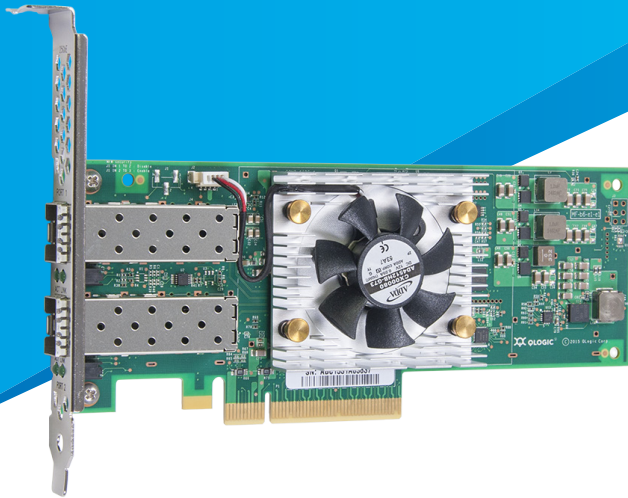


QLogic® FastLinQ™ QL4521x-DE Series

25Gbps Ethernet-to-PCIe 3.0 Intelligent Ethernet Adapters



- Industry's Most Powerful 25GbE Adapter delivers the best price and performance ratio versus 10GbE
- Increase virtual machine density and accelerate multi-tenant networks with full offload for tunneling protocols

OVERVIEW

The 25GbE specification enables network bandwidth to be cost effectively scaled in support of next-generation server and storage solutions residing in cloud and web-scale data center environments. Utilizing 25GbE results in a single-lane connection similar to existing 10GbE technology—but it delivers 2.5 times greater bandwidth. Compared to 40GbE solutions, the 25GbE technology provides superior switch port density by requiring just a single lane (versus 4 with 40GbE), along with lower costs and power requirements. QLogic is a leading innovator driving 25GbE technologies across enterprise and cloud market segments.

The QLogic® FastLinQ™ QL4521x-DE Series Intelligent Ethernet adapters leverage QLogic's fifth generation technology to deliver true 25Gbps Ethernet (GbE) performance. Integrated, advanced networking eliminate I/O bottlenecks, conserve CPU cycles, and enable greater virtual machine density in the next generation of software-defined data centers. Optimized for use across enterprise, managed service providers (MSPs), and large public and scalable public cloud deployments, the QLogic FastLinQ QL4521x-DE Series 25GbE adapters enable organizations to achieve new levels of performance in physical, virtual, and cloud environments.

The QLogic FastLinQ QL4521x-DE Series adapters deliver the most advanced Ethernet solutions on the planet, specifically designed to meet requirements from leading enterprise and cloud providers. QLogic's cutting edge server and Network virtualization features (VXLAN and NVGRE offloads) deliver the most advanced 25GbE adapter.

REDUCE CAPITAL EXPENDITURE AND OPERATING EXPENSE

The QLogic FastLinQ QL4521x-DE Series 25GbE technology delivers the best price per gigabit ratio versus 10GbE, which in turn, enables cloud providers and large-scale data center operators to reduce operating expense while continuing to scale their network of server and storage nodes to meet the increasing demands of the future. QLogic 25GbE is not only cost-efficient, but power efficient because it utilizes a single lane in comparison to other alternatives such as the quad lane 40GbE which translates into reduced cost and complexity. The FastLinQ QL4521x-DE Series 25GbE technology uses the existing 25Gb/s lanes used in 100GbE paving the way to a seamless upgrade path to 100GbE, and protecting critical business investments.

HIGH DENSITY SERVER VIRTUALIZATION

The latest releases of multi-core systems allow larger percentages of virtualization. The QLogic FastLinQ QL4521x-DE Series 25GbE technology support, Microsoft® Hyper-V™ virtual machine queue and Linux® Multi-Queue (MQ) to provide ultimate flexibility, quality of service, optimized host/virtual machine performance while providing full 25Gbps bandwidth per port. Public and Private cloud virtualized server farms can now achieve 2.5x the virtual machine density for the best price and virtual machine ratio.

WIRE SPEED NETWORK VIRTUALIZATION

To achieve network scaling, data center operators create overlay networks to carry traffic from virtual machines over a logical tunnel, using Network Virtualization using Generic Routing Encapsulation (NVGRE) and Virtual Extensible LAN (VXLAN). This answers the network scalability concerns, but since the TCP packets are wrapped inside another frame, the native stateless offloading engines are bypassed and this places a higher load on the system's CPU. The QLogic FastLinQ QL4521x-DE Series 25GbE technology efficiently handles this by enabling its advanced NVGRE/VXLAN stateless offloading engines to access the overlay protocol headers, enabling the traditional stateless offloads to be achieved on the encapsulated traffic. Additionally, the QLogic FastLinQ QL4521x-DE Series 25GbE technology support Open vSwitch (OVS). Using the QLogic Ethernet solution enables data center operators to reach native performance in their network architecture.

TRUSTED, RELIABLE AND INTEROPERABLE

QLogic is an industry leader and member of the IEEE 25G Committee and 25 Gigabit Ethernet Consortium and was the first to demonstrate end-to-end interoperability for 25Gb and 100Gb Ethernet solutions. The QLogic FastLinQ QL4521x-DE Series 25GbE technology adheres to standards, ensuring interoperability with a wide range of network solutions and 25G/100G switches. The QLogic technology also provide an easy upgrade path to 100GbE networks, which utilize multiple 25GbE lanes. In addition, QLogic technology and stack maturity provides organizations with peace of mind and confidence.

Host Bus Interface Specifications

Bus Interface

- PCI Express® Gen3 x8, Gen2 x8 (electrical)

Host Interrupts

- MSI-X

Compliance

- *PCI Express Base Specification, rev. 3.1; PCI Express Card Electromechanical Specification, rev. 3.0; PCI Bus Power Management Interface specification, rev. 1.2*

Ethernet Specifications

Throughput

- 25Gbps line rate per-port in 25GbE mode

Ethernet Frame

- Standard MTU sizes and jumbo frames up to 9,600 bytes

Stateless Offload

- IP, TCP, and UDP checksum offloads
- TCP segmentation offload (TSO)
- Large send offload (LSO)
- Giant send offload (GSO)
- Large receive offload (LRO)
 - LRO (Linux)
- Receive side scaling (RSS)
- Transmit side scaling (TSS)
- Interrupt coalescing
- Microsoft virtual machine queue, and Linux Multiqueue

Tunneling Offloads

- Virtual Extensible LAN (VXLAN)
- Network Virtualization using Generic Routing Encapsulation (NVGRE)

Compliance

- *IEEE: 802.3-2012 and Ethernet flow control), 802.1q (VLAN), IPv4 (RFQ 791), IPv6 (RFC 2460)*

Tools and Utilities

Management Tools and Device Utilities

- Native OS management tools for networking

Operating Systems

- For the latest applicable operating system information, see <http://driverdownloads.qlogic.com>

Physical Specifications

Ports

- QL45212-DE (540-BBQR)/QL45212-DE (540-BBPZ): Full Height Bracket, Dual 25Gbps Ethernet
- QL45212-DE (540-BBQB)/QL45212-DE (540-BBQQ): Low Profile Bracket, Dual 25Gbps Ethernet

Form Factor

- Low-profile PCIe® card (6.60in. x 2.71in.)

Environment and Equipment Specifications

Temperature

- Operating: 0°C to 55°C (32°F to 131°F)
- Storage: -40°C to 65°C (-40°F to 149°F)

Humidity

- Operating: 10% to 80%
- Storage: 5% to 90%

Agency Approvals¹

Safety

- US, Canada, and Europe

EMI and EMC (Class A)

- US, Canada, Europe, Australia, New Zealand, Japan, and Korea

Ordering Information

QL45212-DE (540-BBQR)

- 25GbE SFP28 Adapter
- Full Height Bracket
- Dual-Port
- Customer Install

QL45212-DE (540-BBPZ)

- 25GbE SFP28 Adapter
- Full Height Bracket
- Dual-Port

QL45212-DE (540-BBQB)

- 25GbE SFP28 Adapter
- Low Profile Bracket
- Dual-Port

QL45212-DE (540-BBQQ)

- 25GbE SFP28 Adapter
- Low Profile Bracket
- Dual-Port
- Customer Install

¹ Agency approvals have not been authorized at the time of publication; this list is preliminary.



Corporate Headquarters QLogic Corporation 26650 Aliso Viejo Parkway Aliso Viejo, CA 92656 949-389-6000

International Offices UK | Ireland | Germany | France | India | Japan | China | Hong Kong | Singapore | Taiwan | Israel

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