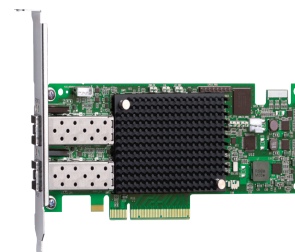




CONNECT

Sun Storage 16Gb FC PCIe Universal HBA, Emulex

Oracle 16Gb Fibre Channel and 10GbE for today and tomorrow – one HBA, it's that simple



Oracle's Sun Storage 16 Gb FC PCIe Universal HBA is a new class of adapter that provides PCI selectable 16 Gb Fibre Channel (FC) or 10 GbE Fibre Channel over Ethernet (FCoE) connectivity—meeting today's and tomorrow's connectivity needs while preserving IT investments. Changing fabric personalities is seamless via smart detection of SFP+ optical transceivers. Depending on which optical transceiver is installed, the HBA will intelligently know to run in FC or FCoE mode. In an Ethernet environment, the adapter provides full Ethernet (NIC) connectivity concurrently with FCoE.

High Performance

At 1.2 million I/O operations per second (IOPS) on a single port, the Sun Storage 16 Gb FC PCIe Universal HBA is the fastest FC adapter available, making it ideal for connectivity to Oracle's enterprise multicore servers. It is also the only 16 Gb FC PCIe HBA with CPU-offloaded T10 Protection Information (T10 PI) advanced data integrity, safeguarding your data from silent data corruption. Its advanced management functionality can shave days off installing and managing adapters, while integrated FMA and support for the Oracle Solaris DTrace feature assist you in maximizing uptime and performance. The Sun Storage 16 Gb FC PCIe Universal HBA features Oracle's bullet-proof driver stack with backward compatibility to 4 Gb FC and 8 Gb FC HBAs. The enterprise-class design utilizes passive cooling for increased reliability.

Lower TCO

Reduce your data center costs through convergence with the Sun Storage 16 Gb FC PCIe Universal HBA. Now, one universal network adapter can do the work of a discrete FC host bus adapter and Ethernet NIC. This convergence also means fewer cables, fewer switches, less power consumption, reduced cooling, and easier LAN and SAN management. The Sun Storage 16 Gb FC PCIe Universal HBA supports 16 Gb FC, 10 GbE FCoE, 10 GbE iSCSI storage protocols, and includes drivers that support Oracle Solaris, Oracle Linux, and all other major operating systems.

Investment Protection

Preserve your existing investment in Fibre Channel storage and core Ethernet switches and routers for data networking with the Sun Storage 16 Gb FC PCIe Universal HBA. It leverages the identical software driver stacks that have been deployed and battle-hardened in millions of previous installations, and it preserves familiar FC concepts such as World Wide Names (WWNs), Fibre Channel Identifiers (FC IDs), LUN masking, and zoning.

Oracle's Sun Storage 16 Gb FC PCIe Universal HBA Advantage

The Sun Storage 16 Gb FC PCIe Universal HBAs have been designed specifically for use in Oracle's Sun servers. They exceed the business requirements of the enterprise data center with higher performance, investment protection, and increased power and cooling efficiency. Oracle solves enterprise-wide business challenges with a comprehensive offering of hardware, software, and services, providing customers with a total Oracle end-to-end solution. This Oracle end-to-end solution provides world-class interoperability testing, service, and support, as well as support for Oracle and third-party storage arrays. Furthermore, Oracle's Sun Storage 16 Gb FC PCIe Universal HBA architecture simplifies LAN and SAN management to improve resource use and reduce your TCO.

Key Features

- Universal HBA capability: Streamlined personality changes with I/O flex allows for 16 Gb FC and 10 GbE FCoE functionality within a single networking adapter
- Support for 16 Gb FC, 8 Gb FC, and 4 Gb connectivity when in FC mode
- Support for 10 Gb Fibre Channel over Ethernet (FCoE), 10 Gb iSCSI, and 10 Gb Network Interface Card (NIC) connectivity when in FCoE mode
- Power efficiency: Reduces data center power consumption and associated OPEX by delivering up to 4x better IOPS performance per watt
- Support for MSI-X, which improves host server utilization and enhances application performances

Key Benefits

- Multifunction Universal HBA: Customer selectable 16 Gb FC to 10 GbE FCoE personalities with the same driver stack for future-proofed data centers, private clouds, and service providers
- Maximum performance: Up to 1.2 million IOPS on a single port to support large server virtualization deployments and scalable cloud initiatives, as well as performance to match new multicore processors, SSDs, and faster PCIe 3.0 server host bus architecture
- Advanced data integrity with T10 PI high-performance offload, which protects data from silent data corruption.
- Reduction in the number of networking cards, cables, and PCIe slot cards

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Architecture

- The Sun Storage 16 Gb FC PCIe Universal HBA is powered by a converged fabric controller which supports both 16 Gb Fibre Channel and 10 GbE. The architecture enables all resources to be applied to any port that needs it, enabling up to 1.2 million IOPS on a single port.

Host Bus Interface

Bus Interface

- PCI Express (PCIe) 3.0 x8 (backward compatibility to PCIe 2.0 supported)

Host Interrupts

- Message Signaled Interrupts eXtended (MSI-X)

Compliance

- PCI Express Base Specification 3.0
- PCI Express Card Electromechanical Specification 2.0
- PCI Bus Power Management Interface Specification Rev. 1.2

Fibre Channel

Throughput

- Auto-negotiated full duplex 16Gb FC, 8Gb FC, and 4Gb FC

Port Virtualization

- N_Port ID Virtualization (NPIV)

Compliance

- FC-LS, FC-FS2, FC-FDMI, FC-CT, FCP-2, FCP-3, FC-TAPE, FC-GS, SCSI-FCP

Topology

- FC-SW switched fabric (N_Port) and point-to-point (N_Port)

Ethernet

Throughput

- 10 Gbps (full-duplex rate per port)

Compliance

- IEEE 802.1Q VLAN
- IEEE 802.1P and 802.1D
- IEEE 802.3x
- IEEE 802.1Qbb
- IEEE 802.1Qaz
- IEEE 802.3ab/802.3z
- DCBX

Topology

- Ethernet public/private network.

FCoE

Compliance

- FC-BB-5, FC-SP, FC-LS, FC-FS2, FC-FDMI, FC-CT, FC-TAPE, SCSI-FCP, FCP-2, FCP-3, FC-GS

Class of Service

- Class 3

Tools and Utilities

Boot Support

- x86 and UEFI – FC boot, PXE boot, iBFT SW iSCSI boot, FCode

Oracle Solaris

- NIC FCode, iSCSI built into OBP, FCode

APIs

- SMI-S and common HBA API support

Operating Systems

- Oracle Solaris
- Oracle Linux
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- Windows Server 2012, 2008 R2, 2008 (including Hyper-V support)

Virtualization

- Oracle VM
- VMware

Physical Specifications

Ports

- Supports up to two FC ports at 16 Gb FC max or two 10 GbE FCoE ports

Form Factor

- Low-profile PCIe card: 167.64mm x 68.91mm (6.60" x 2.71")

Environmental

Temperature

- Operating temperature: 0° to 58° C (32° to 131° F)
- Storage temperature: -43° to 73° C (-40° to 158° F)

Humidity

- Operating: 10 percent to 90 percent RH, noncondensing, 27°C max wet bulb
- Nonoperating: 93 percent RH, noncondensing, 38°C max wet bulb

Distance

- Short Read: Up to 300 meters

Agency Approvals

North America

- FCC Class A
- UL/CSA Recognized

Europe

- CE Mark
- EU RoHS compliant
- TUV Bauart Certified

Japan

- VCCI Class A

Taiwan

- BSMI Class A

Korea

- MSIP (formally KCC/MIC) Class A

China

- China RoHS Compliant

Ordering Information – Part Number

7101683

- Sun Storage Dual 16 Gb FC PCIe Universal HBA, Emulex (for factory installation)

7101684

- Sun Storage Dual 16 Gb FC PCIe Universal HBA, Emulex

7101685

- 2 Sun Storage 16 Gb FC SW optics, Emulex (for factory installation)

7101686

- 2 Sun Storage 16 Gb FC SW optics, Emulex

7101687

- 2 Sun Storage 10 Gb FCoE SR optics, Emulex (for factory installation)

7101688

- 2 Sun Storage 10 Gb FCoE SR optics, Emulex

Warranty

- Visit oracle.com/sun/warranty for Oracle's global warranty support information on Sun Storage products.

Services

- Visit oracle.com/sun/services for information on Oracle's service program offerings for Sun Storage products.

Contact Oracle

- For more information about Oracle's Sun Storage 16Gb FC PCIe Universal HBA, please visit oracle.com/storage or call +1.800.786.0404 to speak to an Oracle representative.



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