



experience

REAL SPEED

10 GbE



Neterion®: The Leader in 10 Gigabit Ethernet adapters



With data volumes growing at explosive rates, network bandwidth has become a critical factor in the IT infrastructure of businesses everywhere. Data created and exchanged in areas like data mining, medical imaging, scientific modeling, video streaming, backup & disaster recovery and Voice-over-IP have driven the “need for speed” to unprecedented levels straining the networks. And with the massive deployment of 1 Gigabit Ethernet on the desktops, the bottlenecks continue to increase.

Moving and backing-up multiple terabytes of data fast and effectively is a daunting challenge—a challenge that demands an immediate solution. A practical solution that protects your IT investment, minimizes costs and disruption to your organization, and removes the roadblocks to a faster network. Impossible? Not anymore.

10 Gigabit Ethernet: the evolutionary solution

The solution has arrived: 10 Gigabit Ethernet—offering up to 10 times the bandwidth of 1 Gigabit while preserving your investments in Ethernet, a proven industry standard for 30 years.

Neterion, the recognized industry leader in 10 Gigabit Ethernet adapters, offers a simple, evolutionary—not revolutionary—path to higher performance. Neterion’s Xframe® family provides:

- PCI-X 1.0, 2.0 DDR and PCI-Express bus support, for up to 10 times the bandwidth of Gigabit Ethernet
- Comprehensive stateless offloads & performance features
- Telco-class Reliability, Availability, Serviceability (RAS)
- Support of all major operating systems: Linux (in the kernel), MS Windows, Sun Solaris, HP-UX (through HP), IBM AIX (through IBM), VMware, etc.
- Plug-and-play installation to take advantage of new levels of performance within minutes!

With total Ethernet compatibility at 10 Gb speeds, you will leverage your familiar cabling, network administrative tools, and personnel expertise, and contribute to lower your Total Cost of Ownership.

The eco-system is ready

Today, 10 Gigabit Ethernet switches are available and being deployed worldwide from all major switch vendors, including: Cisco, 3Com, HP, Alcatel, Fujitsu, Foundry, Force10 Networks, Extreme Networks, Raptor Networks and more. In addition, most Gigabit Ethernet switches that ship today include 10 GbE connections. The move to 10 GbE is happening now!



Yes.

Microsoft Windows | Linux | Sun Solaris |
HP-UX | IBM's AIX | SGI's Irix and more.

Neterion's Xframe supports all mainstream platforms and operating systems

10 GbE: simpler, faster and more cost-effective than Gigabit aggregation

With 10 Gigabit Ethernet to boost your network performance, you will:

- Reach true 10 Gigabit bandwidth (unlike trunked Gigabit links that don't scale)
- Eliminate the "spaghetti-net" nightmares
- Reduce administration complexities
- Free-up valuable I/O expansion slots in servers
- Reduce power and cooling needs
- Establish Telco-class reliability in your network
- Establish true Quality of Service (QoS) allowing flexible bandwidth aggregation
- Enable virtualization and true dynamic use of network and server assets

Neterion's intelligent Xframe architecture includes true QoS mechanisms. And the virtualization capabilities of 10 GbE allows dynamic provisioning of multi-Gigabit links enabling efficient scaling, contrary to physically "trunked" Gigabit Ethernet that do not.

Before-and-after benefits of upgrading to 10 Gigabit Ethernet



Substantial heat reduction

Frees-up I/O slots

Finally, 10 Gigabit Ethernet is more cost-effective than Gigabit Ethernet, whether comparing to single or trunked links, as shown in Table 1. Due to processing interrupt schemes, the law of diminishing returns results in lower real throughput ("goodput") for trunked Gigabit Ethernet links than theoretically possible. In the example below, a 6-Gigabit trunk only yields approximately 4 Gigabit of bandwidth "goodput."

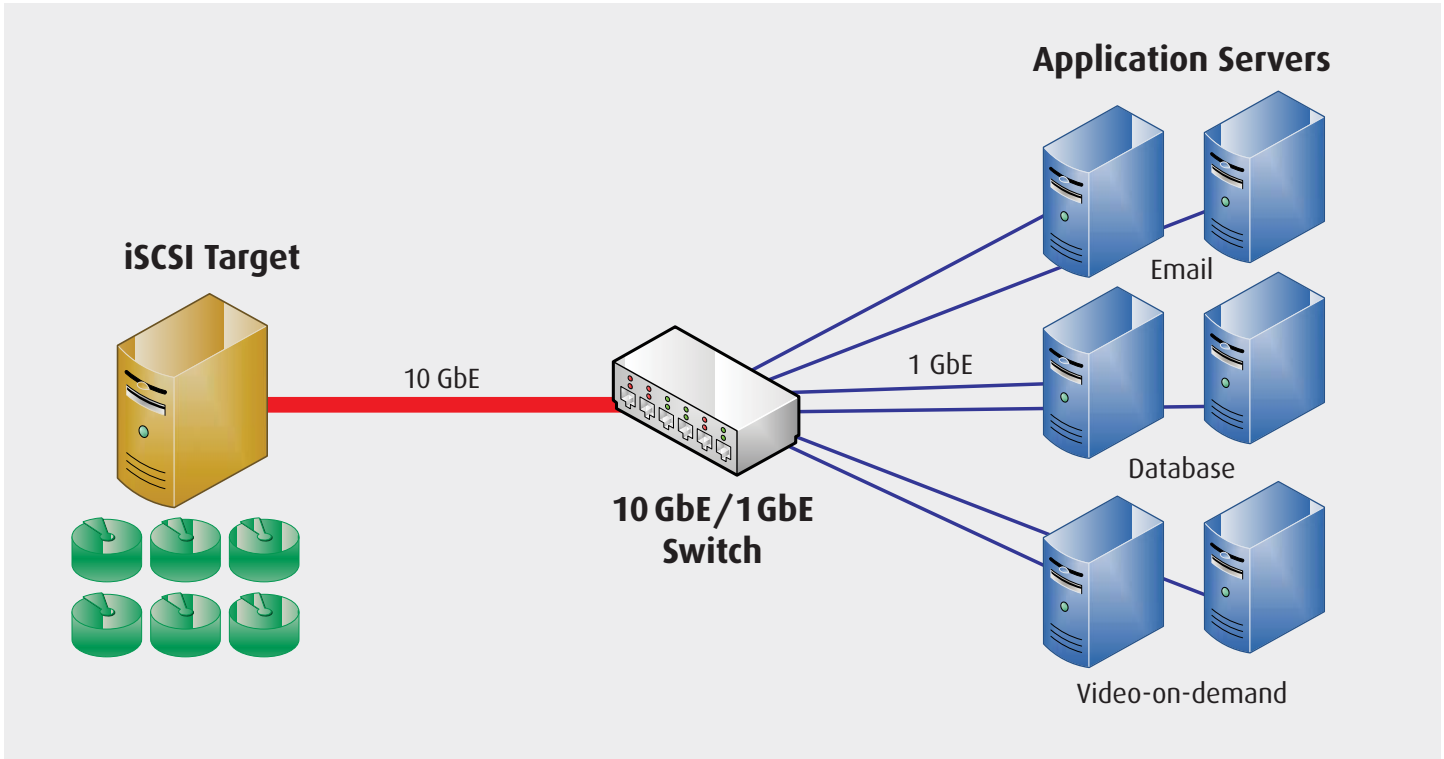
	1 GbE	6 x 1 GbE	10 GbE PCI-X 1.0	10 GbE PCI-X 2.0
Maximum Throughput	950 Mbps	~4 Gbps	7.8 Gbps (*)	10 Gbps
Cost-per-Gigabit Comparison				
• Fiber adapter (**)	\$750	\$4,500	\$4,000	\$4,000
• Switch (\$/port)	\$500	\$3,000 (6 ports)	\$2,000	\$2,000
• Cost/Gbps	\$1,315	\$1,875	\$770	\$600

TABLE 1

(*) Actual maximum throughput of 10 GbE in PCI-X 1.0 buses varies depending on Operating Systems and platforms.
(**) Price comparison based on published vendors List Prices for similar Fiber-based Server-class adapters.

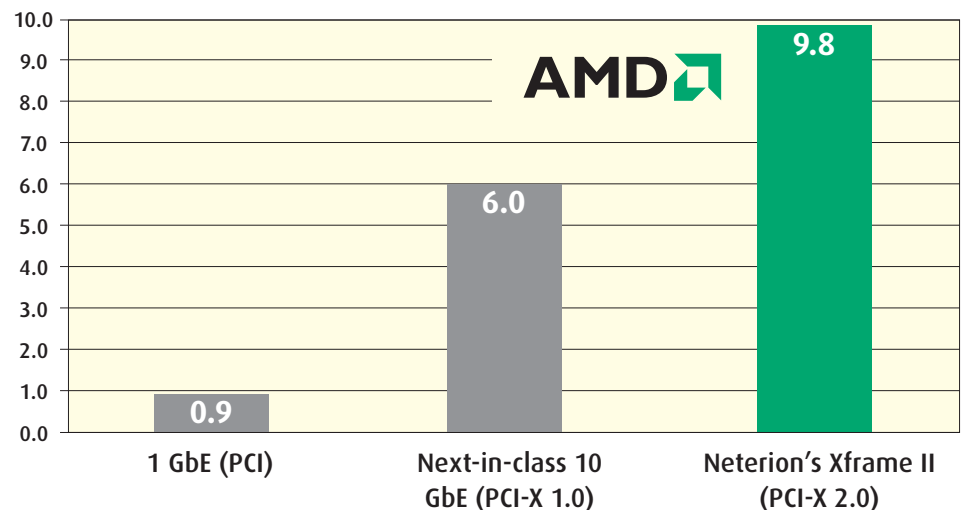
Application of 10 GbE: replacing “trunked” Gigabit Ethernet

A perfect illustration of the efficiency of 10 Gigabit Ethernet is an iSCSI SAN, where 10 GbE replaces “trunked” Gigabit Ethernet on the storage server side. With 10 times the bandwidth, the “target” storage server enables an entire network of “initiator” clients to access centralized storage resources, globally. And with iSCSI’s new advances, it’s as fast and reliable as Fiber Channel, but for a fraction of the cost!



Neterion and AMD teamed to establish 10 GbE performance record

- AMD Opteron processors and Neterion Xframe II Ethernet adapters set a new record for network bandwidth
- Unidirectional traffic—over 9.8 Gigabits per second (Gbps)
- Bidirectional traffic—over 14.6 Gbps
- Best-in-class CPU utilization—less than 15% average per CPU (send)



"Neterion is providing an easily integrated product that delivers true 10 Gigabit Ethernet performance for high-end server and storage applications. And they have done this without requiring the vendors to make any changes to their existing Operating Systems or to break the TCP/IP stack."

Vernon Turner

Group Vice President and General Manager of Enterprise Computing IDC



10 Advantages of Xframe 10 Gigabit Ethernet

Capitalize on 30 years of Ethernet technology, and boost your network performance to 10 Gigabits:

1. Up to 10 times the bandwidth of Gigabit Ethernet
2. Reduced power consumption and heat dissipation
3. Reduced cabling and management complexity
4. Reduced TCO with "Ethernet Everywhere"
5. Faster, simpler and more cost-effective than 1 GbE aggregation
6. Enables high-performance iSCSI storage—a truly global SAN solution
7. Xframe's Standard TCP/IP implementation with future-proof IPv6 Support
8. Xframe's comprehensive protocol assists
9. Xframe's Telco-class Reliability, Availability and Serviceability (RAS)
10. Xframe's support of all major operating systems: Linux, MS Windows, Sun Solaris, HP-UX, IBM AIX, VMware, etc.

IBM's 10 Gigabit Ethernet solution

With IBM's leading X3 I/O architecture inherited from mainframes and double data rate PCI-X 2.0 slots, IBM offers with Xframe II the only true line-rate 10 Gigabit Ethernet adapter for standard-based servers in the industry today.



Key 10 Gigabit Ethernet Applications:

- Core datacenter server connectivity
- 1 GbE aggregation replacement
- Global IP SANs (Storage Area Networks)
- High-speed Back-up over IP
- Enterprise-class VoIP systems
- Video-on-Demand services
- IPTV Broadcasting



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