# Sun Dual Port 10GbE SFP+ PCIe 2.0 Networking Cards with Intel 82599 10GbE Controller

Oracle's Sun Dual Port 10 GbE PCIe 2.0 Networking Cards with SFP+ pluggable transceivers, which incorporate the Intel 82599 10GbE Controller deliver outstanding performance in virtualized environments for network intensive applications requiring higher I/O bandwidth.

## Advanced Networking Features for Sun Blade and Rack Servers

Multi-core and virtualized server environments are driving the need for greater networking performance. By efficiently load-balancing interrupts across CPU cores, these dual port 10 Gigabit Ethernet networking cards eliminate bottlenecks for high-performance applications in the data center. Implementation of Data Center Bridging standards for lossless and low latency Ethernet, FCoE support, along with innovations in Oracle Solaris enables data centers to converge server-to-server, server-to-storage and server-to-LAN communications onto a single Ethernet fabric.

## Built-in Virtualization Technology

Server virtualization may reduce the number of physical servers, but it increases the demands placed on the network requiring additional capacity, capabilities and devices. Virtual networking capabilities are becoming increasingly important with the growing use of virtual machines, distributed applications, and cloud infrastructures.

Oracle's 10GbE SFP+ Ethernet networking cards can be deployed with SR-IOV, for OS supporting SR-IOV, in order to gain direct access to networking hardware for up to 128 virtual machines per networking card. Direct access to hardware from virtual machine environments increases performance and reduces the number of required adapters, cables, and switch ports. Additional hardware-based capabilities deliver I/O virtualization and quality-of- service features that eliminate bottlenecks and improves overall application performance.

In addition, Oracle Solaris implements zero overhead server virtualization and Edge Virtual Bridging in order to improve both VM performance and improve traffic forwarding between VMs.

Advanced networking and virtualization capabilities incorporated in Oracle Solaris and Oracle VM optimize database and application performance. These capabilities include:

- Hardware accelerated traffic classification for Oracle Solaris 11 network virtualization with zones
- Support for multiple Tx and Rx rings for improved scalability

### K E Y F E A T U R E S

Advanced 10GbE networking for sun blade and rack servers

- Fibre Channel over Ethernet (FCoE) support: allows Fibre Channel traffic and LAN traffic to share the same wire
- Industry Standard PCIe 2.0 compliant to deliver new levels of 10GbE performance
- Hardware-based network virtualization supporting up to 128 virtual functions
- Choice of form factors: Low profile card for Sun Rack Servers and ExpressModule for Sun Blade servers
- Broad Operating Systems support
- Remote management

### K E Y B U S I N E S S B E N E F I T S

- Convergence of LAN and SAN reduce cost and complexity of multiple cards, cables and switches

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for discrete data and storage networks

- Optimized 10GbE performance through iSCSI implementation allowing LAN and storage traffic to share the same network
- Elimination of I/O bottlenecks between virtual machines
- High virtualization performance
- Simplified network topology

- Dynamic polling in the Oracle Solaris 11 in order to reduce the interrupt rate and improve system efficiency
- Oracle Solaris Zones for Oracle x86/x64 or SPARC T-Series servers
- Edge Virtual Bridging for improving traffic forwarding between VMs
- Centralized, automated network configuration: pool-level bridging, bonding, VLAN, multi- pathing
- Oracle VM Server for x86 3.0.2: network separation isolates traffic for management, live migration, and cluster heartbeat, storage, and virtual machines
- Improved network and OS security with separate instances of virtual operating environments

## Converged Networking and Storage Technology

- Simplify the network infrastructure by allowing LAN, Storage (FC, iSCSI, NFS) and IPC traffic to share the same a single Ethernet fabric.
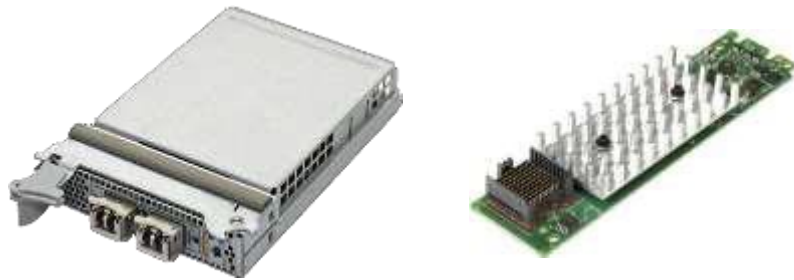


Sun Dual Port 10 GbE PCIe 2.0 EM Sun Dual Port 10 GbE PCIe 2.0 FEM

**SUN DUAL PORT 10GBE SFP+ PCIE 2.0 NETWORKING CARDS WITH INTEL 82599 10GBE CONTROLLER SPECIFICATIONS**

### Hardware systems/platforms supported

Low Profile (LP) adapter: Marketing Part Number (X)1109A-Z Sun Fire x86 Rackmount Servers

- *Sun Server X2-4*
- *Sun Server X3-2, Netra X3-2 Server*
- *Sun Server X3-2L*

Sun Netra X4270 Server SPARC T-Series Servers

- *SPARC T4-1 Server, Netra T4-1 Server*
- *SPARC T4-2 Server, Netra T4-2 Server*

ExpressModule (EM) adapter:

- *SPARC T4-4 Server*
- *Sun Blade X3-2B Server Module, Netra Blade X3-2B Server Module*
- *Sun Server X2-8*
- *Netra X6270 M2 Server Module*

SPARC T4-1B Server Module, Netra SPARC T4-1B Server Module

Fabric Expansion Module (FEM):

Used for Sun Blade 6000 Ethernet Switched NEM 24p 10GbE (X2037A) in Sun Blade 6000 and Netra 6000 Modular Systems

- *Sun Blade X3-2B Server Module, Netra Blade X3-2B Server Module*
- *Sun Server X2-8*
- *Netra X6270 M2 Server Module*

- *SPARC T4-1B Server Module, Netra SPARC T4-1B Server Module Refer to the host server's documentation for the latest hardware support list*

**Operating Systems and Virtualization**

- *Oracle Solaris*
- *Oracle Linux*
- *Oracle VM Server for SPARC*
- *Red Hat Enterprise Linux*
- *Novell SUSE Enterprise Linux*
- *Microsoft Windows*
- *VMware*

Refer to the host server's documentation for the latest OS version support list

FCOE Support

Servers supported: Sun Server X3-2, X3-2L, X2-4, X2-8, X3-2B

OS supported: OEL 6.2, OEL 6.2 with UEK, RHEL 6.2, SLES 11 SP2,Windows 2008 R2 SP1

Switches (tested):Cisco Nexus 5548P, Brocade: 8000/6730 Storage supported: Oracle Pillar Axiom 600

**Network Management**

- *Wired for Management (WfM) baseline v2.0 enabled for servers*
- *DMI 2.0 support, Windows Management Instrumentation (WMI) and SNMP Remote Installation Services (RIS)*
- *PXE 2.0 enabled through boot read-only memory (ROM)*
- *iSCSI remote boot support (on both SPARC and x86)*

**Low Profile Adapter**

- *Length: 14.55cm (5.73 in.)*
- *Width: 6.89cm (2.71 in.)*

**ExpressModule Adapter**

- *Length: 16.82cm (6.62 in.)*
- *Width: 10.8cm (4.25 in.)*

**Fabric Expansion Module**

- *Length: 13.97cm (5.5 in.)*
- *Width: 3.5cm (1.38 in.)*
- *Height: 1.4cm (0.57 in)*

**Power Requirements**

**Typical Power Consumption**

- *Low Profile Adapter: 14W (1.17A @ 12W) dual port*
- *ExpressModule Adapter: 14W (1.17A @ 12W) dual port*
- *Fabric Expansion Module: 14W (1.17A @ 12W) dual port*

**Performance Specifications**

- *Data rate supported per port: 10 Gbit/sec*
- *Support of dual speed 1G/10G via "auto try" technology. It will try 10G first then 1G with a time out period. If one end is set to 1G then the other must be 1G as well or "auto try" will fail.*

**Host Interface**

- *Bus type: PCI Express V2.0, 5.0 Gbit Transfer/sec*
- *Bus width: x8 lane PCI Express 2.0 (operable in x8 slots)*

**Network interface**

**Optical Transceivers**

- *X2129A: 10Gbps Dual Rate SFP+ SR (Short Reach) Transceiver*
  *Use with MMF (Multi-Mode Fiber 850nm) cable with LC connector , support 1G and 10G dual rate*
- *X5562A: 10 Gbps SFP+ LR (Long Reach) Transceiver*
  *Use with SMF (Single Mode Fiber 1310nm) cable with LC connector*

**Direct Connect TwinX Passive Copper Cables (transceivers should not be used)**

- *X2130A-1M: Sun 10 Gbps 1meter SFP+ TwinX Passive Copper Cable (direct connect)*
- *X2130A-3M: Sun 10 Gbps 3meter SFP+ TwinX Passive Copper Cable (direct connect)*
- *X2130A-5M: Sun 10 Gbps 5meter SFP+ TwinX Passive Copper Cable (direct connect)*

QSFP to 4 SFP+ Direct Connect Passive Copper Splitter Cable (Do not use transceivers). These cables are supported for connectivity to Oracle 72port 10 GbE Switch (X2074A-F, X2074A-R). QSFP end plugs directly into the QSFP port of the Oracle switch and SFP+ end plugs directly into the SFP+ port of the card

- *X2125A-1M-N  QSFP to 4 SFP+ 1 Meter, Passive Copper Splitter Cable*
- *X2125A-3M-N  QSFP to 4 SFP+ 3 Meter, Passive Copper Splitter Cable*
- *X2125A-5M-N  QSFP to 4 SFP+ 5 Meter, Passive Copper Splitter Cable*

**Optical Splitter Cable**

QSFP Optical Splitter Cable. These cables are supported for connectivity to Oracle 72port 10 GbE Switch (X2074A-F, X2074A-R) and Oracle QSFP Transceiver (X2124A). MTP end plugs into the QSFP transceiver of the Oracle Switch and LC end plugs into the SFP+ SR Transceiver in the card

- *X2127A-10M 10 Meter, Optical Splitter (MTP to 4 LC)(Multi mode)*
- *X2127A-20M 20 Meter, Optical Splitter (MTP to 4 LC) (Multi mode)*
- *X2127A-50M 50 Meter, Optical Splitter (MTP to 4 LC) (Multi mode)*

**Ethernet Standards Supported**

- *IEEE 802.ae, 2002 compliant*
- *IEEE 802.1Q VLAN*
- *IEEE 802.3ad link aggregation*
- *TCP/UDP/IP h/w checksum off-load*

**Certifications**

- *Hardware certifications: FCC B, UL, CE, VCCI, BSMI, CTICK, MIC*

Marketing **Part Numbers**

(X) 1109A-Z Sun Dual 10GbE SFP+ PCIe 2.0 Low Profile adapter

## Warranty

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## Services

Visit oracle.com/sun/services for information on Oracle's service program offerings for Sun products.
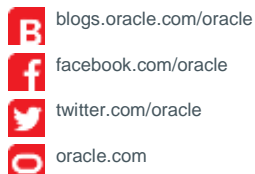
## Contact Us

For more information about Sun Dual Port 10GbE SFP+ PCIe 2.0 Networking Cards with Intel 82599 10Gbe Controller, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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