

The Sun Eco-Optimized SAP Datacenter

Virtualization lowers energy costs, reduces eco-waste, and simplifies administration

With ever-increasing growth in data demands, soaring energy and real estate costs, and rapidly shifting market conditions, businesses are challenged more than ever to cut expenditures and stay competitive. To keep costs down and increase ROI, IT departments must streamline the IT infrastructure to simplify administration and leverage computing resources more effectively. As a key part of this effort, IT department must make deep cuts in energy consumption throughout the organization.

To stay competitive, businesses must be able to adapt and change to minimize time-to-market for innovative products. Similarly,

and ecologically optimize your datacenter infrastructure, achieve greater business flexibility, and improve agility for quicker time to market. Reduced complexity simplifies administration, lowers costs, and increases business continuity — without sacrificing performance.

Virtualization solutions delivered by Sun and SAP span the entire enterprise — from desktop to datacenter to storage — to dramatically reduce costs across the board. Other solutions only manage physical servers. Sun and SAP provide a complete solution including hardware and software to address your datacenter optimization needs.

Highlights

- Drive down energy costs through virtualization to cut business expenses significantly
- Virtualize the SAP architecture across the enterprise — from desktop to datacenter to storage — to simplify administration and reduce eco-waste
- Increase utilization to leverage existing resources and reduce complexity
- Increase scalability so that your SAP environment can adapt quickly to market needs
- Increase reliability while reducing redundancy to lower costs and increase availability
- Cut data recovery time to zero to reduce downtime and increase productivity

Virtualization saves energy and cuts costs across your SAP landscape — from desktop to datacenter to storage. With consolidation and streamlined administration, your business gains agility to respond to business needs.

the IT infrastructure must adapt, resize, and reconfigure easily and quickly to increase service levels and application availability.

An agile business cannot afford downtime, so fast disaster recovery is crucial for effective business continuity. At the same time, redundancy is prohibitively expensive, so IT departments need a cost-effective way to keep businesses up and running 24/7.

Solutions for success

Together, Sun and SAP deliver end-to-end virtualization solutions that economically

Desktop virtualization alone reaps huge benefits. All desktop environments reside in the central datacenter, reducing the costs and complexity of managing and maintaining desktops separately, and reducing eco-waste. In the datacenter, virtualization at both the hardware and software levels opens up avenues for massive consolidation, significant energy savings, and simplified administration. You can gain additional energy savings with Sun's eco-friendly storage virtualization solutions, all while reducing storage complexity, achieving zero recovery time, and lowering administration costs.

Desktop virtualization goes green — everywhere

Virtualizing the desktop reaps huge benefits by reducing costs, simplifying administration, and dramatically lowering energy consumption. The secret to desktop virtualization is moving computing demands off the desktop and into the datacenter. Instead of maintaining separate environments on every desktop, all environments are supported in the datacenter, where IT can maintain them consistently, easily, and at lower costs.

Moving the desktop to the datacenter

For the desktop, the heart of Sun's virtualization solution is the Sun™ xVM Virtual Desktop Infrastructure. This software simplifies maintenance, increases data security, and creates a better working environment for both end users and IT.

In the datacenter, IT sets up a standard operating environment (SOE) on virtualized servers that users can access from anywhere. Productivity skyrockets because IT focus shifts from the desktop to the datacenter. IT only needs to maintain the SOE instead of each individual desktop, so system administration is simpler and more cost-effective.

Your business can support Linux, Windows, and the Solaris™ Operating System (OS) — all in the datacenter — on a wide variety of desktop systems. Your desktop environment can include a mixture of PCs and thin clients, so virtualization fits into your existing landscape and gives you more choices for change.

Sun offers browser-based tools to help IT manage the virtual desktop environment simply and easily, further increasing productivity and lowering costs. With desktop virtualization, the ability to access SAP anywhere results in greater productivity for end users and IT. Data stays secure and

accessible on the centralized server, so risk of losing data from a lost or stolen laptop or PC is virtually eliminated.

Finally, desktop virtualization gives you greater flexibility to add users or reconfigure environments, so your business is more agile to adjust and thrive.

Today's mobile desktop

Businesses are becoming increasingly mobile, with more and more employees working offsite. With Sun, users can gain anywhere-access on any SAP GUI-based device that is connected to SAP datacenters. Sun Secure Global Desktop software centrally manages mobile devices, simplifies administration, provides more flexibility, and helps ensure security.

Going green with thin clients

Using the SOE model, you can replace bulky desktop PCs with thin clients to dramatically reduce energy costs and carbon footprint.

Thin is less — replace PCs with thin clients for 24% power reduction, 23% decrease in CO2 emissions, 55% less electronics, 36% less plastic.

A typical PC uses about 150 to 350 watts while a Sun Ray™ thin client uses only 4 watts. For a representative scenario of PC replacement by thin clients, considering server and cooling infrastructure needs, the Forrester's Desktop

Power and Emissions Calculator identifies a 24% power reduction and 23% decrease in CO2 emissions.

Using thin clients such as Sun Ray thin clients extends desktop lifecycle by three years. Thin clients slow down product obsolescence because there are fewer points of failure, and they rarely need upgrades. On average, thin clients require 55% less electronics and 36% less plastic. Thin clients create fewer hazardous materials upstream, minimize packing material during transport, and generate less ecologically damaging waste downstream.

By using virtual desktops instead of workstations, SAP Belgium is reducing administration costs in its training center. In addition, by replacing bulky workstations with compact client devices, the center now has more physical space available for students. The fact that thin clients have no moving parts decreases noise levels, improving the students' work environment experience. SAP Belgium can also serve more users without increasing hardware and associated maintenance costs.

Massive datacenter consolidation with virtualization

Sun and SAP can help you can push consolidation to the limit and save space, eliminate outdated machines, and eco-optimize the datacenter for huge energy savings. Sun supports virtualization at the OS, virtual machine, and hardware partitioning levels, enabling you to consolidate your datacenter, reduce costs, and raise ROI.

OS virtualization runs thousands of applications on a single server

First, upgrading to Sun systems and the Solaris 10 OS can save as much as 60% in energy costs and decrease floor space by as much as 57%, yielding overwhelming cost savings. The Solaris OS, featuring Solaris

Containers and the ZFS™ file system, runs across multiple platforms, enabling you to configure and virtualize the optimum SAP solutions landscape for your business, based on the right mixture of SPARC®, x64, and Sun's chip multithreading (CMT) processor-based systems.

Operating system virtualization cuts costs and opens up enormous potential for consolidation and maximum usage of resources. Solaris Containers enable applications to run as if they each have a separate environment and dedicated resources. Instead of running different applications on different servers, you can run thousands of applications on a single server, reduce your server footprint, simplify system management, and lower costs. A single instance of Solaris 10 supports 8,000 containers, providing orders of magnitude more flexibility in comparison to other OSs.

Container technology is free. When compared to x86 servers, you can save \$4,500 USD in VMware licensing per dual socket server — a staggering savings. Running containers requires almost no overhead — as little as 2% for 10 containers — which keeps system performance high.

Used with the ZFS file system, containers are easy to create and destroy, enabling an ideal environment for experimentation, SAP solution feature adoption, and rapid response to business needs. Containers are highly portable, so applications are not tied to any single server resource.

SAP's Adaptive Computing Controller (ACC) supports containers to provide a single source of control to operate, observe, manage, and provision applications in a container environment. This combination improves operational efficiency and lowers administrative costs.

Virtualize your OS — with almost no overhead — for free.

Virtual machines shrink the server footprint

For virtualization at the virtual machine level, Sun Logical Domains (LDoms) on Sun UltraSPARC systems provide more flexibility and choice. You can deploy multiple virtual machines (up to 128) on the same platform, so you can shrink your server footprint and save energy.

The Sun xVM hypervisor enables you to run unlimited heterogeneous guest operating systems — Solaris, Windows, and Linux — on Sun's x64 systems. You gain a secure, scalable, and reliable environment for your mission-critical applications that provides more choice, and preserves existing assets.

Hardware partitioning boosts utilization

For virtualization at the hardware partitioning level, Dynamic Domains hard partitions consolidate applications and share headroom for SPARC servers, driving utilization up 60% or higher. You can lower acquisition and management costs and extend the life of existing assets beyond conventional server designs.

Virtualized storage slashes energy costs

Sun's virtualization solutions reduces storage complexity, slashes energy costs, and enables IT departments to manage a rich mixture of systems, solutions, processes, and interfaces efficiently and cost-effectively.

Based on industry standards, storage virtualization powered by the ZFS file system centralizes and pools storage into a single resource, potentially yielding cost and energy savings of 90%. This approach simplifies and streamlines the entire storage environment

and applies the most cost-effective resources for each task. For example, high-performance disks are used for demanding applications while data vaults, backups, and archives can take advantage of low-cost storage. With regulatory compliance requiring extended data retention periods, Sun helps you make the most out of your storage resources and lowers costs.

Used with containers, the ZFS file system provides a low-cost, flexible solution for fast, easy data recovery — reducing DR time almost to zero. Because containers are highly portable, you can minimize downtime for upgrades. You can migrate applications installed in a container to a patch server, then perform updates and patches within the container at uncritical times. This approach eliminates costly redundancy otherwise needed to ensure reliability and continuity.

Tape virtualization delivered by industry-proven Sun StorageTek™ virtualization solutions reduce power and cooling costs, and provide high scalability and availability at a reduced cost.

As part of your virtualized storage environment, Sun Storage 7000 Unified Storage systems combined with Sun servers hosting SAP can provide extreme throughput, data integrity, and exceptional storage performance. Sun's Open Storage products combine open source software with industry standard hardware to give you better scalability and reliability at 1/10th the cost of proprietary system. The Sun Storage 7000's Hybrid Storage Pool dramatically reduces storage I/O bottlenecks. It combines DRAM, solid-state disks (SSDs), and hard drives to deliver substantially improved performance and increased capacity, while significantly lowering power consumption. You can deploy the system literally in minutes, so there is minimal downtime during deployment.

Efficient datacenters increase business agility

When you manage the datacenter more efficiently, your company can move quickly and easily to meet changing business demands and customer requirements. Centralizing datacenter management boosts efficiency by enabling you to better manage, update, and provision virtualized IT assets.

The Sun xVM Ops Center provides centralized, integrated management and maintenance tools to help ensure systems are up-to-date and ready for rapid response. You can improve time-to-market and meet ever-increasing service level requirements by quickly discovering hardware, easily provisioning an operating system or virtual machine, and efficiently managing performance.

The Sun xVM Ops Center helps you monitor and control applications regardless of the underlying virtualization technology. Combined physical and virtual management helps you avoid the headache of piecing together a solution from separate monitoring automation, datacenter management, and virtualization management tools.

You can reduce your security and compliance workload by using the Sun xVM Ops Center to track installed software and hardware, manage compliance with respect to profiles set by IT, and provide timely information about the latest security and software updates for Solaris and Linux.

Integration of the SAP ACC with the Sun xVM Ops Center provides a unified lifecycle infrastructure management system that simplifies discovery, provisioning, and updating of physical and virtual assets. Start, stop, and relocation functionality increases flexibility, reduces operating costs, and lowers risk.

Collaboration delivers innovative solutions

Sun and SAP are trusted partners with a 10-year history of collaboration — delivering proven virtualization innovation such as Solaris Containers, LDOMs, and Sun xVM Ops Center. Throughout the partnership, Sun has optimized its architecture and dedicated resources to supporting SAP software running on Sun platforms.

- In 2004, Sun, together with SAP, launched the Adaptive Computing Council, which continues to foster collaboration and drive value for enterprises.
- In 2005, Sun and SAP delivered the Sun N1™ Advanced Architecture for SAP Solutions to enable a virtualized and optimized SAP environment, streamline IT processes, and reduce management complexity and operating costs, all while improving resource utilization and enhancing application availability and security.
- In 2008, Sun joined SAP to found the Enterprise Virtualization Community. This community develops new virtualization approaches to focus on business processes.

Sun and SAP support teams are located on-site at SAP headquarters in Walldorf, Germany to streamline information transfer and problem resolution. Sun and SAP support teams located in the United States and Asia provide the flexibility to offer you faster, more specific problem resolution to keep your business running 24/7.

Sun Services for SAP virtualization

SunSM Virtualization Architecture Implementation Services can help you choose and deploy the appropriate virtualization technology from Sun and SAP. Sun can help you plan and design the optimal infrastructure based on your application

Learn More

For more information about how Sun can help you create an eco-optimized SAP datacenter, see sun.com/sap/virtualization

requirements, and justify the project by estimating TCO savings and business benefits.

Sun Virtualization Implementation Service can help you reduce the risk and accelerate deployment from a physical to virtual environment.

Sun helps you optimize your datacenter so you can focus on your business.

Count on Sun and SAP to continue to innovate new virtualization solutions to make your business more efficient and maximize ROI. Only Sun and SAP have the powerful solutions that span the entire enterprise, from desktop to datacenter to storage in a heterogeneous environment.

Virtualization at the hardware and software levels helps you take consolidation to the limit for maximum energy and overall cost savings. Topping off the Sun and SAP energy-saving solutions is cost-effective virtualized storage. To run your datacenter more efficiently, Sun and SAP enable you to centralize and manage your virtualized landscape, cut administration costs, and simplify compliance tasks.

Sun and SAP's continued collaboration and support mean that you get help when you need it, where you need it, to keep your business running 24/7.

1. February 26, 2008, "Forrester's Desktop Power And Emissions Calculator" tool.