Server
- HPE ProLiant ML110 Gen9 Server
- HPE ProLiant ML150 Gen9 Server
- HPE ProLiant ML30 Gen9 Server
- HPE ProLiant ML350 Gen9 Server
- HPE Apollo 2000 - XL1x0r Gen9 Server
- HPE Apollo 4200 Gen9 Server
- HPE Apollo 4500 - XL450 Gen9 Server
- HPE Apollo 4500 - XL450 Gen9 Server
- HPE Apollo 6000 - XL260a Gen9 Server
- HPE Apollo 6500 - XL270d Gen9 Server

NOTE: This is a list of supported servers. Some may be discontinued.

Standard Features

At a Glance Features

- Industry-leading hardware integration for low power.
- Quad-port, PCIe 2.0 1Gb Ethernet adapter for HPE ProLiant Gen8 Rack and Tower servers and certain G7 servers.
- Quad-port 1GbE provide up to 8 Gb full duplex throughput per adapter.
- Energy Efficient Ethernet (EEE) support.
- Optimized for virtual servers.
- Improved small packet performance.
- Supports the Preboot eXecution Environment (PXE).
- In addition to Gigabit Ethernet, this adapter supports both 10 Mbps and 100 Mbps providing compatibility with Ethernet and Fast Ethernet twisted pair networks.
- This adapter ships with a pre-installed full height bracket and a half height bracket is also supplied to ensure trouble free installation. The included quick install card guides the user in the bracket exchange process.

Throughput-Theoretical Bandwidth

This adapter delivers 2 Gb/s bi-directional Ethernet transfer rate per port (8 Gb/s per adapter), providing the network performance needed to improve response times and alleviate bottlenecks.

802.1Q VLANs

IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of this 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.

Auto-negotiation

This adapter 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

This 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.

Energy Efficient Ethernet

Compliant with IEEE 802.3az, featuring advanced power savings features throttles power usage with network load activity.

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.

Standard Features

Jumbo Frames	This adapter supports Jumbo Frames (also known as extended frames), permitting up to a 9,000 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.
Management Support	This adapter ships with agents that can be managed from HPE Systems Insight Manager or other management application that support SNMP.
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	This adapter support for 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.
Optimized for Virtualization	I/O Virtualization support for VMware NetQueue and Microsoft VMQ helps meet the performance demands of consolidated virtual workloads.
PCI Express Interface	The x4 PCI Express interface on this adapter is compatible with x4, x8, and x16 PCI slots. If installed in a x8 or x16 slot, the adapter will operate at the x4 speed.
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.
Server Integration	<p>This 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.</p> <p>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.</p>
TCP/UDP/IP	For overall improved system response, this adapter supports standard TCP/IP offloading techniques including:

Standard Features

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.

Time Sync Implementations (PTP)

Synchronization of system clocks throughout a network, achieving clock accuracy in the sub-microsecond range, making it suitable for measurement and control systems.

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 HPE due to malfunction.

For more information

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

Technical Specifications

System Unit	Dimensions (L x W)	13.21 x 6.86 cm 5.2 x 2.7 in NOTE: without bracket
General Specifications	Network Processor	Broadcom BCM5719 chipset
	Data Rate	Four ports, each at 2 Gb/s bi-directional; 8 Gb/s aggregate bi-directional theoretical bandwidth.
	Data Path	Four lane (x4) PCI Express compatible with x4, x8, and x16 PCI Express slots.
	Onboard Memory	4 Mbit for PCA.
	Bus type	PCI Express 2.0
	Form Factor	RJ-45 (Two)
	Bus Speed	Gen 2 x4
	IEEE Compliance	802.3, 802.3ab, 802.3u, 802.3x, Dynamic 802.3ad, 802.1Q, 802.3az, 1588, 802.1as
	Connector	RJ-45 (Four)
	Wiring	Category 5/ (CAT-5) or better twisted-pair cabling
	Cable Distance	Up to 328 ft (100 m)
	Interrupt Levels	Automatically configured
Power and Environmental Specifications	Power	4.3 W (1000Base-T, maximum traffic) 1.0 W (AUX power with WoL)
	Temperature - Operating	0° to 55°C (32° to 131°F)
	Temperature - Non-Operating	-65° to 85° C (-85° to 185° F)
	Humidity - Operating	10% to 90% non-condensing
	Humidity - Non-operating	5% to 95% non-condensing
	Emissions Classification	Class B
	Agency Approvals	USA: FCC Part 15 Class B Canada: ICES-003, Issue 4 Japan: VCCI V3 (2010.04) Class B Korea: KN22 Class B, KN24 Australia: EN55022:2006+A12007 class B European Union: EN55024:1998+A1:2011+A2; EN61000-3-2:2006, EN61000-3-3:2008 International: EN55022:2006 + A1:2007 Class B
	RoHS Compliance	6 of 6
	Safety	UL Mark (USA and Canada) CE Mark EN 60590
Operating System and Virtualization Support		<ul style="list-style-type: none"> • Microsoft Windows Server 2008 (32/64), Enterprise, Web, Embedded, and R2 • Microsoft Windows HPC Server 2008 • Microsoft certified miniport and teaming drivers • Microsoft Windows 2008 Standard (32 and x64) • Microsoft Windows 2008 Enterprise (32 and x64) • Microsoft Windows Small Business Server 2011 (SBS V7) - base

Technical Specifications

- Red Hat Enterprise Linux (RHEL) 5.7 x86 and AMD 64, EM 64T
- Red Hat Enterprise Linux (RHEL) 6.1 x86 and AMD 64, EM 64T
- SUSE Linux Enterprise Server (SLES) 10 x86 and AMD 64, EM 64T
- SUSE Linux Enterprise Server (SLES) 11 x86 and AMD 64, EM64T
- Solaris 10
- VMware ESX/ESXi 4.1, ESXi 5.0, ESXi 5.1
- Citrix
- HyperV (Windows 2008 32 and 64)

NOTE: For more operating system support and certification information, please visit: http://h17007.www1.hp.com/us/en/enterprise/servers/supportmatrix/redhat_linux.aspx#.V4e8tPkrJD8

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
11-Jul-2017	From Version 11 to 12	Changed	Compatibility section was updated.
17-Dec-2015	From Version 10 to 11	Changed	Related options section was updated.
		Removed	Obsolete SKUs were deleted: 412648-B21, 435508-B21, 394791-B21, 394793-B21, 538696-B21, 458492-B21, 468332-B21, 489892-B21, 581201-B21
10-Sep-2013	From Version 9 to 10	Changed	Compatibility, 10 Gigabit Server Adapters, and FlexibleLOM Servers were revised.
15-Mar-2013	From Version 8 to 9	Added	Technical Specifications: Added ESXi 5.0 and 5.1 to the Operation System Support section.
19-Feb-2013	From Version 7 to 8	Changed	Changes made to Overview and Related Options Sections.
04-Dec-2012	From Version 6 to 7	Changed	Changes made in Compatibility and Related Options sections.
10-Oct-2012	From Version 5 to 6	Changed	Changes made in Compatibility section.
09-Oct-2012	From Version 4 to 5	Changed	Changes made in Compatibility section.
24-Sep-2012	From Version 3 to 4	Changed	Changes made in Compatibility section.
20-Aug-2012	From Version 2 to 3	Changed	Changes made in Compatibility section.
08-Jun-2012	From Version 1 to 2	Changed	Changes made throughout the QuickSpecs.
03-Mar-2012	Version 1	New	Initial Version.



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