QLogic FlexSuite Adapters

Frequently Asked Questions

QLogic 2600 Series 16Gb Gen 5 Fibre Channel Adapters and QLogic 8300 Series 10GbE Converged Network Adapters from Cavium

Q: WHY WOULD CUSTOMERS CHOOSE 16GB GEN 5 FIBRE CHANNEL?

The QLogic® 2600 Series Adapters from Cavium™ are for organizations with data centers that require high-speed, secure, reliable Fibre Channel I/O connectivity. These customers are interested in the higher performance offered by 16Gb Fibre Channel while maintaining backward compatibility with their existing 8Gb and 4Gb SAN infrastructure.

The QLogic 2600 Series is targeted at customers that are looking to consolidate their server footprints through virtualization. Server virtualization's popularity is based on its ability to consolidate individual servers, which results in reduced hardware, power, cooling, space, and management costs.

The 2600 Series further enable this goal by increasing the amount of bandwidth and reducing the number of I/O slots needed to support a larger number of virtual machines (VMs). The 2600 Series, which supports granular quality of service (QoS), is optimized for virtualization and cloud computing deployments, and it can be deployed across heterogeneous infrastructures.

The 2600 Series is ideal for high-bandwidth and I/O-intensive applications, such as media streaming, backup/recovery, data warehousing and business analytics, OLTP, Microsoft Exchange Server®, and server virtualization.

Q: WHEN WOULD I DEPLOY 16GB GEN 5 FIBRE CHANNEL VERSUS 10GBE, 10GB ISCSI, OR 10GB FCOE?

There are several considerations when choosing an I/O technology as the foundation for network infrastructure. They largely depend on data center requirements for scalable performance, increasing VM densities, interoperability, and so on. At a high level, 16Gb Fibre Channel is 40 percent faster than 10Gb FCoE and backward compatible with existing Fibre Channel storage environments. Customers looking for multi-protocol support or to converge their storage and network traffic would be candidates for 10Gb FCoE. Customers with iSCSI storage environments should also consider QLogic Converged Network Adapters.

Q: WHAT MAKES QLOGIC 16GB GEN 5 FIBRE CHANNEL DIFFERENT OR BETTER THAN OTHER COMPETITIVE OFFERINGS?

Unlike competitive offerings, QLogic 16Gb adapters are based on a high-availability architecture that provides secure, predictive, and scalable performance across its dual-port architecture. The dual-port ASIC architecture provides complete port-level isolation. In addition, QLogic 16Gb Gen 5 Fibre Channel Adapters provide three times the transaction rate and two times the bandwidth from previous-generation 8Gb Fibre Channel Adapters, resulting in higher application performance, unparalleled flexibility for virtualization and cloud deployments, investment protection, and simplified management.

Q: WHAT APPLICATIONS ARE TRULY GOING TO TAKE ADVANTAGE OF 16GB PRODUCTS?

Companies wanting to consolidate hardware by deploying virtualized environments will benefit by using 16Gb Gen 5 Fibre Channel. High volume, transactional applications like Online Transaction Processing (OLTP), used for purposes such as online banking and travel reservation systems, will benefit from 16Gb Gen 5 Fibre Channel. Database warehousing operations and backup systems will also gain performance advantages using 16Gb Gen 5 Fibre Channel. Backup and restore applications will complete in nearly one-half the time as compared to in 8Gb Fibre Channel environments. And finally, 16Gb Gen 5 Fibre Channel complements SSD storage deployments by eliminating the I/O bottleneck in the network.

Q: WHAT KIND OF PERFORMANCE IMPROVEMENTS FOR "REAL-WORLD" APPLICATIONS CAN I EXPECT USING THE QLOGIC 2600 SERIES?

QLogic adapters deliver performance across OS and enterprise applications. Examples of enterprise workloads are Oracle® OLTP and OLAP, in which Cavium delivers half a million transactions per second (at typical database block size), backup and restore databases at approximately 3,200MBps throughput, and enhanced application performance. In addition, for Microsoft Exchange Server 2010, the high performance of QLogic adapters enhances the user experience by providing 200,000 IOPS at 32KB block size, resulting in twice as fast mailbox backup and restore times; 47 percent better performance than Emulex® for typical Exchange block sizes.[1]

Q: WHAT ARE THE KEY DIFFERENCES BETWEEN THE QLOGIC 2500 SERIES (8GB) AND THE QLOGIC 2600 SERIES (16GB, GEN 5) FIBRE CHANNEL ADAPTERS?

Key features added to the QLogic 2600 Series Adapters include support for PCI Express® Gen 3 host bus interface, increased maximum IOPS (more than one million per adapter), double the maximum throughput (6200 MBps), and dual-personality support.

Q: WHAT IS DUAL PERSONALITY?[2]

QLogic I/OFlex™ technology allows seamless transition between 16Gb Gen 5 Fibre Channel and a 10GbE Converged Network Adapter (NIC, FCoE, and iSCSI). This is dual personality—the ability to use the same I/O adapter for different deployment requirements. Unlike the QLogic Converged Network Adapter, which supports FCoE, iSCSI, and TCP/IP offloaded simultaneously, Emulex's Converged Network Adapter can only support one storage protocol at a time and, in addition, requires a license upgrade to support different protocols.

1 For more information, please see the Double Performance and Flexibility white paper.

2 For more information, please see the Qogic I/OFlex Technology—Any I/O, Any Network solution sheet.

Q: WHY IS PCIE GEN3 IMPORTANT?

Supported by the latest generations of servers, PCIe® Gen 3.0 has a higher maximum system bus throughput, lower I/O pin count, and better performance scaling for bus devices.

Q: IS THE QLOGIC 2600 SERIES BACKWARDS COMPATIBLE WITH PCIE GEN2 AND GEN1 SLOTS?

The series supports PCI Express Gen3, Gen2, and Gen1.

Q: WHAT IS PORT ISOLATION AND WHY IS IT IMPORTANT?

Port isolation refers to the architecture of the adapter's ASIC. QLogic adapters deliver independent functionality on a per-port basis. Each port has its own dedicated processor, memory, and firmware image. This feature provides higher availability and complete physical level of isolation and security across the adapter's dual-port ASIC architecture. A firmware crash on one port does not affect the other port.

Each port can be independently reset and recovered, which means that customers get 100 percent predictable performance and unparalleled stability. Emulex, on the other hand, uses shared resources across both ports, which may provide better single-port performance. However, Emulex's approach adds significant risk—a firmware crash may bring down both ports, traffic spikes on the one port may affect other ports, and performance is unpredictable. In addition, Emulex architecture does not provide the physical level security.

Q: IS THE QLOGIC 2600 SERIES BACKWARDS COMPATIBLE WITH LEGACY FIBRE CHANNEL ENVIRONMENTS?

Yes. The QLogic 16Gb Gen 5 Fibre Channel Adapter auto-negotiates between 16Gb, 8Gb, and 4Gb.

Q: WILL THE QLOGIC 2600 SERIES ADAPTERS WORK WITH PREVIOUS-GENERATION SWITCHES AT 8GBPS AND 4GBPS SPEEDS?

Yes, the QLogic 2600 Series Adapters auto-negotiate to 8Gb and 4Gb Fibre Channel speeds and will also work with previous-generation switches at 8Gb and 4Gb speeds.

Q: ARE DRIVERS FOR 8GB AND 16GB THE SAME?

Yes, the Fibre Channel drivers are universal across products.

Q: WOULD YOU EXPLAIN THE DIFFERENCE BETWEEN QLE266X AND QLE267X?

The "6" and "7" are generations of the QLogic 2600 Series product line. 6 released first, and the dual-personality (I/OFlex) capability was introduced in 7. The QLogic adapters with QLogic I/OFlex technology, which makes them dual-personality capable, are QLE836x and QLE267x. QLE267x has the hardware needed to support dual-personality. However, that support may not actually be enabled in the multi-boot image that is approved for a specific model. QLogic-branded QLE267x supports dual personality. Some OEM-custom QLE267x have multi-boot support for I/OFlex and others do not.

Q: WILL QLOGIC SUPPORT 16GB LR (SINGLE-MODE) OPTIC SKUS?

16Gb LR (single-mode) optic SKUs for QLogic-branded adapters are not supported. The traditional enterprise SAN market requires SR optics. Support for 16Gb LR optics will be available for specific Tier1 OEM customers.

Q: WHAT UNIFIED MANAGEMENT TOOL WILL BE SUPPORTED FOR QLOGIC 2600 SERIES ADAPTERS AND QLOGIC 8300 SERIES ADAPTERS?

QConvergeConsole® is the unified management tool (GUI and CLI) for Fibre Channel/FCoE, iSCSI, and networking (LAN) in Windows® and Linux® environments. In addition, Cavium offers end users the ability to manage QLogic adapters using native operating system (OS) tools or third-party management tools by exposing appropriate APIs.

Using the QLogic vCenter plug-in for VMware® environments, you can also:

1. Manage your storage and network components visually, saving time.
2. Deploy patches and firmware updates remotely, lowering administration costs.
3. Dynamically allocate bandwidth and set protocol type, providing the best utilization of network infrastructure.

Q: USING NPIV, HOW MANY VIRTUAL HOST BUS ADAPTER PORTS CAN BE DEPLOYED WITH THE QLOGIC 2600 SERIES ADAPTER?

255 virtual ports can be deployed. QoS settings can be applied by priority or as a percentage of bandwidth.

Q: CAN ONE PORT SUPPORT A FIBRE CHANNEL ADAPTER AND THE OTHER A CONVERGED NETWORK ADAPTER?

No. The QLogic 2600 and 8300 Series Adapters do not support split personality across ports of the same adapter. This functionality is available in the BR-1860 line of AnyIO adapters from Cavium.

Q: CAN YOU CONVERT TO 16GB FIBRE CHANNEL, AND THEN LATER BACK TO FCOE (I.E. MULTIPLE CONVERSIONS)?

Yes. This is the intention of the product. IT administrators can deploy high-performance 16Gb Gen 5 Fibre Channel now, and, in the future, change the personality to a 10GbE Converged Network Adapter, and then back to 16Gb Gen 5 Fibre Channel, as required. Customers say that they'll extend the life of servers even further by deploying the server to manage LAN/NIC traffic after its useful life as a high performance server. All of this capability is delivered using one adapter.

Q: WHERE CAN I FIND DETAILED INSTRUCTIONS ON CHANGING THE PERSONALITY FROM A FIBRE CHANNEL ADAPTER TO A CONVERGED NETWORK ADAPTER, OR BACK AGAIN?

The user's guide for both products, the QLogic 2600 Series and the QLogic 8300 Series, provide these instructions. They are available for download on the Cavium.com Web site. There is also a QLogic KnowHow video (http://www.youtube.com/watch?v=pJ3AYS98ODg&feature=youtu.be) that shows how to make this change.

Q: WHAT ARE THE SKUS REQUIRED FOR THE SFP CHANGES WHEN A CARD IS CHANGED FROM 2600 TO 8300 OR VICE VERSA?

The 16Gb optic SKU part number is SFP16-SR-SP and the 10Gb optic is SFP10-SR-SP. Each SKU ships with a single optic. Therefore, a dual-port adapter would require two individual optic SKUs.

Q: DOES CHANGING FROM 8300 TO 2600 REQUIRE A QLOGIC OPTIC?

Yes. QLogic optics are required.

Q: DOES CAVIUM SELL 16GB AND 10GBE OPTICS FOR THE CHANNEL PRODUCTS?

Yes. Standalone 16Gb and 10GbE optics are shipping today.

Q: WHAT ARE THE KEY DIFFERENCES BETWEEN QLOGIC 8200 SERIES AND QLOGIC 8300 SERIES CONVERGED NETWORK ADAPTERS?

Key features that have been added to the QLogic 8300 Series Adapters include SR-IOV (for NIC only), eight traffic classes per port, higher IOPS (500,000 per port for FCoE), and increased throughput. The QLogic 8300 Series Adapters also support the PCI Express Gen 3 host bus interface. In addition, the QLogic 8300 Series supports QLogic I/OFlex technology, which enables changing personality from a 10GbE Converged Network Adapter to a pure 16Gb Fibre Channel Adapter. This capability provides immense investment protection and increases the useful life of the product.

Q: ARE DRIVERS FOR THE QLOGIC 8200 SERIES AND THE QLOGIC 8300 SERIES THE SAME?

Yes. The QLogic 8200 Series and the QLogic 8300 Series share the same Ethernet drivers.

Q: CAN THE QLOGIC 8300 SERIES ADAPTERS CONNECT TO A 10GBE ETHERNET SWITCH AVAILABLE TODAY?

The QLogic 8300 Series Adapters can connect to a standard 10GbE Ethernet switch available today if it is used for data networking (standard Ethernet) or iSCSI SAN traffic only. However, if the QLogic 8300 Series Adapter is used for FCoE storage networking, it must be connected to an FCoE-capable switch.

Q: CAN THE QLOGIC 8300 SERIES ADAPTERS SUPPORT SIMULTANEOUS NIC AND ISCSI STORAGE FUNCTIONALITY?

Yes, the QLogic 8300 Series supports simultaneous NIC, FCoE, and iSCSI storage functionality.

Q: WHAT PROTOCOLS DOES SR-IOV SUPPORT, AS A STANDARD FOR I/O VIRTUALIZATION?

SR-IOV as a PCIe-SIG specification does not limit any protocols—it supports Fibre Channel, FCoE, NIC, and iSCSI. Even though the SR-IOV specification covers both storage and networking, the initial implementation is for networking only, similar to all other vendors.

Q: WHEN SHOULD A CUSTOMER USE NPAR VERSUS SR-IOV?

NPAR and SR-IOV are both supported on FlexSuite™ Adapters. NPAR is used when a customer would like to deploy NIC QoS techniques, while simultaneously using storage protocols (FCoE or iSCSI). See the answer above—QLogic SR-IOV is used for networking traffic.

Q: HOW IS THE QLOGIC SR-IOV IMPLEMENTATION DIFFERENT OR BETTER THAN OUR COMPETITION?

The QLogic technology delivers a more secure solution and better traffic isolation. QLogic SR-IOV (VM/VF) is completely isolated and secure. As an example, a vNIC driver in a virtual machine (VM) cannot reset the PF (Physical Function) and bring down the entire adapter. For more information, refer to the Optimize Server Virtualization with 10GbE Secure SR-IOV technology brief.

Q: HOW MANY VIRTUAL FUNCTIONS (VFS) CAN BE SUPPORTED ON THE QLOGIC 8300 SERIES CONVERGED NETWORK ADAPTER WITH NIC SR-IOV?

128 per adapter or 64 per port.

Q: WHERE DO END USERS PURCHASE ACTIVE AND PASSIVE COPPER CABLES FOR THE QLE8360-CU-CK AND QLE8362-CU-CK ADAPTERS?

Active and passive copper cables should be bought directly from FCoE switch vendors or their suppliers. Cavium publishes a list of approved cables (see Copper Cables Support Matrix).

Q: CAN THE QLOGIC 8300 SERIES ADAPTERS RUN NATIVE FIBRE CHANNEL FRAMES OVER A FIBRE CHANNEL SAN?

Using QLogic I/OFlex technology, the QLogic 8300 Series Adapter can be switched from Converged Network Adapter mode to Fibre Channel mode; the adapter will then run native Fibre Channel frames over a Fibre Channel SAN. This capability requires that 16Gb Fibre Channel optics from Cavium have been installed and the appropriate Fibre Channel mode multi-boot image has been downloaded.

Q: CAN THE QLOGIC 8300 SERIES ADAPTERS BE USED FOR GENERAL ETHERNET DATA NETWORKING?

Yes, the QLogic 8300 Series Adapters are fully Ethernet compliant and support Ethernet networking.

Q: DOES CAVIUM PLAN TO SUPPORT OPTICAL TRANSCEIVERS THAT ARE CAPABLE OF DUAL 10GBPS/1GBPS SPEEDS ON THE QLOGIC 8300 SERIES?

There are no plans to do so at this time. Although there are some optic vendors that have transceivers that are capable of both 10Gbps and 1Gbps, the optics are not based on any industry standard and do not support auto-negotiation. In addition, customers purchasing Converged Network Adapters will want to operate at 10Gbps Ethernet speeds to reap the full benefits of running multiple applications on a single port.

Q: IS THERE A 10GBASE-T MODEL OFFERED WITH THE QLOGIC 8300 SERIES?

No, a 10GBASE-T model is supported on the QLogic 3200 Series Intelligent Ethernet Adapters.

ABOUT CAVIUM

Cavium, Inc. (NASDAQ: CAVM), offers a broad portfolio of infrastructure solutions for compute, security, storage, switching, connectivity and baseband processing. Cavium's highly integrated multi-core SoC products deliver software compatible solutions across low to high performance points enabling secure and intelligent functionality in Enterprise, Data Center and Service Provider Equipment. Cavium processors and solutions are supported by an extensive ecosystem of operating systems, tools, application stacks, hardware reference designs and other products. Cavium is headquartered in San Jose, CA with design centers in California, Massachusetts, India, Israel, China and Taiwan.

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