Bangalore R&D Datacenter Consolidation Reduces Power Consumption 17% and Space 51% while Increasing Compute Capacity 154%

Sun microsystems

Highlights

Business Issues:

- Consolidate and compress datacenter to accommodate increased load and new systems

- Reduce electric power and cooling requirements

- Maintain availability and efficient operation during power outages

- Improve overall operational efficiency

- Improve R&D capabilities and productivity

Solution:

- Sun used its latest server and software systems along with innovations in power, cooling cabling and rack design to consolidate 13 labs at its India Engineering Center (IEC) in Bangalore into a state-of-the-art datacenter.

Sun Advantage Partner:

- American Power Conversion Corp.

Business Results:

- 51% reduction in server and storage space footprint

- 17% reduction in electric power consumption

- Migrated applications from 300 older servers to 100 new ones

- Improved availability

- Improved R&D capabilities and productivity

Products/Services/Solutions:

- Sun Fire T2000 and T1000 servers with UltraSPARC T1 processors

- Sun Fire x64 servers with AMD Opteron processors

- Solaris 10 Operating System

- Sun Management Center

- Sun N1 System Manager

- Sun StorageTek 6140 disk arrays

> A singular vision—"The Network Is The Computer"—guides **Sun Microsystems (www.sun.com)** in the development of technologies that power the world's most important markets. Sun's philosophy of sharing innovation and building communities is at the forefront of the next wave of computing: the Participation Age.

Success at a Glance

Running a datacenter presents extra challenges in environments where electric power can be unreliable or in short supply. As one of many global companies benefiting from the world-class human and technical resources available in India, Sun Microsystems is using a combination of its own technology and advanced power and cooling systems to operate a state-of-the-art laboratory datacenter in Bangalore. The datacenter surmounts obstacles related to electric power and sets high standards for eco-responsible computing and overall operational efficiency.

Success Creates a Need for More Power and Space

The lab at Sun's Bangalore India Engineering Center (IEC) datacenter is shared. It's the result of consolidating 13 individual site labs serving Sun R&D groups in India and worldwide. Sun began the consolidation in 2006 as its Bangalore operations expanded and soon recognized the need for newer, high-density equipment that would occupy less space and use less electric power. In addition, Sun needed to contend with costly power outages and brownouts that were impacting the availability and performance of its internal R&D applications.

Sun's Shared Lab Services (SLS) organization spearheaded the consolidation project, applying datacenter design models, services such as custom Consolidation Architecture, Design and Migration Services, and Sun

technology that have proven their ability to reduce operating costs and improve performance and availability at Sun facilities worldwide. The consolidation required the migration of applications from approximately 300 older Sun servers to 100 newer Sun servers, including Sun Fire T2000 and T1000 systems using Sun's breakthrough UltaSPARC T1 processors and CoolThreads technology and energy-efficient Sun x64 servers based on AMD Opteron processors.

Sun Management Center software provides continuous monitoring and Sun N1 System Manager software supports efficient provisioning of the new infrastructure. SLS also used Solaris 10 Zones to deploy applications across the servers and optimize hardware utilization. Sun StorageTek 6140 disk arrays provide network-attached storage.

Applying Advanced Cooling Technology

"The datacenter design utilizes a hot aisle containment technique based on Row Cooling (RC) technology from American Power Conversion Corp. (APC), a Sun development partner," says Ramesh K.V., Sun regional manager for workplace resources in Bangalore. "The RC devices trap and neutralize the heat generated by the equipment to eliminate the mixing of hot and cold air in the room. The units sense the temperatures and speed up or slow down the cooling fans as required, making for a very efficient solution."

"The IEC shared lab datacenter has earned recognition in the press as one of India's best implementations of 2007. It exemplifies Sun's ability to provide a truly efficient, scalable, cost-effective infrastructure"

—Ramesh K.V,
Sun Bangalore Regional Manager for Workplace Resources, Sun Microsystems

Overall, the new shared lab uses about 1,800 servers that currently fill 82 racks with an 8 kW per rack footprint, along with 10 Intermediate Distribution Framework racks that contain the cabling at 4kW per rack. This is about 54% percent more power-efficient than the racks they replaced.

The datacenter uses standard racks that provide a consistent footprint for all users and allow for a dense cable configuration that saves space. The datacenter also features an uninterruptable power supply and emergency diesel generators to ensure continuous operation and availability in the event of power outages. This is important because Bangalore has recently averaged about four power outages a year.

Doing More Processing at Less Cost
The new shared lab datacenter has increased the compute capacity in Bangalore by 154% while reducing electric power consumption by 17%. Sun estimates that it can increase the server count in the 3,000 square foot datacenter to 3,000 servers or more through further consolidation onto newer Sun server systems.

While helping to reduce costs and power consumption, the new datacenter design has also boosted productivity across Sun's R&D organization. "The consolidation allows us to offer more tools to our engineers with greater availability, better performance, and a consistent methodology for accessing the resources we need," says Ramesh K.V. "Electric power and space issues are no longer obstacles to product development."