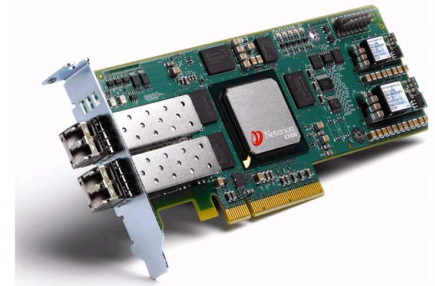


# Neterion X3100 Series

## World's Only Fully-Virtualized 10Gbps Ethernet Network Adapter



### Overview

Neterion continues to lead the industry in 10 Gigabit Ethernet solutions that enhance the productivity and efficiency of data centers while slashing their costs and reducing complexity. Server virtualization and the advent of multi-core processors have provided IT managers with the capability to consolidate their data centers. Neterion's X3100 Series Adapters take these advances to the I/O level.

With the X3100 Series, Neterion delivers its 3rd generation 10 Gigabit Ethernet controller, providing easy access to new features that enable I/O Virtualization without compromise and hardware offloads that significantly ease the demands on server CPU and memory resources.

### I/O Virtualization without Compromise

The X3100 Series was designed to provide an optimum solution for I/O Virtualization. By offloading many of the Hypervisor tasks from the host software to the adapter, virtualized applications can achieve performance levels previously experienced only on servers running in non-virtualized or native OS modes.

Neterion's X3100 Series adapters feature a unique multi-function mode that brings virtualized I/O to any industry standard server, with no need to wait for next-generation virtualization technologies such as SR-IOV. An X3100 Series adapter presents itself to the system as multiple, independent 10 GbE PCI devices, which can be managed and allocated just like a traditional Gigabit Ethernet network.

In multi-function mode, each individual function is provisioned with its own dedicated hardware channel, guaranteeing isolation, boosting performance, and simplifying system management. Neterion's IOQoS™ technology allows channels to be prioritized and managed like a regular Gigabit network. Only Neterion offers this level of I/O Virtualization support.

### High Performance

Based on Neterion's field-proven ASIC architecture, the X3100 Series achieves high throughput and low packet latency with minimum CPU utilization and power consumption. Multiple protocol and hypervisor offloads are integrated in hardware, allowing the CPUs to focus on mission-critical applications.

### Enterprise-Grade Reliability

Designed for data center applications, the X3100 Series protects all internal and external memories with single error correction, double error detection ECC. Virtual functions are isolated and may be independently initialized and reset, meaning that one virtual machine's behavior will not affect another's.

### Easy Integration

The X3100 Series allows end-users to preserve their existing investments in operating systems, software applications, network administration tools and personnel training. Network management is greatly simplified, increasing both security and reliability while lowering the total cost of ownership.

All Neterion products include comprehensive stateless offloads that preserve the integrity of current TCP/IP implementations without "breaking the stack." Drivers are available for all major operating systems.

### Highlights

**The X3100 Series is based on a powerful multi-channel architecture that combines the efficiency of state machines with the flexibility of embedded processor cores. The adapter offers unparalleled performance for virtualized environments.**

- A high-performance, PCIe x8 system interface, combined with extensive protocol offloads, maximize host efficiencies by reducing host processing loads and optimizing bus utilization.
- Two network ports with fully integrated IEEE 802.3ad link redundancy features are designed to meet the demanding redundancy and high availability requirements of critical data center applications.
- Best-in-class I/O Virtualization (IOV) capabilities. Each virtual function is provisioned with its own dedicated hardware channel inside the ASIC, guaranteeing isolation while simplifying system management. A single X3100 Series adapter appears as multiple 10 GbE adapters to the PCI subsystem and can be managed like a traditional Gigabit network.
- Neterion IOQoS™ (I/O Quality of Service) support for each virtual function, allowing traffic to be classified, prioritized, and queued at line rate.
- High-performance ASIC-based implementation for minimum latency and attractive power consumption.

# Neterion X3100 Series

## Fully-Virtualized 10-Gigabit Ethernet Network Adapter

### Specifications

#### General

- 10 Gbps PCIe Ethernet adapter
- Multiple PHY options, including 10GBASE-SR, LR, and DA
- Available in single port and dual port configurations

#### PCI Express

- PCIe 2.0 Compliant (2.5 GT/s)
- Interrupt support: INTA, MSI, MSI-X
- Power management (PME) capabilities
- BootROM (PXE) support

#### Ethernet Media Access Controller (MAC)

- IEEE 802.3ae 10 Gb Ethernet
- IEEE 802.3ad Link Aggregation and Failover
- IEEE 802.3D QoS Support
- IEEE 802.1Q VLAN Tag support
- IEEE 802.3X Pause Frame support
- Up to 512 MAC addresses
- Jumbo Frame support (up to 9622 Bytes)
- Integrated traffic classification/steering capabilities, including Microsoft Receive-Side Scaling (RSS).
- 64MB external receive packet buffer

#### I/O Virtualization Support

- PCI-SIG SR-IOV 1.0 (via optional firmware upgrade)
- Special “multi-function PCI device” mode brings true IOV to any industry-standard server. In multi-function mode, up to 8 functions are available (up to 17 in ARI-enabled systems). Each physical function appears to the system as an independent Ethernet card.
- Unique, hardware-based multi-channel architecture mitigates head-of-line blocking and allows direct data transfer between hardware channels and host-based Virtual Machines without hypervisor intervention
- VMware® NetQueue support
- Dedicated per-VF statistics and interrupts
- Support for function-level reset (FLR)
- Fully integrated Layer 2 switching function
- Ingress replication queue (for broadcast packets)

#### TCP/UDP/IP Stateless Offloads

- Checksum offload for TCP/UDP/IP (IPv4 and IPv6)
- Large Send Offload for TCP/UDP (IPv4 and IPv6)
- Advanced packet classification and prioritization

#### Management

- IEEE, MIB, MIB2, RMON, and RMON2 statistics

#### Operating System Support

- Microsoft Windows Server 2003 and 2008
- Red Hat Enterprise Linux 4 and 5
- SUSE Linux Enterprise Server 10 and 11
- VMWare ESX Server 3.5 and 4.0
- Red Hat, SLES and Citrix XEN
- Solaris 10 Update 4 and 5

#### Physical Dimensions and Environmental

- Bus Type: PCIe x8
- Bus Speed: 2.5 GT/s per lane
- Power Consumption: 12W (single port), 14 W (dual port)
- Dimensions: 6.6” x 2.5” (low profile)
- Operating Temperature: 0 to 55°C
- Operating Humidity: 5 to 95%
- RoHS-6 Compliant

#### Safety / EMC

- cTUVus / UL
- FCC Part 15 (USA)
- Class B ICES-003 (Canada)

#### Interconnect

##### 10GBase-SR (Short Reach Optical)

- Maximum reach: 300 m
- Connector type: LC
- Module type: SFP+
- Cable type: Multi-mode fiber

##### 10GBase-LR (Long Reach Optical)

- Maximum reach: 10 km
- Connector type: LC
- Module type: SFP+
- Cable type: Single-mode fiber

##### 10GBase-CR (twinax/direct attach)

- Maximum reach: 5m (up to 7m with Neterion certified cables)
- Connector type: SFP+ DA
- Cable type: Qualified twinax DA cables (Contact Neterion for details)

### Product Configurations / Ordering Information

Part Number	Ethernet Ports	Interconnect	Form Factor	Host Bus
X3110SR0001	Single Port	SR	Low Profile  (Both full- and half-height brackets are provided)	PCIe x8
X3120SR0001	Dual Port			
X3110DA0001	Single Port	DA		
X3120DA0001	Dual Port			
X3110LR0001	Single Port	LR		
X3110LR0001	Dual port			



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