

PEX 8619 Highlights

- Integrated DMA Engine
- Non-Transparent Port
- Integrated SerDes with speed support for 2.5 GT/s and 5.0 GT/s
- 2KB Maximum Payload Size
- Compliant to the PCI Express Base Specification rev 2.0
- Eight Traffic Classes and Two Virtual Channels per port
- Hot-Plug Support via I²C
- I²C support; SMBus support
- JTAG AC/DC boundary Scan
- Per port error diagnostics

Application:

Failover Storage with DMA in PCIe Switch

PLX Product:

PEX 8619 – 16-lane PCIe Gen 2 Switch

Key Benefit:

Non-Transparent Port for Failover and integrated DMA Engine for data movement

Failover Storage Systems

In today's data-intensive work and industry environments, keeping up with storage requirements can become a daunting task. More and more information is shared electronically between users (presentations, music, HD video, etc). Personal computers and laptops have a finite amount of storage and the need to offload to detached storage subsystems becomes a necessity. Moreover, a mechanism for archiving large amounts of electronic data results in the need for high-capacity storage subsystems.



Data Redundancy

As described above, a storage subsystem becomes the holding place of large amounts of electronic data. The data stored in these subsystems is in many cases sensitive and a redundancy scheme is necessary in order to minimize the impact of hardware malfunction.

System Failover

Because there is some intelligence built into these storage subsystems, a failover mechanism is also required to transfer the intelligence to the backup system.

Non-Transparent Port for Failover

The Non-Transparent (NT) port and the moveable upstream port functions in the PEX 8619 provide the necessary capability for allowing system failover. The NT port provides the isolation required between primary and backup systems while allowing access to each other's address domain through translation registers.

Integrated DMA Increases Data Redundancy Efficiency

The integrated DMA engine in the PEX 8619 provides an efficient mechanism for copying data between the primary and backup systems. With four DMA channels, it can offload the processor by taking on all the data copying tasks allowing the processor to respond more effectively to data access requests.

Storage Subsystem using DMA and NT

The PEX 8619 can be used as a dedicated data mover in two port configuration (x8, x8). Figure 1 below shows the PEX 8519 as a dedicated data mover. In the two port configuration, the port connecting to the backup system is configured as an NT port. The primary CPU configures the DMA descriptors and the DMA engine in the PEX 8619 performs all the data transfers. The DMA channels can be configured to generate interrupts to the host upon completion of a descriptor or after the entire transfer has been completed.

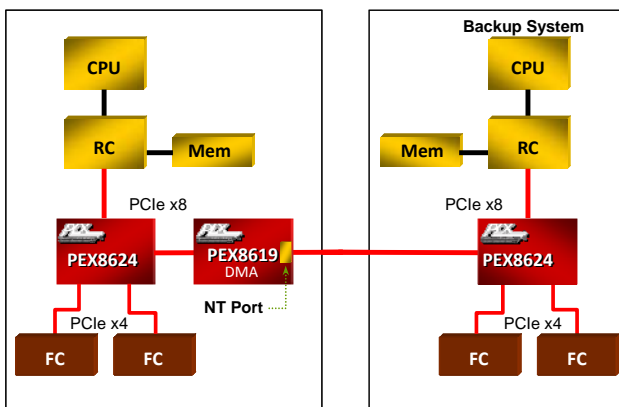


Figure 1. PEX 8619 as a Dedicated Data Mover

The PEX 8619 can be part of the IO interconnect as well. Figure 2 shows the PEX 8619 being used as the IO interconnect switch as well as the data mover across the NT port. The internal architecture provides the required bandwidth for these demanding systems. Additionally, there are arbitration schemes which can be configured to further control the data flow in the switch.

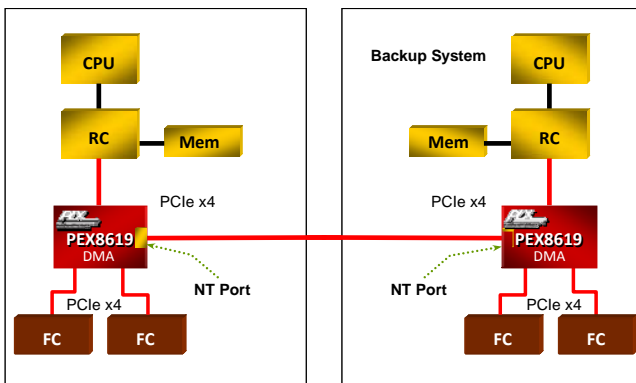


Figure 2. PEX 8619 as IO Interconnect and Data Mover

Additional PLX Advantages

In addition to these two key features (NT and DMA), there are additional features implemented in the PEX 8619.

- Moveable Upstream port – any port can be re-assigned as the upstream port
- Read-Pacing for fair bandwidth allocation
- *VisionPAK™*
 - Per port header and payload counters
 - SerDes Eye Capture
 - Error Injection and Loopback
- Advanced Error Reporting
- Per port error diagnostics
- Dualcast
- Dynamic Buffer/FC Credit Pool

Design Tools & Documentation:

- PEX 8619: www.plxtech.com/8619

Available on PLX Website:

Data Book, Application Notes, Design Guidelines, SDK and more.