

## PEX 8518 Key Features

- ◆ 16-lane PCI Express switch
- ◆ Integrated SerDes
- ◆ Up to five configurable ports (x1, x2, x4, x8)
- ◆ Cut through architecture with 150 ns latency
- ◆ Quality-of-Service with up to 2 Virtual Channels/port
- ◆ Non-blocking switch fabric with full line rates
- ◆ Peer-to-peer switching and host centric data transfer
- ◆ SHPC r1.1 compliant Hot-Plug controller on all ports
- ◆ Dual clock domains with SSC and constant frequency
- ◆ I<sup>2</sup>C interface for configuration
- ◆ 23x23 mm<sup>2</sup> PBGA package

## PEX 8518 Other Features

- ◆ Selectable Non-Transparent bridge port
- ◆ Compliant with PCIe base specification r1.1
- ◆ End-to-end CRC and Poison bit support
- ◆ Basic and Advanced error reporting
- ◆ Hardware fixed and Round Robin Virtual Channel arbitration
- ◆ Link power management states
- ◆ 256 byte payload size
- ◆ Lane and polarity reversal
- ◆ Configuration through I<sup>2</sup>C, host or optional EEPROM
- ◆ JTAG Boundary Scan AC/DC

## Application:

### ***Fibre Channel Host Bus Adapter (HBA)***

## PLX Product:

### ***PEX 8518 – 16-Lane PCI Express Switch***

## Key Benefit:

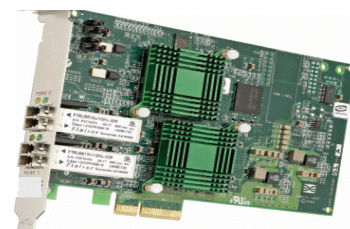
### ***Increase FC Port Density & Speed***

## HBA Migration to PCI Express

Traditionally, the Host Bus Adapters (HBA) with Fibre Channel (FC), SCSI, SATA and other interfaces used PCI or PCI-X to connect to the host bus (shown below). The HBA would connect to the host through chipsets (for x86 architecture) or directly (for RISC processors). The task of designing a system with buses like PCI/PCI-X becomes more challenging as the bus clock speed increases to support the increased CPU speed and storage interface data rates. Furthermore, to increase the number of slots, additional PCI/PCI-X bridges are needed. These supplementary bridges bring additional cost, noise, complexity, board space and latencies.



Most Fibre Channel HBA vendors are migrating to PCI Express as it offers serial interface for better board design and higher and scalable bandwidth that matches the Fibre Channel line rate requirements of 1 Gb/s, 2Gb/s, 4Gb/s and 8Gb/s. The FC HBA illustration on the right shows a x4 PCIe connector and two FC ports.



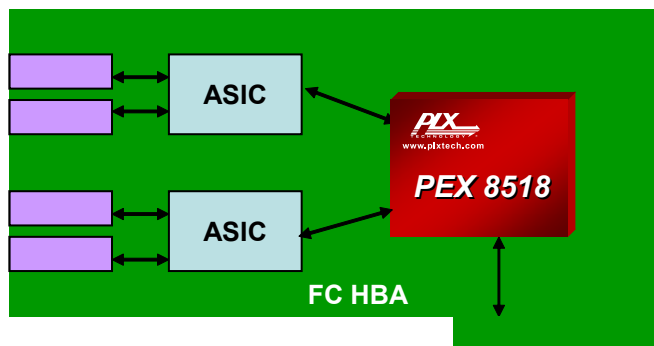
## PCIe Switches to Expand the Connectivity

The PCI Express technology has been adopted by major processor (CPU) vendors, server/workstation motherboard manufacturers, and chip-set suppliers. This helps HBA and Add-on card suppliers in expanding their products to support additional ports and higher bandwidths with the PCI Express architecture.

## Flexible & Versatile PCIe Switches

PLX offers a large selection of PCIe switches compliant with the latest PCIe specifications, validated in PLX labs, tested at the PCI-SIG plug-fest, and used by dozens of customers in their applications. The system designers can cost-effectively expand the FC ports, or increase their I/O capability on the adapter modules by using PLX PCIe switches.

The flexibility and versatility of the PLX switches allows designers to build to the needs of the application. The PEX 8518, a second generation PCIe switch from PLX, offers flexible ports that can be configured in any legal width up to x8 while providing high-performance cut-through architecture (150 ns latency), hot-plug capability on every port, and quality of service (QoS) through two virtual channel support. An example of the PEX 8518 switch in an FC HBA application is shown below.



The HBAs are expected to work across different platforms/motherboards without any hardware modifications. The PEX 8518 switch helps in providing that interoperability through its five flexible ports allowing any port to be upstream and dynamically adopting to the LVDS polarity (polarity reversal) and lane orientation (lane reversal) of the host board adapter. Additionally, PEX 8518 can be directly connected to the host PCIe port or via the root complex. The non-transparent bridge port of the PEX 8518 allows use of a local processor on the adapter board.

## Switches & Bridges Available Today!

PLX is shipping three PCIe bridges (PEX 8111, PEX 8114 and PEX 8311) and the PCIe switches as listed below.

Device	Lanes	Ports	Availability
PEX 8532	32	8	In Production
PEX 8524	24	6	Sampling now
PEX 8516	16	4	In Production
PEX 8518	16	5	Sampling Now
PEX 8508	8	5	Samples in Q2-06

## More than Just Fan Out

- ◆ Cut-through architecture for increased performance
- ◆ Two Virtual Channels for QoS
- ◆ Non-transparent bridging for intelligent adapters

## Design Tools & Documentation:

[http://www.plxtech.com/products/pci\\_express/PEX8518/default.asp](http://www.plxtech.com/products/pci_express/PEX8518/default.asp)

Data Book, App Notes, Product Brief, Hspice Model, simulation model, Development Kit

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