

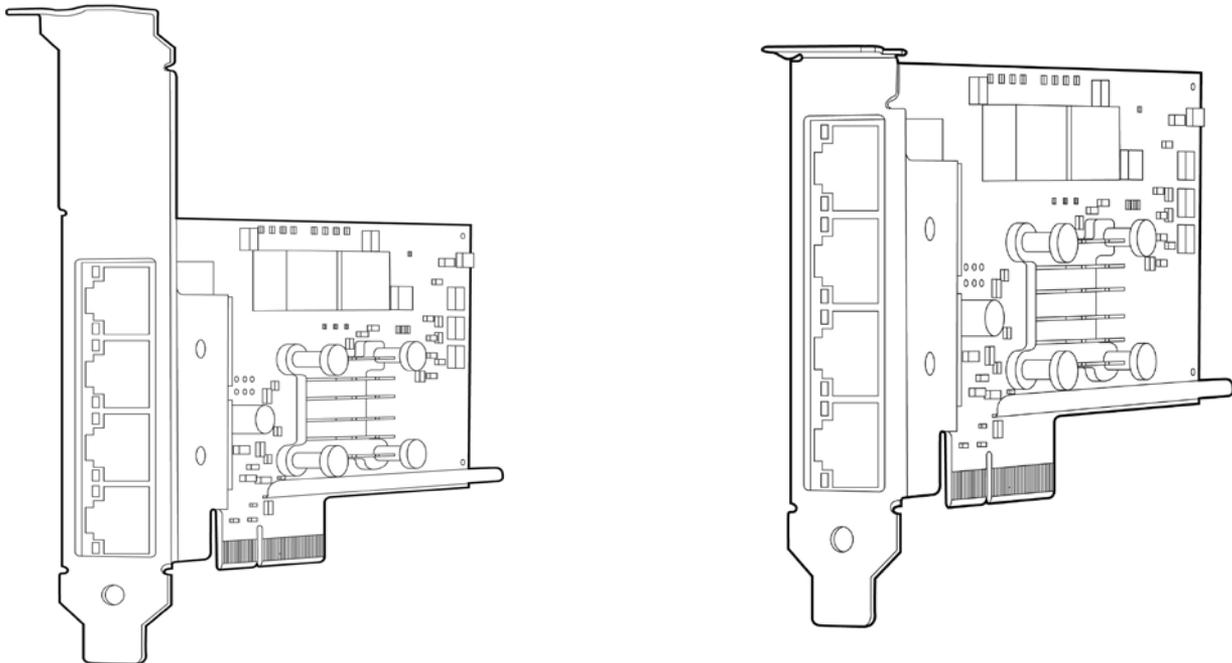
Overview

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 8Gb 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.



Models

HP Ethernet 1Gb 4-port 331T Adapter

647594-B21

Kit contents

- HPE 331T adapter with pre-installed full height bracket
- Low profile bracket
- Quick install card
- Product warranty statement

Compatibility

Compatibility

Servers

ProLiant DL (rack-optimized):

- HPE ProLiant DL160 Gen8
- HPE ProLiant DL165 G7
- HPE ProLiant DL320e Gen8
- HPE ProLiant DL360e Gen8
- HPE ProLiant DL360p Gen8
- HPE ProLiant DL380e Gen8
- HPE ProLiant DL380p Gen8
- HPE ProLiant DL385p Gen8
- HPE ProLiant DL560 Gen8
- HPE ProLiant DL580 G7
- HPE ProLiant DL585 G7
- HPE ProLiant DL980 G7

ProLiant ML (expansion-optimized):

- HPE ProLiant ML310e Gen8
- HPE ProLiant ML310e Gen8 v2
- HPE ProLiant ML350e Gen8
- HPE ProLiant ML350p Gen8

ProLiant SL (scalable system):

- HPE ProLiant SL210t Gen8
- HPE ProLiant SL230s Gen8
- HPE ProLiant SL250s Gen8
- HPE ProLiant SL270s Gen8
- HPE ProLiant SL4540 Gen8

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

Standard Features

Performance

Product 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)

Quad-port 1 Gigabit Ethernet Throughput The HPE 331T adapter provides 2,000 Mbps full duplex Ethernet transfer rate per port (8 Gbps aggregate full duplex) delivers outstanding network performance that improves response time and removes bottlenecks. Four ports on a single adapter are ideal for high density, I/O slot constrained servers, virtualization and security, applications, server consolidation, and increased network segmentation. The total aggregate throughput of 8Gbps in full-duplex mode also meets the needs for customers desiring high bandwidth but are not yet ready to move to 10 Gigabit Ethernet.

NOTE: Port enumeration on the 331T is from the top down, i.e. the port near the top of the adapter is port #0 and the port closest to the gold teeth is port #3

Jumbo Frames The 331T adapter support for jumbo frames (also known as extended frames) permits up to a 9K byte (KB) transmission unit (MTU) when running Ethernet, which is over five times the size of standard 1500-byte Ethernet frame. Jumbo frames can help achieve higher throughput and better CPU utilization and are particularly useful for database transfer and tape backup operations.

MSI and MSI-X Up to 17 Message Signaled Interrupt (Extended) provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores

802.1Q VLANs IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the HPE 331T 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.

TCP/IP Stateless Offloading For overall improved system response, the 331T supports standard 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.

Time synchronization Hardware assist for IEEE 1588 and IEEE 802.1AS time synchronization implementations for time sensitive applications

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

SR-IOV The HPE 331T does not support SR-IOV (Single Root - Input Output Virtualization)

HPE Sea of Sensors 3D Support for HPE Sea of Sensors 3D Technology which is a collection of 32 sensors that automatically track thermal activity - heat - across the server. When temperatures get too high, sensors can kick on fans and

Standard Features

make other adjustments to reduce energy usage. What makes it better is the upgrade from all six fans kicking on at one time to a new system where only one kicks on - the one in proximity of the area that started heating up - thus reducing the amount of energy used for cooling.

Energy Efficient Ethernet

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

Versatility

10/100/1000T Twisted Pair Networks

In addition to Gigabit Ethernet, the HPE 331T adapter supports both 10Mbps and 100Mbps providing compatibility with Ethernet and Fast Ethernet twisted pair networks.

Full and Half Height Brackets

The HP331T 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

x4/x8/x16 PCI Express Compatibility

The x4 PCI Express interface on the HPE 331T 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.

High Availability

Network Adapter Teaming

ProLiant Network Adapter Teaming provides fault tolerance and load balancing across a team of two or more network adapters. The team of adapters works together as a single virtual adapter. The HPE 331T provides support for several different types of teaming enabling IT administrators to optimize availability, improve performance and help reduce costs.

The teaming options offer IT professionals an easy, efficient, and cost-effective way to provide network fault tolerance and increased network bandwidth. For more information, refer to the ProLiant Network Adapter Teaming Whitepaper available at:

<http://bizsupport.austin.hp.com/bc/docs/support/SupportManual/c01415139/c01415139.pdf>

Network Management

Auto-negotiation

The HPE 331T automatically senses the speed of the device to which it is attached. It also automatically configures for full duplex, depending on the duplex mode of the switch, hub, or router connected to the adapter.

Management Support

Like all HPE server adapters, the HPE 331T ships with drivers and agents that can be managed from HPE Systems Insight Manager, as well as using any other management application that supports SNMP. HPE Systems Insight Manager can recognize the HPE 331T individually or in teams, and can collect and report SNMP statistics on the adapter events.

Server Integration

The HPE 331T is a completely integrated, tested, and qualified solution that is optimized for Hewlett Packard Enterprise servers. Hewlett Packard Enterprise validates a wide variety of major operating systems drivers with the network drivers plus provide a central interface to simplify network management.

Configuration Utilities

Each HPE 331T 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.

Standard Features

LED Indicators The colored LEDs on each port of the HP331T adapter indicate network activity, and network link speed. Amber link LED indicates 10/100Mb speed and Green indicates 1000Mb link speed. Per port bracket LED indicators show link integrity, network activity, and network speed for easy troubleshooting.

PXE boot Support Support for pre-boot execution environment (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.

Warranty

Warranty Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Service and Support

Service and Support HPE Technology Services

HPE Technology Services offers you consultants and support experts to solve your most complex infrastructure problems. We help keep your business running, boost availability, and avoid downtime.

Protect your business beyond warranty with HPE Care Pack Services

When you buy HPE Options, it's also a good time to think about what level of service you may need. HPE Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

HPE Foundation Care services deliver scalable support-packages for HPE industry-standard servers and software. You can choose the type and level of service that is most suitable for your business needs. New to this portfolio is HPE Collaborative Support. If you are running business critical environments, Hewlett Packard Enterprise offers Proactive Care or Critical Advantage. These services help you deliver high levels of application availability through proactive service management and advanced technical response.

Here is the support service recommendation from the Foundation Care and Proactive Care portfolio. For customized support service solution, Hewlett Packard Enterprise can work with you to tailor a service solution for your unique support requirements using broader services portfolio of Foundation Care and Proactive Care.

Recommended HPE Care Pack Services for optimal satisfaction with your HPE product

Recommended Services

3-Year HPE 24x7 4 hour Response, Hardware Support Onsite Service

Provides you with rapid remote support and if required an HPE authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

OR

3-Year HPE 24x7 4 hour Response, HPE Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution, and basic software problem diagnosis, fault isolation, and resolution if available to Hewlett Packard Enterprise. If the problem is with HPE HW, the representative will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged. In case, the issue is with Hewlett Packard Enterprise or supported third-party software product and cannot be resolved by applying known fixes, Hewlett Packard Enterprise will contact the third-party vendor and create a problem incident on your behalf.

HPE ProLiant Server Hardware Installation

Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

Related HPE Care Pack Services to enhance your HPE product experience

Related Services

3-Year HPE 24x7 4 hour Response, Proactive Care or Critical Advantage

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-2140ENW.pdf>

Service and Support

OR

3-Year HPE 6-hour Onsite Call-to-Repair, HPE Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request to the HPE Global Solution Center, and basic software problem diagnosis, fault isolation, and resolution if available to Hewlett Packard Enterprise. In case, the issue is with Hewlett Packard Enterprise or supported third-party software product and cannot be resolved by applying known fixes, Hewlett Packard Enterprise will contact the third-party vendor and create a problem incident on your behalf.

HPE Proactive Select Service

Provides a flexible way to purchase Hewlett Packard Enterprise best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more

<http://www.hp.com/go/insightremotesupport>

HPE Support Center Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

The HPE Support Center Mobile App allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Care Pack or Hewlett Packard Enterprise contractual support agreement.

NOTE: The Hewlett Packard Enterprise Support Center Mobile App is subject to local availability

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. Supplies and consumable parts will not be provided as part of this service; standard warranty terms and conditions apply. Parts and components that have exceeded their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual or the technical product data sheet will not be provided, repaired or replaced as part of this service.

Warranty / Service Coverage

For ProLiant servers and storage systems, this service covers HPE-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by Hewlett Packard Enterprise as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

For more information

To learn more on services for HPE ESSN Options, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit:

<http://www.hp.com/services/proliant> or <http://www.hp.com/services/bladesystem>

Related Options

Gigabit Server Adapters	HP NC365T 4-port Ethernet Server Adapter	593722-B21
	HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
	HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
10 Gigabit Server Adapters	NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.	
	HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
	HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21
	HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
	HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
	HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
	HP Ethernet 10Gb 2-port 561T Adapter	716591-B21
	HP Ethernet 10Gb 2-port 570SFP+ Adapter	718904-B21
FlexibleLOM Adapters	NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.	
	Ethernet Adapters	
	HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B21
	HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
	HP Ethernet 10Gb 2-port 530FLR-SFP+ Adapter	647581-B21
	HP Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
	HP Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
	HP Ethernet 10Gb 2-port 570FLR-SFP+ Adapter	717491-B21
	FlexFabric Adapters	
	HP FlexFabric 10Gb 2-port 526FLR-SFP+ Adapter	629138-B21
	HP FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
	HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
	HP FlexFabric 10Gb 2-port 554FLR-SFP+ Adapter	629142-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://www.hp.com/go/ProLiantNICs	

Technical Specifications

General Specifications	Network Processor	Broadcom BCM5719 chipset		
	Data rate	Four ports, each at 2 Gbps full duplex; 8 Gbps aggregate full duplex theoretical bandwidth.		
	Data path	Four lane (x4) PCI Express compatible with x4, x8, and x16 PCI Express slots		
	On-board memory	4 Mbit for PCA		
	Bus type	PCIe 2.0		
	Bus speed	Gen 2 x4		
	Interrupt levels	Automatically configured		
	Connector	RJ-45 (Four)		
	Cable distance	Up to 328 ft (100 m)		
	Wiring	Category 5/ (CAT-5) or better twisted-pair cabling		
	Dimensions	13.21 cm x 6.86 cm [5.2 in x 2.7 in (L x W)] (without bracket)		
Form factor	Low profile card with both full height (pre-installed) and half height brackets included in kit			
IEEE Compliance	802.3, 802.3ab, 802.3u, 802.3x, Dynamic 802.3ad, 802.1Q, 802.3az, 1588, 802.1as			
Power and Environmental Specifications	Operating	Temperature	32° to 131° F (0° to 55° C)	
		Humidity	10% to 90% non-condensing	
	Non-operating	Temperature	-85° to 185° F (-65° to 85° C)	
		Humidity	5% to 95% non-condensing	
	Power requirement	4.3 W (1000Base-T, maximum traffic) 1.0 W (AUX power with WoL)		
	Emissions classification	Class B		
	Agency approvals	USA	FCC Part 15 Class B	
		Canada	ICES--3, Issue 4	
		Japan	VCCI V3 (2010.04) Class B	
		Korea	KN22 ClassB, 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 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 			

Technical Specifications

- Microsoft Windows 2008 Standard (32 and x64)
- Microsoft Windows 2008 Enterprise (32 and x64)
- Microsoft Windows Small Business Server 2011 (SBS V7) - base
- Microsoft Windows Small Business Server 2011 Essentials
- RHEL 5.7 x86 and AMD 64 & EM 64T
- RHEL 6.1 x86 and AMD 64 & EM 64T
- SLES10: x86 and AMD 64 & EM 64T
- SLES 11: x86 and AMD 64 & EM64T
- Solaris 10
- VMware ESX/ESXi 4.1, ESXi 5.0 and ESXi 5.1
- Citrix
- HyperV (Windows 2008 32 and 64)

NOTE: For more Linux OS support & certification information, please visit the ProLiant & Bladesystem Server Linux matrix: <http://h18004.www1.hp.com/products/servers/linux/hplinuxcert.html>

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) 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 at: <http://www.hp.com/go/green>. 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
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.



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