

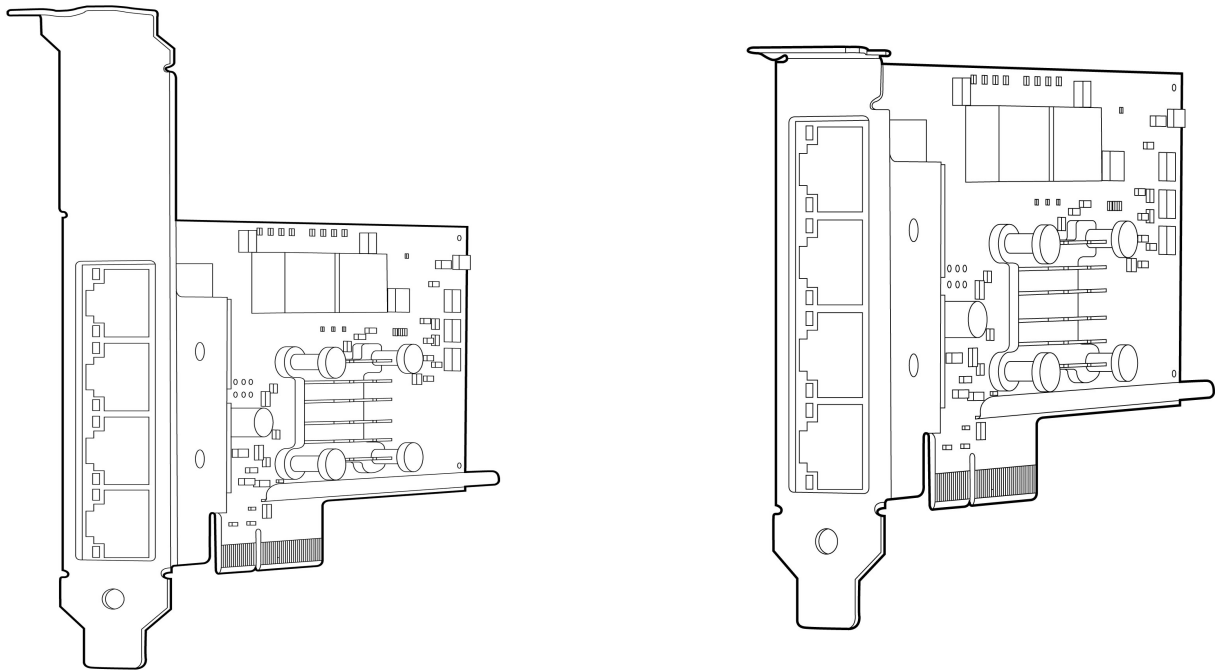
Overview

The HP Ethernet 1Gb 4-port 331T adapter features the next generation of Ethernet integration offering a single chip solution on a card, further reducing power requirements for 4 ports of 1Gb Ethernet.

The HP 331T delivers full line-rate performance across all ports with low power consumption. The 331T is a low-profile card with both full height and half height brackets included in the kit. The x4 PCIe 2.0 interface is compatible with x4, x8, and x16 PCI slots.

The HP 331T quad-port adapter is ideal for virtualization, security, server consolidation, network segmentation, and other applications requiring maximum throughput and port density. The total aggregate throughput of 8Gbps in full-duplex mode meets the needs of customers desiring high bandwidth.

The HP 331T adapter supports advanced features such as Large Send offload capability, TCP checksum and segmentation, VLAN tagging, MSI-X, jumbo frames, Energy Efficient Ethernet (EEE), IEEE 1588, and virtualization features such as VMware NetQueue and Microsoft VMQ.



Models

HP Ethernet 1Gb 4-port 331T Adapter

647594-B21

Kit contents

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



Compatibility

Compatibility

Servers

ProLiant DL (rack-optimized):

- HP ProLiant DL165 G7
- HP ProLiant DL360p Gen8
- HP ProLiant DL380p Gen8
- HP ProLiant DL580 G7
- HP ProLiant DL585 G7
- HP ProLiant DL980 G7

ProLiant ML (expansion-optimized):

- HP ProLiant ML350p Gen8

ProLiant SL (scalable system):

- HP ProLiant SL165s G7
- HP ProLiant SL230 Gen8
- HP ProLiant SL250 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 HP 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 HP 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 HP 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



Standard Features

Optimized for Virtualization

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

HP Sea of Sensors 3D

Support for HP 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 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 HP 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 HP 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 HP 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 HP 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.



Standard Features

Management Support	Like all HP server adapters, the HP 331T ships with drivers and agents that can be managed from HP Systems Insight Manager, as well as using any other management application that supports SNMP. HP Systems Insight Manager can recognize the HP 331T individually or in teams, and can collect and report SNMP statistics on the adapter events.
Server Integration	The HP 331T is a completely integrated, tested, and qualified solution that is optimized for HP servers. HP 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 HP 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.
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

HP Technology Services

HP 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 HP Care Pack Services

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

HP Foundation Care services deliver scalable support-packages for HP 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 HP Collaborative Support. If you are running business critical environments, HP 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, HP 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 HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services **3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service**

Provides you with rapid remote support and if required an HP 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 HP 24x7 4 hour Response, HP 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 HP. If the problem is with HP 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 HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP 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>



Service and Support

Related HP Care Pack Services to enhance your HP product experience

Related Services **3-Year HP 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>

OR

3-Year HP 6-hour Onsite Call-to-Repair, HP 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 HP Global Solution Center, and basic software problem diagnosis, fault isolation, and resolution if available to HP. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

HP Proactive Select Service

Provides a flexible way to purchase HP 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>

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

HP's 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. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

*HPⁱ Support Center Mobile App is subject to local availability



Service and Support

Parts and materials

HP will provide HP-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 HP-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 HP 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 HP 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 HP ESSN Options, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant> or www.hp.com/services/bladessystem



Related Options

Gigabit Server Adapters	HP NC112T PCI Express Gigabit Server Adapter	503746-B21
	HP NC360T PCI-E Dual Port Gigabit Server Adapter	412648-B21
	HP NC365T 4-port Ethernet Server Adapter	593722-B21
	HP NC373F PCI-E Multifunction 1000SX Gigabit Svr Adapter	394793-B21
	HP NC373T PCI-E Multifunction Gigabit Server Adapter	394791-B21
	HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
FlexLOMs		
	HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B21

10 Gigabit Server Adapters

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.

HP NC522SFP Dual Port 10GbE Gigabit Server Adapter	468332-B21
HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
HP NC524SFP Dual Port 10GbE Module	489892-B21

NOTE: NC524SFP is available only on DL370 G6, ML370 G6, DL580 G7, DL585 G7, and DL980 G7.

HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21
HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: 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● 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			



Technical Specifications

- SLES10: x86 and AMD 64 & EM 64T
- SLES 11: x86 and AMD 64 & EM64T
- Solaris 10
- VMWare vSphere 4.1 and 5.0
- 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 offers end-of-life HP 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 HP sales office. Products returned to HP 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 web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

© Copyright 2012 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Windows is a US registered trademark of Microsoft Corporation.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

