Neterion X3110 / X3120

High Performance 10GbE Adapters Optimized for Virtualization

Enterprise Proven Solutions for Next Generation Data Centers

The third generation of Exar's industry-leading Neterion family of 10 Gigabit Ethernet (GbE) solutions enhances productivity and efficiency of data centers while reducing operating costs and complexity. The X3110 single port and X3120 dual port adapters incorporate advanced stateless protocol offload features, and provide reliable, high-performance networking and block storage connectivity for enterprise servers and storage platforms.

The X3100 family "futureproofs" today's enterprise data center by delivering optimal efficiency and performance for a non-virtualized environment while providing an advanced, scalable architecture that enables easy migration to a fully virtualized environment without compromising performance and efficiency.

Maximum Performance for Virtualized Environments

The X3100 family of products are designed from the ground up to provide optimal performance in both virtualized and non-virtualized environments. In addition to an array of stateless offloads, the X3100 family has the flexibility to run virtualized applications both in para-virtualized mode, which is optimized for a large number of virtual machines running non-I/O intensive applications, as well as Direct Access Mode, which provides the architectural enhancements to virtualize I/O intensive applications.

Direct Access Mode integrates dedicated hardware resources for multiple virtual NIC interfaces, so each function is provisioned with its own dedicated channel. This advanced architecture significantly reduces host processor overhead required for the hypervisor, guarantees virtual machine isolation, simplifies system management, and delivers near-native performance for virtualized environments. The X3100 family has the flexibility to fully support both single root I/O virtualization (SR-IOV), and multi-function mode, with each mode providing the same level of channel isolation and the performance delivered by dedicated hardware. Exar's Neterion adapters allow guest operating systems to run native drivers, and are treated by the system as multiple, independent 10 GbE PCI-Express devices.

Dynamic Bandwidth Allocation and Quality of Service per Virtual Interface

Employing Exar's unique IOQoS™ technology, the X3100 adapters enable even the most I/O-intensive applications to be virtualized by providing dynamically configurable Quality of Service (QoS) and bandwidth allocation for each virtual interface. Using IOQoS, Service Level Agreements (SLAs) can be configured and enforced in high performance virtualized environments, with the QoS prioritization and bandwidth allocation for each virtual interface provisioned on-demand to support changing workload requirements. In addition, independent performance monitoring, as well as independent resets, are supported for each virtual function.

Seamless Integration with System Software and Utilities

The X3100 family of adapters enables end-users to preserve their investments in operating systems, application software, network administration tools and personnel training. The Exar X3100 family includes comprehensive stateless offloads that minimize host processor loading while preserving the integrity of current TCP/IP implementations and not "breaking the stack." Drivers are available for all major operating systems and hypervisors.

HIGHLIGHTS

The X3100 Series of 10 Gigabit Ethernet adapters provide the "Missing Piece of Virtualization™", enabling even the most I/O-intensive workloads to be virtualized, driving up system efficiency and reducing IT costs.

Only Exar offers the unprecedented level of I/O virtualization support and performance guarantee delivered by the X3100 series.

Increased System Efficiency with Hardware Offload
- More CPU Cycles Available for Applications
- Better Application Performance
- More VMs per physical server

Reduced Capital Expenditures
- Extends Server Consolidation by Enabling I/O Intensive Applications to be Virtualized
- Reduces the Number of Server Adapters by Consolidating Server I/O

Reduced Operational Expenditures
- Dynamically Configurable QoS and Bandwidth Enables Simpler Provisioning and Management
- Easy Re-provisioning of Workloads Increases Data Center Agility
- Less Hardware Reduces Power and Cooling
- Easy Migration from Non-virtualized to Virtualized Environments

Neterion®

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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 or ranges
- 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: 1 Physical and up to 16 Virtual Func.
- Special "multi-function PCI device" mode brings true IOV to any industry-standard server. Up to 8 functions are available (up to 17 in ARI-enabled systems).
- 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

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

Operating System Support
- Microsoft Windows Server 2003, 2008, Hyper-V, Win 7
- 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: X3110DA - 12W; X3110SR/LR -13W; X3120DA - 13W; X3120SR/LR - 15W
- 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 (also called DA 'Direct Attach' twinax)
- Maximum reach: 5m (7m – 15m with Neterion certified cables)
- Connector type: SFP+ DA
- Cable type: Qualified Neterion cables (see Neterion for details)

ORDERING INFORMATION

Part Number	Ethernet Ports	Interconnect	Form Factor	Host Bus
X3110SR0001	Single Port	10GBase-SR	Low Profile (Both full- and half-height brackets are provided)	PCIe x8
X3120SR0001	Dual Port			
X3110DA0001	Single Port	10GBase-CR		
X3120DA0001	Dual Port			
X3110DA0002	Single Port	10GBase-LR		
X3120DA0002	Dual Port			

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