Overview

Designed to seamlessly integrate into the Sun Blade 6000 chassis, Oracle’s Sun Blade 6000 Virtualized 40 GbE Network Express Module is industry’s first fully virtualized 40 GbE network aggregation for all ten server modules (blades). 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. It includes 10 x 1GbE Pass-thru ports and 2x 10GbE or 1x 40 GbE Virtualized SFP+ ports and SAS-2 for internal connectivity to storage blades.

Data Center Simplicity with Uncompromised Performance

The Sun Blade 6000 Virtualized 40 GbE Network Express Module offers IT managers a simple design with scalable high-performance I/O throughput and low overall TCO. This virtualized NEM includes a “virtualized NIC” that eliminates dedicated NIC to be attached to each server module and eliminates first tier switching for intra-blade communication. Its virtual I/O technology allows up to 10 server modules to share common high performance 40GbE or 10GbE LAN network connectivity while supporting internal SAS-2 storage connectivity.

While traditional pass-thru devices can provide blade I/O connectivity, they require a lot of cabling. This NEM simplifies networking even more with its 10:1 cable reduction.

The Sun Blade 6000 Virtualized 40 GbE NEM is easy to install and manage. Its architecture is based on completely hot-pluggable components—I/O, processing, system management, and chassis infrastructure. The NEM is inserted into the Sun Blade 6000 chassis and can be accessed externally. The hot-swap feature can be deployed without interruption to chassis power.

The NEM can be managed through the Sun Blade 6000's Chassis Management Module (CMM), requiring zero management for the NEM itself. Without compromising high-performance and I/O throughput, the virtualized NEM's simplified design allows you to be more flexible in your blade I/O connectivity.

The Sun Blade 6000 Virtualized 40 GbE NEM gives IT administrators the flexibility to customize network speeds based on running applications through its virtualized server workloads for enterprise cloud, collaboration and virtualized business application workloads.

Customer Benefits

With its robust feature set, the Sun Blade 6000 Virtualized 40 GbE NEM allows customers to simplify their network while reducing the costs:

Simplify Network Connectivity

- Optimize server I/O with embedded virtualization technology that allows more server modules to be housed within a relatively compact blade package.
- Aggregate I/O and low latency intra-blade communication across the 10 blades in the Sun Blade 6000 chassis.
- Share 40GbE bandwidth among the blades or configure for fixed bandwidth in 1% increments depending on workloads.

Save Time, Save Money

- Decrease TCO with zero management of the NEM. Instead of assigning an administrator to manage the NEMs, now customers can manage it through the Sun Blade 6000 Chassis Management Module.
- Reduce upgrades performed by the technical staff with the simple, hot-swappable I/O design. Upgrades become non-disruptive, easy and quick. Skilled IT staff members can focus on other business needs.
- Eliminate dedicated NICs required per server module—reducing power requirements.
- Free data center real estate with a 10:1 cable reduction.
Overview and Frequently Asked Questions
Sun Blade 6000 Virtualized 40 GbE Network Express Module
October 11, 2011

Frequently Asked Questions

What is the Sun Blade 6000 Virtualized 40 GbE NEM?
It is the third generation network express module for the Sun Blade 6000 modular system. It includes 1GbE Pass-thru fabric, 2x 10 GbE or 1x 40 GbE Virtualized uplinks via SFP+ Modules, and internal SAS 2 connectivity. It is a zero management I/O virtualization module to connect the Sun Blade 6000 chassis into the datacenter network.

What are the major functionalities of the NEM?
The Sun Blade 6000 Virtualized Multi-Fabric 40 GbE NEM has three main functions:

- **40GbE NIC virtualization**: allows up to 10 server modules to share a single 40 GbE (or 2x 10 GbE) network port through the PCIe 2.0 interface of the server blade. There are four SFP+ ports on each NEM. Port 0 and Port 1 are 10 GbE uplinks. A 40 GbE link is established when all four SFP+ ports are connected by QSFP to 4 SFP+ splitter cable.

- **Pass-through Gigabit Ethernet ports**: the pass-through Gigabit Ethernet ports are strictly passive and isolated from the other functional blocks with no interaction. There is one pass-through Ethernet port per server module.

- **Gen-2 SAS storage expanders**: the SAS storage expanders provide storage connectivity between the server modules and the blade storage modules.

What are the components of the Sun Blade 6000 Virtualized NEM?
This NEM consists of:

- **Virtualized NEM ASCI** that enables the intelligent I/O virtualization between the 10 server modules connecting to the data center network.

- **An integrated SAS2 Controller providing 20 SAS2 lanes to server modules.**

What are the operating systems that have been certified to run on this NEM?

Which Sun Blade server modules are supported to work with this NEM?
- SPARC T4-1B server
- SPARC T3-1B server
- Sun Blade Server X6270 M2 server module
- Sun Blade X6275 M2 GbE server module
- Sun Blade Storage Module M2

How does the 10GbE virtualization work? What are the key technologies involved?
This NEM is architected to provide 40GbE or 20GbE Virtualized I/O to all 10 server modules in the Sun Blade 6000 chassis. Each NEM contains Oracle Virtualized NEM ASICs that aggregate I/O to the blade servers in the Sun Blade 6000 Chassis. Each server module appears to have its own 40GbE or 20GbE NIC through the Virtualized NEM ASICs. The Sun Blade server modules connect to this NEM via PCIe 2.0 interfaces, thus saving cost of expensive NIC cards.

How is blade server bandwidth and security managed by the NEM?
- **Equal bandwidth**: By default, the total bandwidth (40 or 20 GbE) is divided equally among all server blades. Unused bandwidth from any server(s) can be used by other server(s) depending on the workload demand.
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- Fixed bandwidth: Bandwidth can be configured for any server blade(s) in 1% of increments of the total available bandwidth.
- Security: The default configuration prevents blade-to-blade communication for privacy

Where can I find more information about the Sun Blade 6000 Virtualized Multi-Fabric 40 GbE NEM and the Sun Blade 6000 Modular System?

Three Blades Architecture White Papers are available at http://www.oracle.com/technetwork/server-storage/sun-blade/documentation/index.html including:
- Sun Blade 6000 Modular Systems from Oracle
- Sun Blade 6000 Server Module Architecture
- Sun Blade 6000 I/O and Management Architecture

Where can I check the energy consumption of this NEM?
Please go to the Sun Blade 6000 modular system power calculator.

Are there any virtual tours of the Sun Blade 6000 modular system?
Please go to the 3D Model to see how the NEMs fit into the Sun Blade 6000 Chassis.

Can I order the Sun Blade 6000 Virtualized 40 GbE NEM today?
Yes, we are now taking orders for this product.