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Overview
HPE Ethernet 1Gb 4-port 331FLR Adapter

Recommended SKU - This adapter is a recommended option that has been selected by HPE experts to provide the right technology for a range of workloads and market segments offering the best combination of performance, value and availability.
The HPE Ethernet 1Gb 4-port 331FLR Adapter for select HPE ProLiant rack servers features the next generation of Ethernet integration, offering a single-chip solution in a FlexibleLOM form factor, which offers the option for future upgrades to 10GbE networking speeds. It delivers full line-rate performance across all ports with low power consumption.
The HPE 331FLR is ideal for virtualization, security, server consolidation, network segmentation, and other applications requiring maximum throughput and port density. The total aggregate throughput of 4Gb meets the needs of customers desiring high bandwidth.
The HPE 331FLR supports advanced features such as Large Send and Receive offload capability, TCP checksum and segmentation, VLAN tagging, MSI-X, jumbo frames, IEEE 1588, HPE Sea of Sensors 3D 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.

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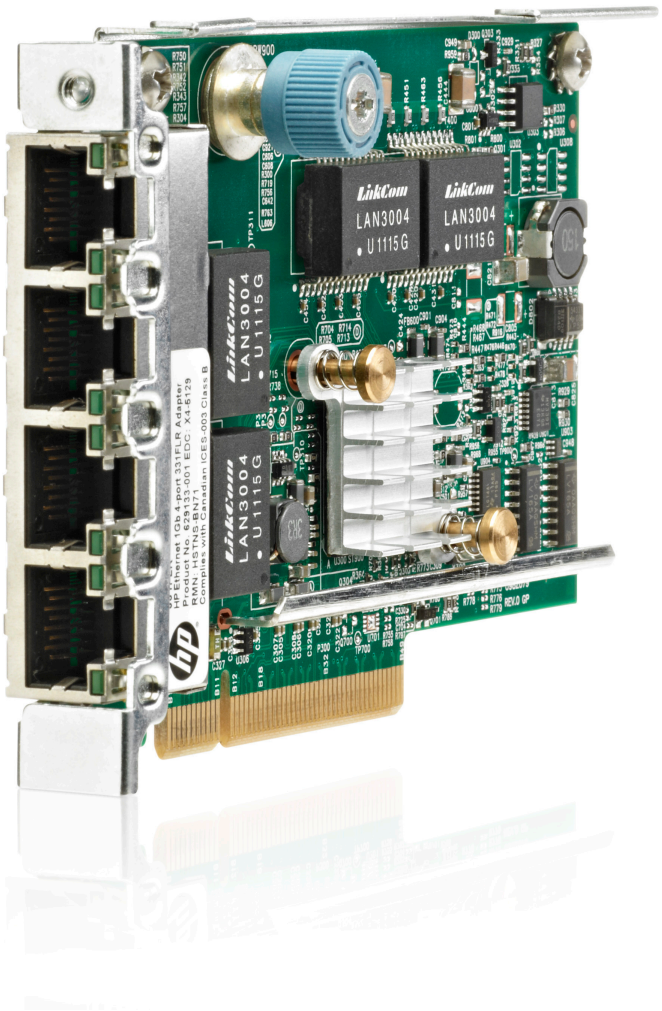
Overview



HPE Ethernet 1Gb 4-port 331FLR Adapter

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Platform Information

Models

HPE Ethernet 1Gb 4-port 331FLR Adapter	629135-B22

Kit Contents	HPE 331FLR FlexibleLOM adapter Quick install card Product warranty statement
Compatibility - Supported Servers	HPE ProLiant DL20 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 DL385 Gen10 Server HPE ProLiant DL560 Gen10 Server HPE ProLiant DL580 Gen10 Server HPE Apollo 2000 - XL1x0r Gen9 Server HPE Apollo 4500 – XL450 Gen9 Server HPE Apollo 6000 – XL230a Gen9 Server HPE Apollo 6000 – XL230b Gen9 Server **NOTE: This is a list of supported servers. Some may be discontinued.**

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Standard Features

At a Glance Features	• FlexibleLOM for select HPE servers • Industry-leading hardware integration for low power • Quad-port 1GbE provides up to 8Gb/s full duplex throughput per adapter • Energy Efficient Ethernet (EEE) support. • Optimized for virtual servers. • Improved small packet performance. • Supports the Preboot eXecution Environment (PXE).
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.
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.

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Standard Features

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	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. 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	For overall improved system response, this adapter 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.
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.

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Standard Features

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**

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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 Hewlett Packard Enterprise due to malfunction.
For more information	Visit the Hewlett Packard Enterprise Service and Support **website**.

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Technical Specifications

System Unit	**Dimensions (L x W)**	11.75 cm x 7.62 cm [4.626 in x 3.0 in (L x W)] **NOTE: without bracket**
General Specifications	**Network Processor**	Broadcom BCM5719 chipset
	Data Rate	Four 1GbE ports, each at 2 Gbps full duplex; 8 Gbps aggregate full duplex theoretical bandwidth. 10/100/1000 Mbps, Full-duplex.
	Data Path	Four lane (x4) PCI Express,mechanically compatible with x8, and x16 PCI Express slots.
	Onboard Memory	276 MB.
	Bus type	PCI Express 2.0
	Form Factor	FlexibleLOM
	Bus Speed	Gen 2 x4
	IEEE Compliance	802.3, 802.3ab, 802.3u, 802.3x, 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**	5.5W Maximum
	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 60590-1
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**.	
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Technical Specifications

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.

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Summary of Changes

Date	Version History	Action	Description of Change
07-May-2018	Version 16	Changed	Compatibility section was updated
15-Feb-2018	Version 15	Changed	Overview section was updated
18-Dec-2017	Version 14	Changed	Product Information- Compatibility was updated
16-Oct-2017	Version 13	Changed	Overview, At a Glance Features and TS/OS and Virtualization Support topics were updated.
11-Jul-2017	Version 12	Changed	Compatibility section was updated.
17-Dec-2015	Version 11	Changed	Related options section was updated.
		Removed	Obsolete SKUs were deleted: 412648-B21, 458492-B21, 435508-B21, 468332-B21, 394791-B21, 489892-B21, 394793-B21, 581201-B21, 538696-B21
09-Sep-2014	Version 10	Added	SKU was added on Models section: 629135-B22 SKUs added on FlexibleLOM Adapters: 656596-B21, 727060-B21
		Changed	Compatibility Section was updated
		Removed	Obsolete SKUs were removed from the 10 Gigabit Server Adapters on the Related Options section: 468332-B21, 489892-B21, 581201-B21
10-Sep-2013	Version 9	Changed	Compatibility, 10 Gigabit Server Adapters, and FlexibleLOM Servers were revised
15-Mar-2013	Version 8	Added	Technical Specifications: Added ESXi 5.0 to the Operation Systems Support section.
19-Feb-2013	Version 7	Changed	Changes made in the Overview and Related Options sections.
04-Dec-2012	Version 6	Changed	Changes made in the Compatibility and Related Options sections.
10-Oct-2012	Version 5	Changed	Changes made in Compatibility section.
24-Sep-2012	Version 4	Changed	Changes made in Compatibility section.
20-Aug-2012	Version 3	Changed	Changes made in Compatibility section.
08-Jun-2012	Version 2	Changed	Changes made throughout the QuickSpecs.
06-Mar-2012	Version 1	New	Initial Version.

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