

PEX 8696 Highlights

- 96-lane, 24-port PCIe Gen 2 Switch
- Compliant to the PCIe base spec revision 2.0
- Supports up to 8 upstream/host ports with 1+1 or N+1 failover to other upstream ports
- Supports PCI-SIG defined Multicast
- Integrated Non-Transparent port
- 2KB maximum payload size
- Microsoft Vista compliant
- *performancePAK*[™] features
 - Full line rate on all ports
 - Non-blocking switch fabric
- *visionPAK*[™] features
 - Serdes eye capture
 - Per port performance monitoring
 - Error injection and loopback
- 176ns max packet latency (x16 to x16)
- Per port error diagnostics
- Advanced error reporting
- Port status bits and GPIO
- INTA# and FATAL_ERR# signals
- Memory (RAM) error correction
- Data path parity
- ECRC and Poison bit support
- 4 hot-plug ports with native HP signals
- All ports hot-plug capable thru I²C

Application:

Failover System Using Multi-Root

PLX Product:

PEX 8696 – 96-lane, 24-port PCIe Gen 2 Switch

Key Benefit:

Up to 8 upstream ports provide failover and efficient CPU utilization

Multiple Upstream Ports

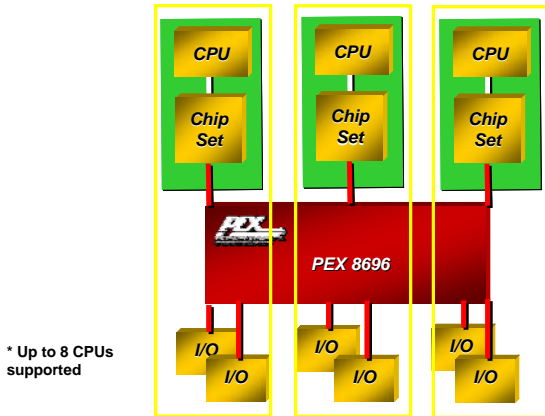
To date, most embedded, server and storage systems typically have a single-master in their hierarchy. One CPU is designated the master and enumerates all the components in the entire system, allocates memory to the end-points and manages most of the transactions – staying true to its designation of a master. For those applications requiring failover and redundancy, designers needed to use two CPUs, which tend to cause conflict between the two masters. In order to ensure a single-master hierarchy in a PCI Express (PCIe)-based system, those designers used the non-transparent port in PLX PCIe switches to isolate the two CPUs and remove any conflict between the two masters.

Now, a new-generation of systems are on the horizon that need to use multiple CPUs to improve the performance by focusing the CPUs on a smaller number of end-points and maximizing their operational efficiency. This in turn requires a new generation of PCIe switches that can support multiple hosts. Such switches provide multiple upstream ports to connect to several CPUs, thereby reducing the number of system components as well as latency. In addition to their new-found efficiencies, these systems also provide several points of failover for protection.

PEX 8696 supports up to 8 upstream ports

PEX 8696 is the highest-density Gen 2 PCIe switch available in the market with 96 lanes and 24 ports and up to 8 upstream ports. Figure 1 shows a usage model for the multiple upstream ports in PEX 8696. In this figure, each CPU has its own dedicated IOs isolated from other CPUs and in case of a failure in one CPU, it's IOs can be switched over to the working CPU. Such a usage model ensures that each CPU performance is being maximized by focusing on a smaller number of IOs.

Each CPU* has its own dedicated IOs isolated from other CPUs



* Up to 8 CPUs supported

Figure 1. PEX 8696 using multiple upstream ports to isolate end-points for efficient CPU utilization and failover

The other unique feature offered in PEX 8696 is the support for a x16 wide port. PLX is the only vendor to offer this support in PCIe switches. Figure 2 shows a usage model where graphics applications can take advantage of this x16 support.

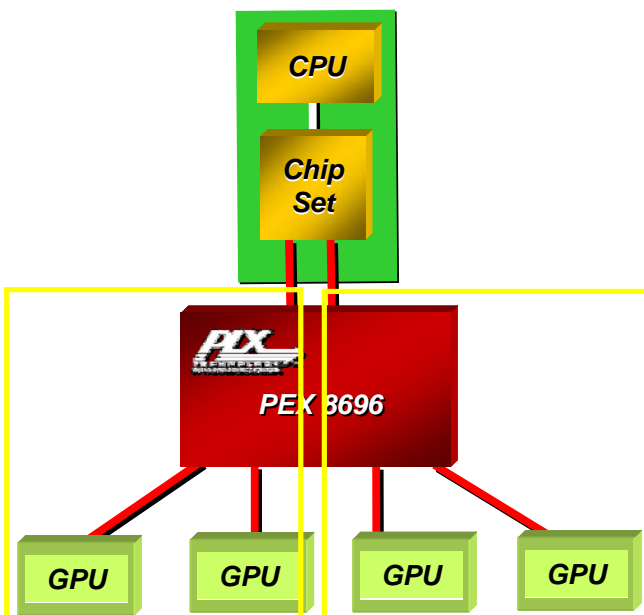


Figure 2. Graphics application using x16 link-width support in PEX 8696

Multicast is an extremely useful feature, especially in communications applications. Figure 3 shows a usage model where the PEX 8696 is supporting multiple multicast groups with several ports capable of being the source port. The PEX 8696 device supports up to 64 multicast groups, per the PCI-SIG specification.

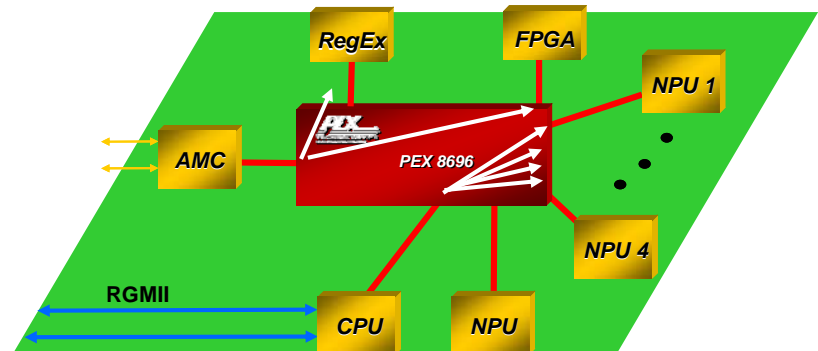


Figure 3. Using Multicast feature in PEX8696

The PEX 8696 is a very flexible switch supporting 24 ports which can be configured to lane widths of x1, x2, x4, x8 and x16 in most any combination.

The PEX 8696 provides end-to-end CRC (ECRC) protection and Poison bit support to enable designs that require end-to-end data integrity. It also supports data path parity and memory (RAM) error correction circuitry throughout the internal data paths as packets pass through the switch.

Additional PLX Advantages

In addition to the above key features such as multiple upstream ports, multicast, x16 support, integrated NT port, there are additional features implemented in the PEX 8696 that are extremely useful in customer applications:

- Moveable upstream port – any port can be re-assigned as the upstream port
- Read Pacing™ for fair bandwidth allocation
- Advanced error reporting
- Per port error diagnostics
- Dynamic buffer/FC credit pool

Available on PLX Website:

Product Brief, Databook, Application Notes, technical support
<http://www.plxtech.com/8696>