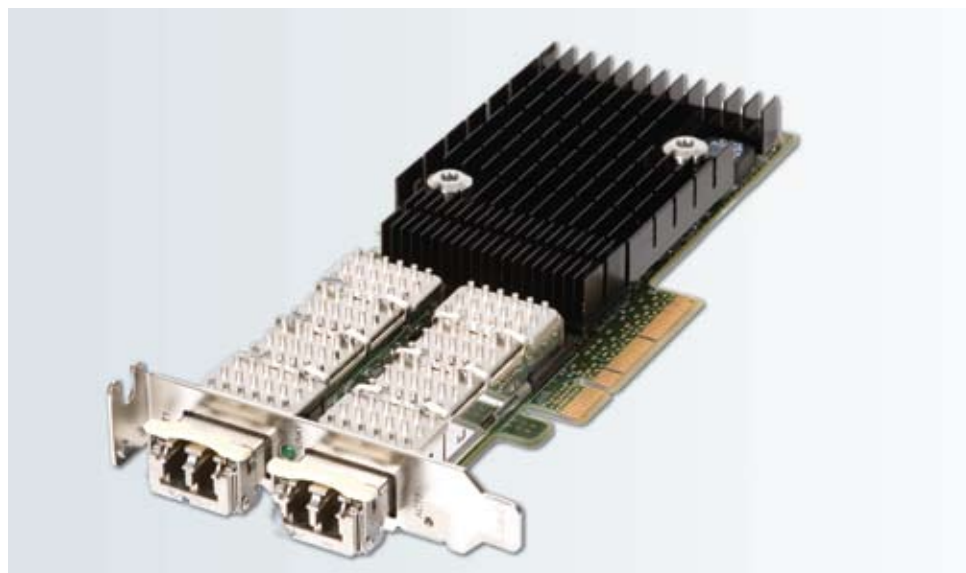


# Sun™ Multithreaded 10 Gigabit Ethernet Networking Cards Family

Accelerate application performance



## Highlights

- High-bandwidth, dual-port 10 GbE cards for application acceleration and I/O virtualization
- 10 Gbps wire-speed performance and cost savings (aggregation of multiple GbE links/ports)
- Increased network reliability from dual ports and RAS features
- Ideal for network-intensive applications and services, such as fast database access and backup, large data warehousing, Web infrastructure, cluster computing and HPC/grid, video streaming, and IPTV



With parallel processing and chip multithreading (CMT) technologies becoming more pervasive, high-performance applications are now more dependent on I/O throughput and memory latency for performance gains. Sun's new dual-port 10 Gigabit Ethernet technology is designed to help accelerate application performance by optimizing I/O throughput within environments that utilize parallel threads. Based on Sun's innovative multithreaded ASIC and Throughput Networking software, new Sun™ Dual 10 Gigabit Ethernet Fiber XFP Networking Cards can provide the critical bandwidth and granular resource allocation required for parallel applications and high-speed networks.

### High performance and low CPU utilization

Sun dual-port 10 GbE networking cards extend CPU and OS parallelism to networking with their support for hardware-based flow classification and multiple DMAs. Using CPU thread affinity to bind a given flow to a specific CPU thread, they help enable a one-to-one correlation of RX and TX packets across the same TCP connection. This can help avoid cross-calls and context switching to deliver greater performance while reducing the need for CPU resources to support I/O processing.

### Optimization of resources

The networking cards also make it easier to optimize and customize resources for applications, services, and users. Their load balancing and granular resource control features enable incoming packets to be assigned to specific CPU threads or balanced across L1, L2, L3, and L4. This offers a high level of flexibility and granularity for assigning resources and can help avoid I/O bottlenecks.

# Sun Multithreaded 10 GbE Networking Cards Family Specifications



ExpressModule for blade servers (X1028A-z)

## Features

- Dual 10 GbE port x8 PCI Express 1.1-compliant, Fiber XFP MSA-compliant
- IEEE 802.3ae 2002-compliant
- Uses Sun's own ASIC and software for innovative Throughput Networking design
- Networking I/O virtualization is already built into the adapter for supporting progression in the various upper-layer virtualization software
- Hardware-based flow classification for extending parallelism and virtualization to networking
- Large number of DMA channels, multiple receive and transmit descriptor rings, and dedicated networking hardware resources (DMA, interrupts, buffer, and more) for each thread/strand
- CPU/thread affinity and CPU load balancing at L2, L3, and L4
- Supports S10 U3, S10 U2 + KU for SPARC®, x86, and Linux in 32-/64-bit mode
- Dynamic Reconfiguration (DR)
- Jumbo frames
- Ipv4/IPv6 and IPMP support
- TCP/UDP/IP h/w checksum offload
- 802.1Q VLAN support

## Physical characteristics — Low Profile Adapter

### Length

- 167.65mm (6.6 in.)

### Width

- 68.90mm (2.713 in.)

### Height

- Component side: 14.48mm (0.57 in.)
- Solder side: 2.67mm (0.105 in.)

## Physical characteristics — PCIe ExpressModule

### Length

- 170mm (6.69 in.)

### Width

- 112mm (4.41 in.)

### Height

- 21.5mm (0.85 in.)

## Power requirements — Low Profile Adapter

### Maximum power consumption

- 24.33 W

### Typical power consumption

- 20.74 W

## Power requirements — PCIe ExpressModule

### Maximum power consumption

- 22.96 W

### Typical power consumption

- 19.87 W

## Performance specifications

### Maximum Ethernet transfer rate

- 10 Gbps for each single port
- 16 Gbps total for both ports

### Host interface

- 8-lane PCIe 1.1

### Network interface

- Two instantiations of XAUI, IEEE 802.3ae, 2002-compliant

### Optics: XFP

- 10 GBase-SR, 10 GBase-LR
- IEEE 802.3ae 2002-compliant

## Ethernet relevant standards supported

- IEEE 802.3ae, 2002-compliant
- IEEE 802.1Q VLAN
- IEEE 802.3ad link aggregation
- TCP/UDP/IP h/w checksum offload

## Hardware systems supported

- Refer to product Web pages for most current updates; the plan is to support the majority of server platforms (SPARC/CMT and x64) with PCIe I/O

## Learn More

For more details about the Sun Multithreaded 10 Gigabit Ethernet Networking Cards Family, go to: [sun.com/10gbe](http://sun.com/10gbe)

## Operating systems

- Solaris™, SPARC, and x86 operating systems
  - Solaris™ 10 OS 11/06 and onwards
  - Solaris™ 10 OS 6/06 with patch 118833-36 for SPARC and patch 118855-36 for x64
- Red Hat Enterprise Linux
  - Red Hat Enterprise Linux 4 U3 and U4, 64-b
- SUSE Enterprise Linux
  - SUSE Enterprise Linux 10 64-b
- Windows 2003 Server Enterprise Edition
- Refer to product Web pages for most current status on future support of additional operating systems

## Certifications

- FCC Class A — Europe
- CE — Europe
- VCCI Class A — Japan
- CSA — Canada
- MIC — Korea UL

## Ordering part numbers

- X1027A-z — Sun Dual 10 GbE XFP PCIe Low Profile Adapter for rack servers without transceiver (need to order at least one of the following pluggable fiber transceivers)
- X1028A-z — Sun Dual 10 GbE XFP PCIe ExpressModule for blade servers without transceiver (need to order at least one of the following pluggable fiber transceivers)
- X5558A — 10 GbE SR (Short Reach) XFP Transceiver for use with Multimode Fiber (MMF, 810nm)
- X5560A-z — 10 GbE LR (Long Reach) XFP Transceiver for use with single-mode fiber (SMF, 1310nm)