SUN BLADE 6000 VIRTUALIZED 40 GbE NETWORK EXPRESS MODULE

IN-CHASSIS VIRTUALIZED 40 GBE ACCESS

KEY FEATURES

- Virtualized 1 port of 40 GbE or 2 ports of 10 GbE uplinks shared by all server modules Support of industry-standard single root I/O virtualization (SR-IOV)

- One pass-through Gigabit Ethernet port per server blade

- VLAN support

- Hot pluggable in the Sun Blade 6000 chassis and Sun Netra 6000 chassis

- Broad OS support

KEY BENEFITS

- Provides higher performance due to scalable I/O throughput in virtualized servers

- Simplifies IT infrastructure: 10:1 cable reduction and elimination of NICs for servers

- Lowers TCO with zero management and elimination of first tier switch for intra-blade communication

- Provides traffic separation between blade servers, resulting in highly secured environments

Designed to seamlessly integrate into the Sun Blade 6000 and Sun Netra 6000 chassis, Oracle's Sun Blade 6000 Virtualized 40 GbE Network Express Module is the industry's first fully virtualized 40 GbE network aggregation for all 10 server modules (blades) in Oracle's Sun Blade 6000 and Oracle's Sun Netra 6000 chassis. It is an ideal network interface for connecting multiple virtualized blades that require scalable I/O throughput for workloads such as web servers, application servers, and database servers.

Product Overview

The Sun Blade 6000 Virtualized 40 GbE Network Express Module is a multifunction PCIe 2.0 connectivity module for the Sun Blade 6000 and Sun Netra 6000 chassis. Combining virtualized 40 GbE or 10 GbE network connectivity and 1GbE pass-through, this network express module (NEM) is a unique platform for simplifying data center networks—without adding the extra cost of switches to manage. It utilizes a 40 GbE network interface card (NIC) ASIC designed by Oracle that virtualizes the 40 GbE or 2 ports of 10 GbE network connectivity across 10 server modules in the Sun Blade 6000 chassis, thus simplifying the networks by eliminating NICs for servers, switching for intra-blade communication, and reducing cables by 10:1.

The Sun Blade 6000 Virtualized 40 GbE Network Express Module offers configurable options, making it ideally suited for different types of workloads ranging from applications just needing high intra-blade communications to those needing higher virtualized bandwidth. Examples of some of these workloads are ones that move smaller amounts of data and require high-speed network for lower latency, such as web servers and application servers, and workloads that move a lot of data intermittently, such as enterprise applications and databases. By default, the blades share the available bandwidth in equal amount and are in privacy mode so the unicast traffic from one blade is not seen by other blades. More deterministic bandwidth can be configured for any or all blades in the increment of 1 percent of the total bandwidth. VLANs supported by the NEM provide security options for both the unicast and broadcast traffic from the blades.

The Sun Blade 6000 Virtualized 40 GbE Network Express Module supports connection to external devices either through small form-factor pluggable (SFP+) ports and 10/100/1000 twisted-pair Ethernet (TPE) ports. Up to two SFP+ ports can be used as 10 GbE ports. A 40 GbE link is provided when four SFP+ ports are used (with QSFP to four SFP+ splitter cables). Additionally, 10 pass-through ports of 1 GBase-T (10/100/1000 Mbps), one port for each blade server, are supported

The NEM form factor provides a method of deploying bulk remote I/O that allows tool-less installation/removal and packs more performance and functionality in a smaller space, while

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delivering higher network throughput. It makes efficient use of data center real estate by reducing the number of cables.

This NEM is easy to install and manage. The flexible architecture of the Sun Blade 6000 and Sun Netra 6000 modular system is based entirely on the hot-pluggable components—I/O, processing, system management, and chassis infrastructure. All critical components, including the NEM modules, are hot-swappable and redundant, providing   enterprise-class reliability, availability, and serviceability (RAS) features. The Sun Blade 6000 Virtualized 40 GbE Network Express Module helps to boost data center efficiency and uptime and lower total cost of ownership (TCO).

Sun Blade PCIe-2 pass-through fabric expansion module (Mktg Part # 7100633) is required on the server blade for its connectivity to the SFP+ ports on the NEM

Sun Blade 6000 Virtualized 40 GbE Network Express Module Specifications

Supported Operating Systems and Virtualization Software	
Refer to host server for specific OS version supported by the server • Oracle Solaris • Oracle Linux • Red Hat Enterprise Linux	• SUSE Linux Enterprise Server • Microsoft Windows 2008 • Oracle Virtual Machine • VMware

Supported Sun Blade 6000 and Sun Netra 6000 Server Modules	
Sun Blade 6000 chassis version: A90-D Sun Netra 6000 chassis version: 7100418, 7100417 Refer to the I/O matrix of the blade servers in Sun Blade 6000 modular system for the updated list.	• SPARC T5-1B, Netra SPARC T5-1B • SPARC T4-1B, Netra SPARC T4-1B • Sun Blade X4-2B, Sun Blade X3-2B • Netra Blade X3-2B

Single Root I/O Virtualization (SR-IOV)
• 4 virtual functions per blade; 96 DMAs (48 DMA Rx/Tx pairs).
• SR-IOV when supported by the host OS

VLAN Support
• 4,094 VLANs supported
• VLAN tag insertion/removal is not supported. The NEM only inspects VLAN tags, but does not do insertion/removal of VLAN tags. The software module on the host removes VLAN tags from ingress packets and inserts VLAN tags for egress packets.

Virtual Machine (VM) Support
15 virtual machines (VMs) for each blade server per 10 GbE port and total 30 VMs for each blade server with two 10 GbE ports of the NEM
Live migration is only supported for VMware driver. A maximum of 16 VMs can be migrated per blade server.

Link Aggregation and Failover
• Static link aggregation of two 10 GbE links. 802.3ad is not supported.
• Failover supported using bonding/teaming driver

Security
• Security with VLANs, L2 and L3. No egress filtering.

Ports
• Ten 10/100/1000 Mb/sec Ethernet pass-through ports
• Four 10 Gbe SFP+ ports (2 SFP+ ports as two10 GbE links, 4 SFP+ ports as a 40 GbE link)

Health Monitoring Capabilities

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- Voltage monitoring
- Temperature monitoring
- Fault detection

Updates
All software and firmware is field upgradable

Indicators
• RJ45 Ethernet link/activity and speed LEDs
• SFP+ link/activity and speed LEDs
• SIS LEDs, locate button, ATTN button

Power Dissipation
65 w typical (Max: 73 w)

Dimensions and Weight
• Height: 2.41 cm (0.95 in)
• Width: 42.6 cm (16.77 in)
• Depth: 16.3 cm (6.42 in)
• Weight: 2.42kg (5.34 lbs)

Environment	
Cooling	Top-to-back forced air
Operating temperature	0° C to 35° C (32° F to 95° F)
NEBs operating temperature	0 to 45° C (32° F to 113° F)
	5° C to 55° C short-term emergency NEBs conditions (41° F to 131° F)
Nonoperating temperature	$-$ 40° C to 70° C ($-$ 40° F to 158° F)
Operating relative humidity	10% to 90% RH, noncondensing
NEBs operating humidity	5-85% noncondensing 90% for short-term NEBs conditions
Nonoperating relative humidity	5% to 95% RH, noncondensing
Operating altitude	Up to10,000 feet (3,048 meters)
NEBS operating altitude	Up to 5,900 feet (1,800 meters) at 45° C ambient (113° F). Up to 13,000 feet (3,960 meters) at 35° C ambient (95° C).
Nonoperating altitude	Up to 39,370 feet (12,000 meters)

IEEE Networking and SAS Standards	
1 Gb links	• IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports
	• IEEE 802.1Q VLAN
	• IEEE 802.3 10BASE-T specification
	• IEEE 802.3u 100BASE-TX specification
	• IEEE 802.3ab 1000BASE-T specification
10 Gb links	• IEEE 802.3ae 10GBASE-SR
	• IEEE 802.3ae 10GBASE-LR
	• IEEE 802.1Q VLAN
SAS support	SAS-2

Agency Approvals	
• UL recognized	• EN55022, Class A
• CUR recognized	• EN55024
• TUV certified	• Australian EMC Framework (C-Tick Mark)

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RELATED PRODUCTS

Sun Blade 6000 and Sun Netra
6000 Ethernet Switched NEM
24p Network Express Module
supports:

- Oracle's SPARC T5-1B, T4-
  1B, T3-1B, Sun Blade X4-2B
  Server Module, X3-2B Server
  Module

- Oracle's Netra SPARC T5-1B,
  T4-1B, Oracle's Netra Blade
  X3-2B Server Module

RELATED SERVICES

Oracle Premier Support
- Installation
- Maintenance

• FCC rules, Part 15, Class A	• VCCI, Class A (Japan)
• ICES-003, Class A	• RoHI compliant for environmental requirements
• EMC Directive 2004/108/EC (CE Mark)	• China RoHS compliant

Description and Ordering Information

Sun Blade 6000 Virtualized 40 GbE Network Express Module: P/N: 7100090 (PTO

Options available:

- Dual rate transceiver: SFP+ SR (2129A, X2129A-N)

- Sun dual speed 10 GbE SFP+ long reach pluggable transceiver (5562A-Z, X5562A-Z)

Below copper cables are direct attach and transceivers should not be used:

- TwinX passive cable, 5 meter (X2130A-5M-N): max 2

- Twinax Passive Copper Cable splitter 3 meter (X2125A-3M): max 1

LC end of the below optical splitter cable plugs into the SFP+ SR transceiver
(X2129A-N) in the SFP+ port of the NEM. MPO connector at the other end of the
cable plugs into the QSFP transceiver in the QSFP port of the switch:

- QSFP optical cable splitter: 10 meters, MTO to 4 LC (X2127A-10M): max1

- QSFP optical cable splitter: 50 meters, MTO to 4 LC (X2127A-50M): max1

Below 1000Base-T adapter can be used only in port 0 of the SFP+ ports:

- Sun 1000Base-T SFP+ adapter (X2123A-N, 2123A): max 1 (port 0 only)

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Warranty

The Sun Blade 6000 Virtualized 40 GbE Network Express Module comes with a one-year warranty. For more information, visit http://www.oracle.com/us/support/policies/index.html for Oracle's global warranty support.

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