Lowest Power Fibre Channel Adapters for Green Data Centers

Cavium's QLogic Adapters Deliver the Highest Performance at the Lowest Power

QLogic StarPower™

QLogic StarPower technology from Cavium offers dynamic and adaptive power management features to optimize power and bandwidth for lower power consumption.

KEY BENEFITS

Application growth and technology improvements drives data center managers to use server virtualization to consolidate server footprints and reduce the amount of power and cooling required. Upgrading server equipment to an energy-efficient model can save up to one ton of carbon emissions. Virtualization is an innovative way to absorb growth while minimizing environmental impact.

- **Lower Power Consumption.** The QLogic® Dynamic Power Management feature automatically reduces power consumption with no IT administrator intervention. QLogic 2600 Series Adapters from Cavium™ use the minimum number of PCIe® lanes to accommodate the maximum Fibre Channel bandwidth in a PCIe Gen3 slot. In a PCI Express® Gen3 slot, the QLogic Dynamic Power Management feature demonstrates 42 percent greater power savings compared to the Emulex® LPe16002B adapter.

- **Lower Power Bills.** In a data center with thousands of servers and Fibre Channel Adapters, the QLogic StarPower™ solution results in significant cost savings through lower electricity usage.

- **Reduction in Cooling Costs.** Choosing an adapter that delivers lower power consumption generates less heat, requiring less cooling to maintain the server's operating temperature.

- **Lower Operating Expenses.** Decreased power and cooling requirements enable more servers to operate using the existing footprint within the data center.

- **Environmentally Responsible.** Reducing Fibre Channel adapter power consumption helps lower overall carbon footprint.

INDUSTRY CHALLENGES

All around the globe, more and more data is shared every day, while there is also a shift towards environmentally responsible thinking. The significant increase in the amount of data means that more energy is required to power up and cool the enterprise data center. Therefore, data centers play an important role in reducing the amount of energy used to run large infrastructure complexes.

QLOGIC STARPOWER TECHNOLOGY

Dynamic Power Management techniques, such as Intelligent Link Training (ILT), save power on the QLogic 2500 Series (8Gb) and QLogic 2600 Series (16Gb) Fibre Channel Adapters. Intelligent Link Training forces the PCIe bus to use the minimum number of lanes needed for maximum throughput. For example, for PCIe Gen2 slots, the QLogic 2600 Series Adapter uses all 8 PCIe lanes; however, when the same adapter is plugged into a PCIe Gen3 slot, it uses only four lanes, which are powered down when the bandwidth is not in use, which saves power. Reducing Fibre Channel Adapter component count and using power-efficient components further reduce power consumption.

In addition to its power-saving features, the QLogic 2600 Series Adapter uses an active heat sink to cool the adapter. The design maintains an optimal operating temperature across the broad range of server designs, irrespective of airflow. Having a cooler adapter delivers the highest levels of reliability. Active cooling solutions have been deployed in the industry across many implementations: high-performance CPUs, memory modules, and power components.

Lowest Power Fibre Channel Adapters for Green Data Centers

KEY BENEFITS

- **Lower Power Bills.** The QLogic StarPower solution results in significant cost savings.

- **Reduction in Cooling Costs.** Choosing an adapter that delivers lower power consumption results in generating less heat.

- **Lower Operating Expenses.** More servers can operate using the existing power footprint in the data center.

- **Environmentally Responsible.** Lower the overall carbon footprint.

Table 1. QLogic 2600 Series Power Consumption Advantages[1]

Adapter	Power Consumption: Idle State	Power Consumption: Active State (with I/O)
LPe16002B	10.85W	11.64W
QLE2672	7.63W	8.20W
QLogic Advantage	3.2W (42%)	3.4W (42%)

KEY ADVANTAGES

Lower Power Consumption. In a PCI Express Gen3 slot, the QLogic Dynamic Power Management feature demonstrates 42% greater power savings over Emulex, as shown in Table 1.

Higher Application Performance and Virtual Machine Scalability. The QLogic 2600 Series Fibre Channel Adapter delivers the best application performance, making it an ideal solution for high-density virtualized environments. Cavium's QLogic technology delivers higher application performance than Emulex in Oracle® and Microsoft Exchange Server® environments. The QLogic 2500 Series and the QLogic 2600 Series outperform the Emulex LPe12002 and LPe16002B Adapters, respectively, at real-world workloads (block sizes) used in the enterprise data center. As shown in Table 2, this greater performance effectively means a more efficient adapter well suited for green data centers.

Table 2. Fibre Channel Adapter Power Efficiency

Fibre Channel Adapter	IOPS/Watt – QLogic	IOPS/Watt – Emulex	QLogic Advantage
8Gb Dual Port	63K/W	37K/W	85%
16Gb Dual Port	137K/W	102.2K/W	34%

High Availability Architecture. The QLogic 2600 Series Fibre Channel Adapter is the superior choice for the enterprise data center. QLogic Fibre Channel architecture provides port-level isolation across its dual-port ASIC, using independent buffers, the CPU, and the firmware image for each port. This design provides predictive and scalable performance across both ports.

Proven Leadership. According to Dell'Oro Group, Cavium's QLogic adapters lead the market with a double-digit lead over the nearest competitor. With more than 15 million ports deployed across multiple hardware platforms and operating systems, QLogic Fibre Channel Adapters have been field-tested in enterprise data centers.

QLOGIC STARPOWER

QLogic StarPower technology from Cavium offers dynamic and adaptive power management features such as power and bandwidth optimized intelligent PCI Express link training, low-power switching power supplies, and thermally efficient layout requiring lower airflows.

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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1. For a detailed description of the power testing methodology, see the technology brief, "QLogic Platform and Methodology for Product Evaluations."

Follow us:

Corporate Headquarters   Cavium, Inc.   2315 N. First Street   San Jose, CA 95131   408-943-7100

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