

Sun's Santa Clara Datacenter

Hardware Replacement Nets Massive Space, Energy, and Cost Savings at Sun

Success Story

Business Issues

- Consolidate and compress datacenters to reduce costs and improve operational efficiency
- Reduce energy consumption and related costs and environmental impacts
- Avoid new construction and infrastructure costs
- Refresh older server and storage technology for improved availability, performance and capacity
- Improve employee productivity

Solution

By replacing older servers and storage systems with its latest equipment, Sun compressed 152 datacenters (202,000 square feet) from its Newark and Sunnyvale, California locations to 14 new, high density, next-generation datacenters (76,000 square feet) at its Santa Clara, California campus.

Business Results

- More than \$9 million USD cost avoidance in new datacenter investment
- 88% reduction in server and storage space footprint
- Over 60% reduction in overall power load
- Over 450% improvement in server compute performance
- 244% increase in storage capacity

Products/Services/Solutions

- Sun Fire™ T2000 and T1000 servers with UltraSPARC® T1 processors
- Sun Fire servers with UltraSPARC IV and IV+ processors, including Sun Fire V490 and V890 servers
- Sun Fire x64 servers with AMD Opteron™ processors, including Sun Fire X4100 and X4200 servers
- Solaris™ 10 Operating System
- Sun StorageTek™ 3000 and 6000 series arrays

A singular vision — “The Network Is The Computer™” — guides Sun Microsystems 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

Every day, thousands of organizations worldwide benefit from Sun’s environmental stewardship and eco-responsible solutions that offer high performance and lower power, cooling, and space requirements. Sun itself is no exception.

In 2006, Sun launched an initiative to move out of its Newark and Sunnyvale, California facilities and consolidate the product development business administrative datacenters based at those locations in new, high density, next-generation datacenters at its Santa Clara, California campus. To meet space and budget targets, which were linked with energy-saving and environmental goals, Sun needed to compress the datacenters and their supporting server and storage systems into 61 percent less space.

Sun’s Global Lab & Datacenter Design Services (GDS) organization was tasked with leading the effort to compress the existing datacenters, and to design and build the replacement datacenters in Santa Clara. To make matters more complicated, Sun had to vacate half of the Newark buildings housing 83,000 square feet of datacenter space within a few months, well before the Santa Clara space would be available. There was no time to complete new or temporary construction to make up for the lost datacenter space, and security and cost considerations ruled out co-location solutions.

It was time to take a different approach to the problem, based on replacing the datacenter server and storage systems with Sun’s latest and most capable technology.

The Sun GDS team had already been developing a hardware replacement program that enabled massive compression. Earlier, smaller projects in the U.K. and the U.S. had yielded more than 90 percent compression in square footage and 50 percent reduction in utility costs.

GDS set out to apply the lessons of these projects on a much larger scale. They identified 2,177 servers and 738 storage devices as candidates for replacement. For example, they replaced 88 Sun Fire™ V880 systems with 58 Sun Fire T2000 and T1000 systems yielding a 91 percent reduction in datacenter floor space and a 60 percent reduction in power costs. They also replaced a variety of older systems with servers based on UltraSPARC® IV+ and multicore AMD™ processors performing at more than four times the processing speed. The overall server replacement equated to a 456 percent compute performance increase using less than half the number of original servers. In addition, the benefits of the Solaris Binary Compatibility Guarantee proved itself again, with no issues upgrading applications to the Solaris™ 10 Operating System.

The hardware replacement produced similar benefits on the storage front. The GDS team replaced older disk arrays with Sun StorageTek™ 3000 and 6000 series arrays that have high-performance 144 gigabyte Fibre Channel drives. Capacity increased 244 percent even though 70 percent fewer systems are deployed.

The new server and storage systems decreased the overall lab power consumption over 60 percent. Overall, the hardware replacement allowed Sun to reduce lab space by 88 percent, avoid more than \$9 million in construction, infrastructure and power costs, and project a 100 percent payback in three years. Results of this magnitude may seem extraordinary, but they are replicated every day by Sun customers worldwide.

“The hardware replacement program is a perfect example of how investments in Sun’s newer technologies can produce massive cost savings and productivity improvements. But it’s even bigger than that. It helps the environment. We’re applying our ECO strategy in our own backyard.”

Dean Nelson

Director of Global Lab & Datacenter Design Services,
Sun Microsystems