

Neterion Xframe® E

10 Gigabit Ethernet PCI Express Server & Storage Adapter

Xframe E is the newest member of Neterion's Xframe 10 Gigabit Ethernet product family. PCI-Express (PCIe) is a next-generation I/O interconnect standard that is rapidly gaining traction in the server and storage world. The pairing of Neterion's industry-leading Xframe technology with PCIe means that best-in-class Ethernet performance is available to more servers than ever before.

The Xframe product family offers a unique multi-channel device model. A total of eight independent transmit and receive paths are available and each path may be prioritized for true Quality-of-Service support. By combining this novel architecture with the power of Extended Message Signaled Interrupts (MSI-X), Neterion has established a leading-edge framework for I/O Virtualization.

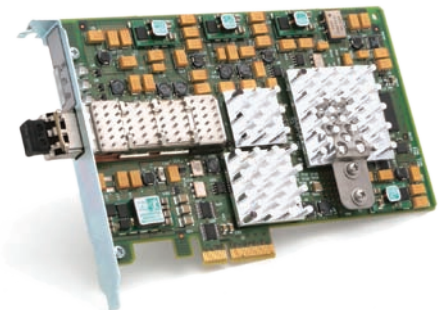
Capitalizing on Ethernet, a proven industry standard for 30 years, the Xframe E adapter allows end-users to preserve their existing environment: operating systems, network administration tools, core cabling, personnel training, and network infrastructure. Xframe E dramatically increases network performance, eliminates bottlenecks resulting from the explosion of data volume, frees-up server and user-level bandwidth, boosts application response, and significantly improves data backup times.

Xframe E is fully compliant with both the PCIe 1.1 specification and the IEEE 802.3ae 10 Gigabit Ethernet standard. The adapter connects to the host system using a PCIe x4 connector. On the network side, Xframe E utilizes industry-standard SR and LR optical transponders.

All Xframe products include full IPv4 and IPv6 support, combined with comprehensive stateless offloads that preserve the integrity of current TCP/IP implementations without "breaking the stack." Xframe drivers are available for all major Operating Systems, including Microsoft Windows, Linux (included in the kernel), Hewlett-Packard HP-UX, IBM AIX, Sun Solaris and SGI Irix. All Neterion products are designed to be fully software forward-compatible with future releases.

Test results from leading OEM evaluation labs on the features and benefits of Xframe E, compared to 1 Gigabit Ethernet:

- Up to 7x higher throughput
- 50% lower latency
- TCP processing overhead reduced by 40%
- Up to 7-fold reduction in cabling expense



Xframe E Features and Benefits

Xframe E is based on a sophisticated ASIC state machine architecture with built-in HA/RAS (High Availability/Reliability, Availability, Serviceability) features that provide the highest performance and reliability available.

- 8 virtual transmit and receive paths that may be prioritized for QoS
- Extensive Protocol Offloads and Assists reduce host processing loads, while optimizing bus utilization
- "Deep-Split Bus Transaction Capacity" provides full PCI Express bus utilization while achieving the industry's lowest latency
- Flexible interrupt features include INTA, PCI 2.2 Message Signaled Interrupt (MSI), and next generation MSI-X
- True QoS (Quality of Service) support for up to 8 levels, allowing traffic to be classified, prioritized, and queued at line rate
- On-board memory drastically reduces performance-degrading link-layer flow control
- Turn-key driver support for all major Operating Systems and server architectures (Custom driver development is also available)
- ECC (SEC/DED) protection for all on-board data and control structures as well as state machine protection
- "Carrier Grade" environmentals for power, thermal, and noise characteristics
- Modular design permits connectivity options for multi mode or single mode fiber deployment

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Specifications

Advanced Features

- TCP Checksum Offload (Tx and Rx; IPv4 and IPv6)
- TCP Large Send Offload support for segments up to 64 KB (plus headers)
- TCP Large Receive Offload
- UDP Checksum Offload (Tx and Rx; IPv4 and IPv6)
- UDP "Checksum Over Fragment" Offload (IPv4 and IPv6) for transactions up to 64 KB
- UDP Large Send Offload (IP fragmentation) for transactions up to 64 KB
- Advanced packet classification and prioritization features
- IPv4 Header Checksum Offload (Tx and Rx)
- IP Differentiated Services support
- Advanced Flow Control features (RED – Random Early Detection)
- 32 MB Rx Frame Buffer (host-configurable into prioritized queues)
- Support for up to 8 concurrent PCIe split transactions
- Adaptive Interrupt Coalescence
- PCI Physical Pin (INTA) Interrupt support
- PCI Message Signaled Interrupt (MSI) support for up to 32 unique interrupts
- PCI Extended Message Interrupt (MSI-X) support for up to 64 unique interrupts
- Extended-MSI (XMSI) support for up to 64 unique interrupts
- End-to-end SEC/DED ECC protection for all on-board control and data structures
- Redundant-State-Variable State Machine Error Protection for all on-board state machines

Standards Support

- PCIe 1.1 host interface
- DIX/802.3 FCS Offload for Tx and Rx frames
- 802.3ad "Slow Protocol" frame support
- 802.3ad Link Aggregation support

- 802.1Q VLAN tag support (Tx append and Rx strip)
- 802.1D (ex. 802.1p) QoS support (Rx frame steering across up to 8 queues)
- Jumbo Frame support (up to 9600 Bytes)
- 802.3X Pause Frame support (in hardware)
- Unicast/Multicast Rx frame filtering for up to 256 address/mask pairs
- Microsoft Receive Side Scaling Support
- ACPI power management support

Network Management

64-bit MAC Statistics include:

- MIB Statistics
- MIB2 Statistics
- MIB2 Extension
- RMON Statistics
- RMON 2 Statistics
- Automated DMA transfer of all statistics to host memory

Physical Dimensions and Environmental

- Bus Type – PCIe
- Bus Width – x4
- Bus Speed – 2.5 Gb/s per lane per direction
- Power Consumption: 12W (typical)
- Operating Temperature: 0 to 55° C
- Operating Humidity: 5 to 95%
- Length: 6.6" long (Half Length)
- Height: 4.2" tall (Full Height)

Physical Media		
Description	Optical: 850nm SR	Optical: 1310nm LR
Distance	300m	10km
Connector	LC	LC
Cable Type	Multi Mode Fiber	Single Mode Fiber



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