

## Oracle VM Changes the Rules

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**Abstract:** Oracle already supports many of the world's most mission critical systems. Parlaying its enterprise expertise and support into the virtual world with Oracle VM has the potential to help businesses accelerate their virtualization deployments for mission critical applications. With continued focus on supporting Oracle applications as well as other enterprise Linux, Windows, and Solaris workloads, Oracle has the potential to become a top virtualization player in a market that is on fire.

### Building a Better Data Center

IT commoditization has gone too far. Both businesses and systems integrators face the problem of building and maintaining highly complex and mission critical systems—all via self-assembly of commodity components. Although these general purpose components work well individually, assembling them in full application stacks can trigger highly complex systems integration issues, causing unexpected problems including application latency, incompatibilities, and lack of support. The number of possible configurations and options that could be constructed from commodity components is so large that it is impossible to test them all and impractical to expect the customer to rely on the “blogosphere” for support.

The adoption and benefits realization of server virtualization has been nothing short of phenomenal. Technology and business success stories include data center consolidations, vastly improved resource utilization, simplified management of routine IT tasks, and integrated X86 workloads into the disaster recovery plan—all significant challenges that virtualization has helped to overcome. Increasing comfort levels with server virtualization lead to more applications running in virtualized environments. In fact, in a recent ESG survey, 38% of respondents indicated expanding the number of applications running on a virtual machine as a top IT priority.<sup>1</sup> The success of virtualization has also lead to new complexities that are proving to be a roadblock. Creating a virtual machine is a relatively simple task. Convincing the application owner that running their application on a virtualized platform is the optimum and most efficient use of IT infrastructure can be an uphill battle.

Oracle VM, Oracle's server virtualization solution, provides a fully integrated, regression tested commodity environment customers can assemble to deliver a highly reliable and supportable mission critical platform. By offering support for Oracle VM as an add-on component of Oracle's enterprise support package, customers can be assured of full end-to-end support—from application functionality through to physical hardware. Rapid hot fixes can be delivered to any part of the stack, including the REL binary compatible Linux and Xen virtualization, as well as the other Oracle software solutions.

### Mission Critical Support

The mission critical IT support model started with the mainframe—standard hardware and software was delivered within a defined range of configurations. Application vendors could work with the hardware vendor to integration test any and all code before delivery. Customers were assured of high quality code testing based on configurations similar to their own. Problems, when they occurred, were simple to replicate on similar configurations at the vendor site and hot fixes could be created and delivered rapidly to affected customers.

With the introduction of high end UNIX platforms such as AIX, Solaris, and HP/UX (designed to run on proprietary hardware, in much the same way as the mainframe), nothing really changed. Customers and vendors were assured of a limited number of valid configurations. Again, problems were easy to replicate and hot fix.

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<sup>1</sup>Source: ESG Research Report, *2009 Data Center Spending Intentions Survey*, March 2009.

With the introduction of standalone operating systems—like Windows and Linux—that could be installed on thousands of different hardware platforms with many different options for peripherals and drivers, the support problem became much more pronounced. The number of valid configurations expanded to the point where it became impossible to integrate test the software or to reliably replicate the customer's problem at the software vendor's site.

The introduction of virtualization further exacerbated the problem, adding orders of magnitude of additional configuration options to the point that being able to validate the customer's configuration becomes almost impossible. ESG regularly encounters businesses that have had to hit the brakes on migrations of their top tier applications to a virtualized platform due to vendor support for the virtualization solution. At this point, vendors, including Oracle, have had to adopt a best-efforts support standard where no guarantee could be offered—or offer no support at all. Some businesses are willing to take the risk of running unsupported workloads, but it is not without challenges. It was not until September 2008 that Microsoft included VMware under its Server Virtualization Validation Program (SVVP).

### **A Groundbreaking Approach**

Recognizing that “best efforts” was an unacceptable level of service for mission critical systems, Oracle set out to create a solution that simultaneously addressed two key points:

1. The value of the use of commodity components at the infrastructure layer, combined with the flexibility and operational effectiveness of virtualization, had to be maintained, including full compatibility with existing industry standards such as Open Virtualization Format (OVF). Creating a platform just for Oracle components is not in the customer's best interests and would lead to additional costs and complexity for both Oracle and the customer.
2. The infrastructure layer configuration, including the virtualization solution, needed to be standardized to the point that full integration testing could be performed and problems could be replicated at the vendor site.

Oracle offers a full commodity, open source platform with all of the cost and transparency benefits combined with the repeatability of a proprietary platform—without the costs and vendor lock in.

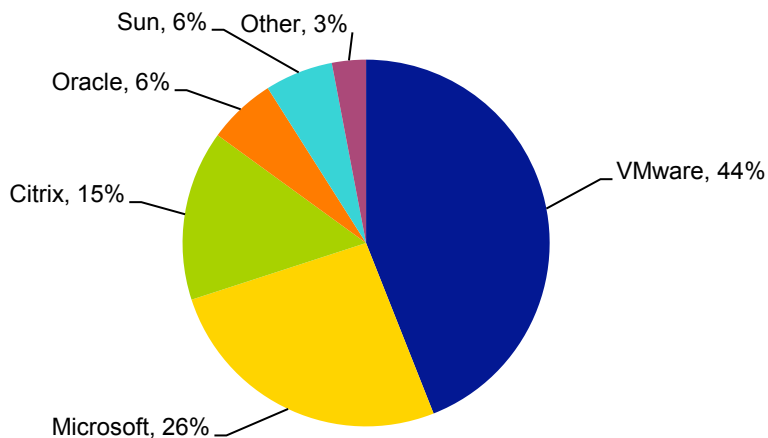
### **Oracle VM, the Product**

Oracle continues to up its game in the virtual world. On May 13, 2009, Oracle acquired Virtual Iron to extend its current Oracle VM toolset, enhance its support for Microsoft Windows workloads, and position itself to better compete against the competition. The company's pending acquisition of Sun Microsystems also has the potential to deepen its virtualization roots in the data center—thanks to Sun's server and desktop virtualization products—and build the trust of application and line of business owners. Indeed, ESG surveys of global IT professionals have found increasing usage of Oracle VM as a virtualization platform over the past 12 months. As shown in Figure 1, when asked to name their organization's primary server virtualization solution, 6% of enterprise-class organizations cited Oracle. An additional 6% of respondents surveyed within the past 12 months cited Sun as their primary virtualization platform, meaning that the combined company is viewed as the virtualization solution of choice by some 12% of ESG's survey respondents. This is a healthy showing considering Oracle's focus on its own application stack and late entry into the market. The potential Oracle has in the market, based on its ability to help customers run mission critical applications on a virtual machine, could help them leap frog the competition. If companies build confidence in Oracle VM to run top tier Oracle applications, why wouldn't they trust it to the multitude of Linux and Microsoft workloads that linger as ideal virtualization candidates?

Oracle has also made many acquisitions over the past few years to improve upon its sizeable share of both the infrastructure (database, middleware, BI, etc.) and applications markets (Oracle eBusiness Suite, PeopleSoft, Hyperion, Siebel, Retek, etc.). Oracle provides certified support for all of its software running on Oracle VM and also supports other products running on Oracle VM. Using Oracle VM enables companies to have a single vendor for all software support, thus eliminating the finger pointing that occurs in a multi-vendor shop.

**FIGURE 1. PRIMARY SERVER VIRTUALIZATION SOLUTION**

**Which of the following would you consider to be your organization's primary server virtualization software vendor? Percent of enterprise-class organizations (1,000 employees or more), N=521**



Source: Enterprise Strategy Group, 2009

Oracle VM is on a General Public License (GPL), is freely downloadable from Oracle's website, and is tightly based on and binary-compatible with Red Hat Enterprise Linux (REL) with Xen. Oracle VM executes directly on top of Intel or AMD hardware using a virtualization model called "paravirtualization." This approach currently offers performance and security improvements over other virtualization techniques that are kernel-based, such as KVM, as it includes a service virtual machine (domain 0) that does privileged IO work on behalf of the guest operating systems.

Sets of standardized Oracle VM Templates are included that enable customers and systems integrators to rapidly construct supportable configurations of Linux, Windows, and all Oracle applications including databases and middleware. Oracle JRockit can be integrated as an Oracle VM guest using JeOS (just enough OS) alongside Windows, Linux, and shortly, Open Solaris.

Storage support is offered in a variety of ways, including iSCSI, multipathed SAN, NFS, and local storage (no HA cluster support). The virtual machine file system is OCFS2, a clustered file system that supports distributed lock management, which ultimately helps enable IT automation across the infrastructure.

Businesses with REL installed that subscribe to Red Hat's support service only need to point at Oracle's Unbreakable Linux Network (UNL) to change over and benefit from automated patch management. There is no need to re-install the REL image—a giant benefit for existing customers.

### The Bottom Line

Current Oracle customers and those planning a new Oracle implementation should look very carefully at what the Oracle VM model offers in terms of assured enterprise class, mission critical systems support. The benefits of commodity-based, open industry standard operating systems and hypervisors—combined with standard templates that can be rapidly deployed and supported—offer a compelling business benefit. Businesses should also explore Oracle's ability host additional Linux, Windows, and Solaris workloads and begin to include them into the virtualized environment.

Generally, infrastructure code adoption is driven by application availability and support. Uniquely, Oracle offers large enterprise application software portfolios that are only supported formally on their own hypervisor and also have the ability to run other Linux and Windows virtual machines. The pending Sun acquisition, Oracle's enterprise application success, and its growing ability to support non-Oracle workloads have the potential to

quickly position Oracle as a top player in the virtualization market. Determining which virtualization solution to standardize on x86 workloads is no easy task with many credible options up for grabs. Using application support as a driver to make the decision is an obvious approach—one that many enterprises will follow.