Sun's Open Network System for Web

Accelerating application performance and cost efficiency

Every new processor generation builds excitement, and a host of new systems that seek to exploit its strengths. Unfortunately, new servers alone cannot address the myriad challenges facing modern datacenters — with escalating server, storage, and switch sprawl that adds complexity, cost, and heat. More than just a fast server, datacenters need innovative technology solutions that directly address their most important challenges.

Those deploying enterprise Web infrastructure in particular need solutions that are fast, compact, and easy to manage, with the ability to effectively scale infrastructure as needs dictate.

Sun remains focused on bringing the wealth of technology advances happening in the marketplace to bear on organizations' most compelling challenges. This system includes:

- Blade server technology based in the Sun Blade 6000 Modular System chassis
- A revolutionary system for aggregating networked Ethernet based systems
- The most advanced and open storage technologies based on both open standards and enterprise flash components such as solid state devices (SSDs)
- The OpenSolaris™ Operating System, providing key virtualization, file system, and management technology

Sun's Open Network System for Web effectively combines virtualized and consolidated networking and storage coupled with the Sun Blade 6000 Modular System — at half the cost of competitors.

Highlights

- Sun Blade™ X6270 server modules offer two Intel® Xeon® Processor 5500 Series CPUs, and up to 144 GB of memory.
- The Sun Blade 6000 Virtualized Multi-Fabric 10 Gb Network Express Module (NEM) provides cable aggregation at the chassis level.
- The Sun™ Storage 7410 Unified Storage System accelerates and radically simplifies network attached storage (NAS).
- The OpenSolaris™ Operating System provides key technologies such as Solaris™ Containers, Solaris ZFS™, and Solaris DTrace.
- The MySQL™ database and technologies such as the GlassFish application server help to implement enterprise portals.

Speed, simplicity, and savings

Sun's Open Network Systems approach is focused on innovating around the convergence of open compute, storage, networking, and software technologies. This approach is designed to deliver the best performing, most efficient, and most scalable systems on the market to maximize the economics of computing. In the case of enterprise Web infrastructure, the result is a simple architecture that provides a scalable and efficient platform — delivering excellent scalability and performance at a price point that is less than half that of competitors.

Compact and efficient modular systems

The compact and efficient Sun Blade 6000 Modular System provides compute power, configuration, and I/O flexibility as well as high density and effiiency. A variety of server modules are supported, based on x86/x64 and SPARC® architectures. For enterprise Web deployments, the Sun Blade X6270 server module provides two sockets for Intel® Xeon® Processor 5500 Series CPUs, and up to 144 GB of system memory. This configuration represents a 25% increase in density per blade chassis when compared to other blade systems with similar features.

Virtualized and consolidated networking

For network consolidation, the Sun Blade 6000 Modular System is configured with a Sun Blade 6000 Virtualized Multi-Fabric 10 Gb Network Express Module (NEM). This NEM offers cable aggregation at the chassis level, providing a 10:1 reduction of networking cables. The 10 network interfaces available to the server modules are aggregated to a single 10 Gb Ethernet interface — providing 1 Gb/sec to 10 Gb/sec connectivity per server module through the uplink. In fact, since the 10 Gb Ethernet uplink is shared, if some server modules are not using the network uplink, the remaining server modules can share the available 10 Gb/sec bandwidth.

In contrast, traditional switching solutions provide only individual Gb Ethernet uplinks to individual blades. These switch modules alone can be over twice as expensive as the Sun Blade 6000 Virtualized Mutli-Fabric 10 Gb NEM. In addition to base cost, these switches need to be managed, and can require optional management software licenses and fees that make them even more expensive. The result is up to 50% savings in networking costs alone (Table 1).

Table 1: Gb Ethernet uplink cost comparison for the Sun Blade 6000 Modular System

	Other Blades	Sun Blades	Benefits of Sun's Approach
Number of leaf switches	4	0	Zero managed switches
Cable aggregation devices	0	4	Full uplink capacity and bandwith
Cost of uplink technology	$42,000	$20,800	50% cost reduction in networking costs alone

Cost effective virtualized network attached storage

For fast and cost-effective storage, the Sun™ Storage 7410 Unified Storage System provides access to the latest technology, open software, and protocols. Powered by the OpenSolaris Operating system, the Sun Storage 7000 series is based on cost-efficient industry-standard components, next-generation flash storage, and a robust open software stack that includes Solaris DTrace analytics software and Hybrid Storage Pools provided by Solaris ZFS.

The Sun Storage 7410 Unified Storage System offers a revolutionary management interface powered by advanced DTrace analytics diagnostics tools. With this interface, administrators can easily identify storage problems such as file blocking, contention, and hard drive overuse — all on a very granular basis. Volumes can be created easily using the interface, and exported using a wide range of industry-standard protocols such as iSCSI, NFS, and CIFS.

Robust OpenSolaris™ technology

For enterprise Web infrastructure, the OpenSolaris OS provides key technology for virtualization of the operating environment to help fully utilize the resources of these powerful systems. With a long enterprise heritage, the OpenSolaris OS also helps with the deployment of software and easy scalability. The Solaris ZFS file system installs throughout the storage devices, including up to four hard disk drives (HDDs) or solid state drives (SSDs) on the server module, as well as the storage devices in the Sun Storage 7410 Unified Storage System. As a result, administrators can manage all storage resources from a single command.

Using Solaris Containers and Zones, administrators can build a single OS template configured with all of the required applications andcorresponding services. This Solaris Zone template can then be easily cloned using a single command that uses the Solaris ZFS file system to make a snapshot. This cloned environment is then made available to a newly-created Solaris Container, saving valuable time in the deployment process and space on the storage system. The new Solaris Container will have all of the applications configured just as the original, except for IP information and other unique configuration information.

In addition, applications such as the GlassFish application server and the MySQL database can be used to fully implement a Web environment. Perhaps the best aspect of this open source approach is that all of these services can be deployed with software acquisition costs effectively reduced to zero. Sun's performance leadership in this area is well established.

For more information, please see world-record results published at *http://www.sun.com/ons/performance*. With these results, Sun's Open Network System for Web provides:

- Scale — innovative systems optimized for performance and scale
- Simplicity — reducing management overhead of the datacenter, and
- Savings — lower acquisition cost and Eco efficient

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