



Neterion Xframe® II Sun Fire

Low Profile 10 Gigabit Ethernet PCI-X Adapter optimized for Sun Fire Systems

Xframe II Sun Fire is the industry's leading 10 Gigabit Ethernet low profile adapter taking advantage of the PCI-X bus architecture. Unleashing the speed of 10Gb/sec, Xframe II Sun Fire can be easily integrated into low profile space constrained environments such as Sun's Thumper X4500 data-server.

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, the proven industry-standard for 30 years, the Xframe II 10 Gigabit Ethernet Adapter allows end-users to preserve their existing environment: operating systems, network administration tools, core cabling, personnel training, etc. Xframe II dramatically increases network performance, eliminates bottlenecks resulting from the explosion of data volumes, frees-up server and user-level bandwidth, boosts application response and slashes data backup times.

Xframe II Sun Fire is fully compliant with the PCI-X 2.0 Mode II specification and the IEEE 802.3ae 10 Gigabit Ethernet standard. The Xframe II Sun Fire host system interface is a 64-bit, 133 MHz PCI-X bus, fully compatible with PCI-X 1.0 and 2.0 slots. This interface may be run in DDR (double data rate) mode on systems that support it. The network interface is a 10 Gigabit Ethernet link, using standardized PMD (Physical Media Dependent) devices to ensure ready interoperability.

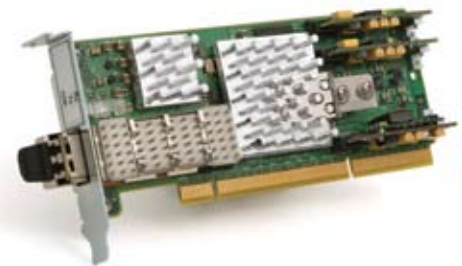
All Xframe products include full IPv4 and IPv6 support, and comprehensive stateless offloads that preserve the integrity of current TCP/IP implementations without "breaking the stack." Xframe drivers are available for all major Operating Systems, including Microsoft Windows, Linux (included in the Kernel), 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 to provide a simple upgrade path.

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

- Up to 8x higher throughput
- 50% lower latency
- TCP processing overhead reduced by 40%
- Up to 8-fold reduction in cabling expense

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Xframe II Sun Fire Features and Benefits

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

- Sun Solaris Ready, with support for Solaris 10 (driver included in the OS) and Linux, as well as all other mainstream Operating Systems
- 8 virtual transmit and receive paths that may be prioritized for QoS
- Extensive Protocol Offloads and Assists maximize host efficiency by reducing host processing loads, and optimizing bus utilization
- "Deep-Split Bus Transaction Capacity" provides full utilization of PCI-X bus 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 in both directions, allowing traffic to be classified, prioritized, and queued at line rate
- 32 MB of on-board memory drastically reduces performance-degrading link-layer flow control
- ECC (SEC/DED) protection for all PCI-X Mode II bus transactions and on-board data and control structures
- "Carrier Grade" environmental characteristics for power, thermal, and noise characteristics



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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 32 concurrent PCI-X 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
- 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

- PCI-X 1.0 and 2.0 compliant
- PCI 2.3 compliant
- 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

Operating Systems Support

- Solaris 10 (all updates) — driver included in the OS build
- Windows 2003 — driver included in the OS build
- Linux — driver included in Kernel 2.6.4
- IBM AIX, HP-UX, SGI Irix
- MacOS, FreeBSD, etc.

Physical Dimensions and Environmental

- Bus Type—PCI-X
- Bus Width—64 bit
- Bus Speed (MHz)—266 in 2.0 slot, 133 in 1.0 slot
- Typical Power Consumption: 16 Watts
- Operating Temperature: 0 to 50° C
- Operating Humidity: 5 to 95%
- Minimum Operational Air Velocity: 250 LFM
- Length: 6.6" long (Half Length)
- Height: 2.536" tall (Low Profile)

Physical Media

| Description | Optical: 850nm SR | Optical: 1310nm LR |
|-------------|------------------------|-------------------------|
| Distance | 300m | 10km |
| Connector | LC | LC |
| Type | Multi-Mode Fiber (MMF) | Single-Mode Fiber (SMF) |

Disclaimer: The Xframe II Sun Fire adapter has been tested for thermal compliance with Sun Fire systems X4100, 4200, 4500 and 4600 in the recommended operating environments. Other systems have different air flow characteristics and may not be designed to support low profile adapters. Consult with your manufacturer for support in these systems.



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