

PEX 8516 Key Features

- ◆ 16-lane PCI Express switch
- ◆ Integrated SerDes
- ◆ Up to four configurable ports (x1, x2, x4, x8)
- ◆ Quality-of-Service with 2 Virtual channels/port
- ◆ Selectable Non-Transparent Bridge Port
- ◆ Peer-to-peer switching and host centric data transfer
- ◆ 27mmx27mm, 312 pin PBGA

PEX 8516 Other Features

- ◆ Standards Compliant-Exceeds PCIe base specification r1.0a
- ◆ List on the PCI-SIG's Integrator's List
- ◆ Non-blocking Switch Fabric with full line rates
- ◆ End-to-end CRC and Poison bit support
- ◆ Standard r1.1 compliant Hot-Plug Controllers with Hot Plug on all ports
- ◆ Basic and Advanced error reporting
- ◆ Hardware fixed and Round Robin packet queue arbitration
- ◆ JTAG boundary scan
- ◆ All Link power management states
- ◆ 256 Byte maximum data payload size
- ◆ Lane and polarity reversal
- ◆ Configuration through host or optional EEPROM
- ◆ Typical Power: 3.0 Watts

Application:

Intelligent Quad Gigabit Ethernet Adaptors

PLX Product:

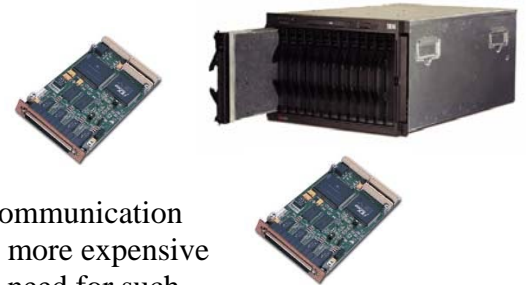
PEX 8516 – 16-lane PCI Express Switch

Key Benefit:

Highly Selectable Non-Transparent Port

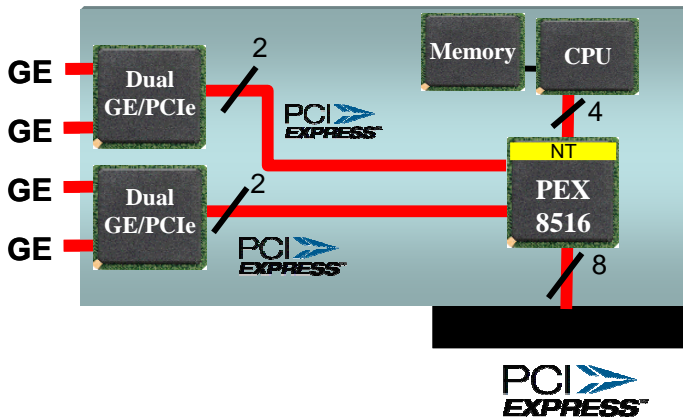
New Network Interface Cards Incorporating Offload Functions

As local area network (LAN) speeds commonly reach one gigabit/second rates servers are spending exorbitant processing power simply terminating TCP/IP and other communication protocol sessions. This requires more expensive servers just to keep up. Yet, the need for such bandwidth is continuing to grow. Offloading these functions can minimize the need for multiple high cost servers. Blade servers can utilize processors with lower power dissipation and thereby improve blade density. New quad Gigabit Ethernet Network Adaptor Cards (NICs) are including local processors to handle this processing and combining multiple I/O data streams to improve economic efficiencies. In addition to terminating sessions, these devices may also process iSCSI, remote DMA, RAID, or other communication or storage standards present. Security tasks such as SSL encryption/decryption may also move off the host.



The PEX 8516 Switch Aggregates Multiple Connections & Provides Processor Isolation

The PLX Technology PEX 8516 is a highly configurable 4-port 16 lane PCI Express Switch. When used in an intelligent NIC, it can aggregate four gigabit Ethernet ports and provide connections to a local processor as well as an upstream port to the host. Strapping pins allow a wide variety of configurations including a 2 x2-lane, a 1 x4-lane, and 1 x8-lane option for these NIC architectures. The 16-lanes of bandwidth provides for full wire-speed non-blocking operation. Large packet buffers and selectable flow control allows high burst traffic without dropped packets.



The Key Is Non-Transparency

Such an intelligent NIC design illustrated above will have two system processors, including one on the host system and therefore two processor domains. During system discovery and enumeration, each will attempt to configure the whole system resulting in memory mapping conflicts. The PEX 8516 has a selectable non-transparent port which isolates each processor domain and provides address translation between the local processor and the host. Added mailbox and doorbell registers allow direct communications between processors.

With 16 total PCI Express lanes available, you have more than sufficient bandwidth to interconnect multiple I/Os, local CPU, and the upstream host port. PEX 8516 allows peer-to-peer communication so ingress data to the NIC can be switched directly to the CPU and then sent upstream to the Host for improved system efficiency.

Key Advantage for PLX

While non-transparency is a fully open implementation, used for many years in PCI and PCI-X designs, no other PCIe Switch vendor has included this capability to-date. This technology is fully compatible with the PCI Express standard and all PLX switch products include this critical functionality.

In addition, the PEX 8516 includes many optional PCI Express capabilities such as two virtual channels per port for true quality of service. With two virtual channels, control traffic can be given higher priority than normal data plane flows. End-to-end CRC for enhanced data integrity, and advanced error reporting for sophisticated system error management and control are also supported.

Additional PLX Advantages

- ◆ Superior PCI Express expertise and support
- ◆ Hot Plug support on all ports
- ◆ Plug-fest certified PCI Express Compliance for full interoperability

Design Tools & Documentation:

On PLX Public ToolBox:

<http://www.plxtech.com/products/ExpressLane/switches/PEX8516/default.asp>

- ◆ DataBook, BSDL Files, Application Notes, White Papers, Product Brief, Hspice Models

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