

**Sun Ops Center 2.5: Managing Mixed
Environments in Virtualized Sun
Infrastructure**

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Virtualization is seen as a key to workload and server consolidation, and to improved IT infrastructure utilization. To get the most out of virtual infrastructure, however, IT operations teams need robust management tools capable of provisioning, monitoring, analyzing and optimizing workload performance across physical (P) and virtual (V) resources. In Sun computing environments, the primary operating systems are Sun Solaris and OpenSolaris — although Sun's x86 servers can run Microsoft Windows, and a variety of Linux distributions, all within the same scale-out, virtualized datacenter combining Sun servers with x86 servers. Because third-party ISV providers of management software have taken different approaches to supporting this mix of operating systems, it was often difficult for IT organizations that have all of these environments to optimize management of critical workloads.

Sun Ops Center, the central management platform for Sun systems, [was recently upgraded](#) to fill these gaps and to provide Sun customers with significantly more sophisticated virtual server management capabilities than before. The release of Sun Ops Center 2.5 provides a more inclusive mechanism from which to manage physical and virtual server hosts, and guests, running Solaris Containers (SPARC and x86) and Logical Domains (Ldoms, on SPARC only). By deploying Ops Center, Sun customers will be able to broaden their use of Sun's xVM framework and better optimize more workloads within the four walls of the datacenter. Importantly, Ops Center 2.5 brings improved visualization to the customer issue of "virtualization sprawl" — in which proliferation of virtual machines has replaced the previous problem of physical server proliferation.

For customers who have adopted virtualization, ease of use in provisioning and cloning VMs has led to a staggering number of VMs being created in enterprise sites. "Sprawl" can become a process problem in which lifecycle management and proper IT processes are not properly implemented to control resource usage. However, in many cases, "sprawl" is simply a reflection of the increasing demand for computing resources and the current infrastructure model created by virtualization. This problem is one of doing system management on a new scale, where new approaches and technologies are needed.

Sun Ops Center 2.5, announced in late September, also brings new physical systems management functionality to the Sun Ops Center enterprise system management framework, including automated workflows, visualization of firmware, operating systems and applications — and an enhanced graphical user interface (GUI) that makes it easier to track all objects under management. Sun said Ops Center 2.5 supports end-to-end lifecycle management, and speeds change management as business conditions change. The goal of these enhancements is to simplify and integrate operations across physical and virtualized infrastructure combining Sun's SPARC-based systems and x86 servers.

Perhaps surprising to those who equate Sun management to Sun's own hardware/software products only (Solaris 10 and OpenSolaris), Ops Center 2.5 can also manage workloads running under a variety of operating systems, including Microsoft Windows, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), and Oracle Enterprise Linux (OEL). This last aspect of support for OEL will likely become even more important if [Oracle's planned acquisition of Sun Microsystems](#) is finalized in coming months. Ops Center 2.5 supports unified patching for Windows, Linux and Solaris software.

Regarding pricing, Sun is offering subscriptions and perpetual licenses for Ops Center 2.5. Commercial subscriptions start at \$500 per year for the Premium Management Pack, which includes patching and provisioning, and they start at \$1,000 a year for the Enterprise Management Pack, which includes full virtualization management.

The functions of life-cycle management, monitoring, executing policies for resource-pool management, and workload migration are all enhanced in Ops Center 2.5. It also supports greater IT flexibility through a unified patching approach to working with Solaris, Windows and Linux deployments. Taken together, these enhancements in functionality provide greater management depth — and advance Sun's long-term system management plans to the next stage of "delivering data services" that was originally proclaimed in 2006, when Sun first introduced the xVM concepts.

Since 2006, Sun's product line has added many x86 server products, which run in virtualized and non-virtualized modes — as well as a build-out of Sun's CMT SPARC servers (originally code-named Niagara), which include Sun-specific virtualization called Ldoms (short for logical domains). The broadening product line, and the need to support Microsoft Windows and Linux guests for the x86 servers, taken together, make the new functions of Ops Center even more important for Sun IT sites.

Sun's virtualization management portfolio does have some unique differentiators. Ops Center manages across different virtualization technologies, including both Solaris 10 containers (within a single Solaris domain) and hardware-based Ldoms (SPARC only), across architectures that have both x86 servers and SPARC servers, and across physical and virtual servers. Given the planned integration of networking virtualization (Project Crossbow) and storage virtualization into the management framework, Ops Center is in a position to manage the fully virtualized datacenter, or the "internal cloud."

However, the problem that Sun faces, which is also faced by the industry at large, is that virtualization is increasingly creating isolated silos of virtualization (e.g., via product-specific management of VMware, Microsoft or Xen-based virtualization deployments). At the moment, the industry is still working on integrated approaches to managing multiple virtualization platforms. IDC believes that this situation will improve, as systems vendors, including HP, IBM and Sun, are motivated to provide customers with a more unified view of all the "objects" in the datacenter. Ops Center is one example of taking this wider view, as are HP's Insight Dynamics-VSE and management tools from IBM (Tivoli Orchestrator), NEC (Sigma System Center) and Fujitsu (Resource Coordinator) — and more such tools can be expected to enter the marketplace.

All of this must be viewed in context of the probable Oracle acquisition of Sun (pending approval by the European Union), which would eventually lead to a unified product catalog including software products from both Sun and Oracle. It could also lead to customers' future use of Solaris and the migration of Ops Center functionality into the Oracle Enterprise Manager Grid Control platform. This would be especially interesting for customers who use Oracle Enterprise Linux (OEL), an operating system that Oracle leverages for use with Oracle Database 11g deliverables, such as Oracle Real Application Clusters (Oracle RAC), and the new [Oracle Exadata V2 data warehouse system](#), comprising a database "engine" and a storage "engine" leveraging Sun x86 servers.

Oracle has made it clear that virtualization management is important to its long-term strategy, even though many scalable Oracle databases do not yet run in an x86-based virtualized infrastructure. (IDC notes that Oracle databases already run in virtualized mainframe and Unix server systems. IDC also notes that Oracle offers its own VM architecture, called the Oracle Virtual Machine [OVM], to house Oracle software stacks for virtualized infrastructure, including x86 servers.) In addition to the early 2009 release of the Oracle VM Management Pack for Oracle Enterprise Manager Grid Control, Oracle also acquired Virtual Iron as part of a broader strategy to provide complete and open management solutions across the virtual and physical enterprise. In so doing, Sun stated it is looking to provide "top-down management capability combined with advanced virtualization capabilities."

With so much change in the datacenter, it is important to recognize that Sun is shipping this Ops Center capability into a rapidly changing world, albeit one where Sun's servers and software are widely deployed across datacenter infrastructure. Customers are planning workload consolidation projects to save operational costs and looking to virtualization to improve business flexibility while reining in operational

costs. Many datacenter projects have been put on hold, and new build-outs will likely represent a "re-set" of traditional deployment patterns, as economic conditions improve in 2010.

To the extent that Ops Center 2.5 can help Sun's customers (and potentially Oracle's, as well) to address the proliferation of virtualized systems, better integrate physical and virtual systems management and improve the performance of mission-critical application workloads — then its arrival may encourage customers to use Sun platforms and operating systems as key nodes in these heterogeneous, virtualized IT infrastructures.

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