

PEX 8508 Key Features

- ◆ 8-lane PCI Express switch
- ◆ Up to five configurable ports (x1, x2, x4)
- ◆ Low latency: under 150ns
- ◆ Integrated SerDes
- ◆ Quality-of-Service with up to 2 Virtual Channels/port
- ◆ Selectable Non-Transparent Bridge Port
- ◆ Peer-to-peer switching and host centric data transfer
- ◆ 19mmx19mm, 296 pin PBGA

PEX 8508 Other Features

- ◆ Standards Compliant-Exceeds PCIe base specification r1.1
- ◆ 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
- ◆ Dual clocking domain support with simultaneous SSC and constant frequency clocking
- ◆ Hardware fixed and Round Robin packet queue arbitration
- ◆ Vaux, Wake#, & Beacon
- ◆ Configuration through I2C, host or optional EEPROM
- ◆ JTAG boundary scan-AC/DC
- ◆ All Link & device power management states including D3 (cold)
- ◆ 256 Byte maximum data payload size
- ◆ Lane and polarity reversal
- ◆ Typical Power: 2.5 Watts

Application:

Processor Isolation in NAS Gateways

PLX Product:

PEX 8508 – 8-lane PCI Express Switch

Key Benefit:

Highly Selectable Non-Transparent Port

New Network Storage Systems Incorporating Failover and Redundancy

Networks with combined network attached storage (NAS) and storage area networks (SAN) as shown in figure 1 are becoming more prevalent. They provide higher throughput access to data, prevent direct attached storage based bottlenecks, segment data backup operations from normal traffic, and allow low latency. Gateways which provide access from one network to the other are becoming critical elements. To prevent these systems from becoming single points of failure they need to have high reliability with failover capability. To ensure this support, these Gateways are being designed with multiple redundant processing boards. If one fails, the other board automatically takes over.

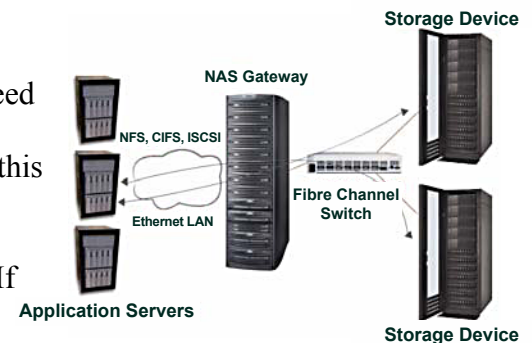


Figure 1

The PEX 8508 Supports Redundant Board Designs

The PEX 8508 is a 5-port, 8-lane PCI Express switch with a host of capabilities that allow dual primary and backup processor boards to offer failover capability. The switch's highly flexible configuration options include two x4-lane ports. With dual processors present, the switch can isolate these processors, provide Hot Plug on each port to assist in rapid changeover of failed boards, and ultra low latency to minimize failover times. Optional Advanced Error Reporting supports sophisticated system error management and control.

The Key Is Non-Transparency

Figure 2 shows two NAS Gateway processor boards. The PCI Express switch is used to prevent the backup host on board B from enumerating and configuring portions of the primary host system on board A. In addition, non transparent ports provide doorbell and mailbox registers for inter-processor communications. The switch provides complete on-chip hardware based address translation between the two processor domains. The backup processor will monitor heartbeat messages from the primary system and upon failure, take over as the primary host.

Here only one PEX 8508 switch is required with the one non transparent port, but to maintain identical board layouts, each board shown has a PEX8508 switch. This application can be generalized to where each compute or storage or I/O board would include a PEX8508 to isolate each processor domain.

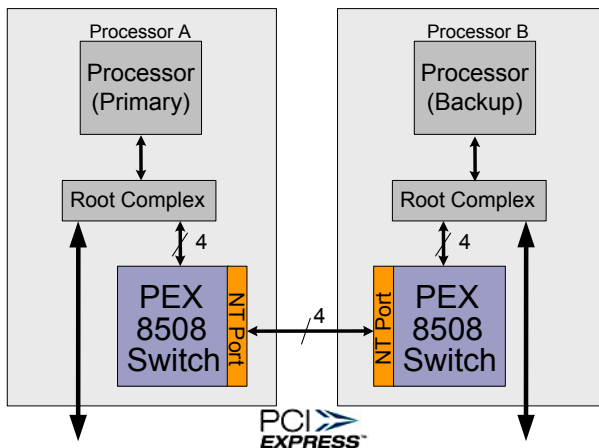


Figure 2

Key Advantage for PLX

While non-transparency is a fully open implementation, used for many years in PCI and PCI-X designs, PLX is the first PCIe Switch vendor to include this capability. This technology is fully compatible with the PCI Express standard and all PLX switch products include this critical functionality.

In addition, the PEX 8508 includes many optional PCI Express capabilities such as Hot Swap controllers on every port. This switch supports all of the Hot Swap usage models including a manually operated retention latch via an MRL Sensor, Attention Buttons, and Electromechanical Interlock via the Power Enable output.

Additional PLX Advantages

- ◆ Superior PCI Express expertise and support
- ◆ Extensive line of compatible PCI Express Switches and Bridges
- ◆ Plug-fest certified PCI Express Compliance for full interoperability

Design Tools & Documentation:

On PLX Public ToolBox:

http://www.plxtech.com/products/pci_express/PEX8508/default.asp

- ◆ DataBook, Reference Design Kit, BSDL and HSPICE Models, Product Brief

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