



Oracle Accelerates Momentum of Solaris Investment

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Oracle has [unveiled the beta](#) of its second major update of Solaris since taking over the product through the acquisition of Sun Microsystems in 2010. The product was formally introduced by the company at a New York City event on April 29, 2014, and will be released in the forthcoming months, after the completion of a public review period.

Solaris 11.2, which will augment and eventually replace the current Solaris 11 and Solaris 11.1 products, includes a substantial list of new features.

The company has paid particular attention to making Solaris more feature competitive with open source competitors, particularly through its heavy endorsement of OpenStack cloud system software. But beyond the OpenStack implementation, the product also brings a new mixed virtualization/container strategy that gives customers significant flexibility for consolidating existing Solaris installations on new servers, regardless of the Solaris versions that customers have in use on their current platforms.

Cloud Enablement

The top headline feature of Solaris 11.2 is the inclusion of a full OpenStack distribution. By embracing OpenStack and integrating OpenStack code directly in Solaris 11.2, Oracle has brought what is increasingly a de facto standard across the industry into Solaris, allowing servers running the new release of Solaris to host an OpenStack cloud. Oracle will integrate many of its Solaris technologies such as Zones, Kernel Zones, Elastic Virtual Switch, ZFS file system, virtual networking, and Unified Archives into OpenStack. In addition, Oracle will also support customers using other OpenStack distributions to integrate these elements into their deployments.

The inclusion OpenStack brings Solaris 11.2 in synch with major Linux distributions, which continue to be one of Oracle Solaris' top competitors for market growth, and makes Solaris more relevant to the current market trend of cloud computing and the modern apps cloud deployments will support. This means that customers wanting to build a private cloud can now include Solaris servers in that mix. Service providers, particularly those that are delivering either platform as a service (PaaS) or Web hosting services will also find this update of interest.

However, there are still many challenges in the commercialization of OpenStack — in particular, its immaturity, which is in stark contrast to the maturity of Solaris. OpenStack continues to be revved every six months, and this frequent release cycle will invariably lead to some difficult deployment decisions by customers and future release and life-cycle decisions by Oracle.

Each release of OpenStack has a longer practical supportable life cycle, and while Oracle has incorporated an earlier version of OpenStack based on the Grizzly release in the beta, the final release of Solaris 11.2 will likely have a more current OpenStack release, either the Havana or Icehouse code. As OpenStack becomes more mature, life cycles will extend and these concerns will fade away.

IDC notes that, while Oracle's own Linux product, Oracle Linux, has not yet formally added OpenStack functionality, the company has confirmed that it is moving in that direction, and IDC believes that native OpenStack functionality will be delivered with Oracle Linux in the near future as well.

The OpenStack market has become extremely crowded, with a multitude of distributions, many of which are from large vendors with market power. Differentiating from the crowd and providing unique value will be a tough task for all competitors, Oracle included.

Virtualization Enhancements

Oracle places a high value on delivering tightly engineered systems, which deliver optimal performance and operational benefits, albeit at a higher acquisition price. The company has been focusing on ways to further improve its already strong virtualization performance and also has been working to simplify the forward migration of customers from older versions of Solaris.

One existing virtualization technology, known today as Solaris Zones (formerly referred to as Solaris Containers), offers a comparatively lightweight method of isolating applications into an OS container rather than a full VM. The use of Solaris Zones for backward compatibility is limited today to N-1, or the ability to support Solaris 10 instances in Solaris 11 Zones. IDC notes that Solaris Zones are conceptually similar to a currently hot topic in the Linux space — Docker container technology.

With Solaris 11.2, the company has brought forward a new [type 2 hypervisor](#). This capability is referred to as Kernel Zones, and it permits the deployment of current and future Solaris versions — 11.2 or newer — with the full kernel. The classic Solaris Zones technology (not to be confused with Kernel Zones) continues to exist. Where the technology becomes more interesting is customers can manage both Kernel Zones and Solaris Zones from the same management tools, leading to a more seamless deployment of a mixture of Solaris versions, simplifying consolidated deployments of customers' Solaris infrastructure. This technology is available on both x86 and SPARC deployments of Solaris 11.2.

Solaris also continues to support Oracle VM for SPARC (LDOMs), which is a firmware-based hypervisor embedded into the SPARC hardware system.

IDC sees this investment as an interesting expansion for customer deployments and an asset for customers that are trying to consolidate multiple different versions of Solaris onto a single server. This technology also will be valued by customers that wish to have full isolation between individual operating system images that are deployed on a single Solaris server. While Oracle refers to Kernel Zones as a zero-overhead technology, IDC questions if zero overhead is possible, considering how type 2 hypervisors are implemented.

Better Together Story

Oracle is well aware that its strategic approach of building highly differentiated, vertically integrated, engineered Unix-based systems — in which Solaris 11.2 will be playing a key role — is not entirely in synch with current conventional wisdom. Much of the world is moving toward increasingly capable x86 servers, especially now that Intel's Xeon e7 processor is inspiring vendors to build powerful scale-up x86 systems. Add to that the industry's steady progression toward an increasingly software-defined environment, which encourages, and forces, more system integration on x86 servers.

Even Oracle's Unix partner Fujitsu — that builds the high-end M10 server series based on SPARC chips, which run Solaris — is marketing its new E7-based PRIMEQUEST server as an alternative to high-end Unix servers. IBM's most recent strategy for its Unix-based POWER platform has been to open the hardware IP up, make it Linux enabled, and create an open ecosystem for the platform.

Oracle, however, believes that vertical integration must be the company's "highly differentiated" answer to these trends. In the new SuperCluster M6-32, for example, hardware and software are co-engineered and fine-tuned, which improves the entire system performance. Those same performance enhancements speed up multi-tenant cloud service deployments, for example, and facilitate a highly virtualized environment. This integration and performance allows for Oracle database and enterprise applications to

run together on a single system, delivering very high RAS, and enables end-to-end monitoring of the entire system — all as part of the package. Oracle also believes that the footprint is much better than with scale-out or even scale-up x86 servers, which has positive TCO implications.

The company has taken an unambiguous stance with the continuing development of its engineered systems — to the tune of \$18 billion in R&D over three years — and contends that giving in to conventional wisdom (less integrated x86 servers) is unsustainable in the long run. It believes that its enterprise customers increasingly want "someone else" to do the integrating. Oracle does have all the pieces of the puzzle: the silicon (SPARC), servers, the OS (Solaris), integrated virtualization, middleware, the cloud system software (OpenStack), and a good chunk of systems support that cements customer intimacy (and yields revenue). Most importantly though, Oracle owns crucial apps and databases that customers rely on, and its infrastructure assets are primarily to optimize performance and ease operational issues of these applications. From a P&L standpoint, this approach has worked, given how profitable Oracle's engineered systems are.

Whether Oracle will take over as "the leader in high-end computing" with this strategy, as the company believes, depends on how well the Unix-based competition will fare, how powerful new Xeon E7-based systems will become, and how strong customer needs for integrated offerings will become. Oracle has stated an intention to not so much go after new customers but market these big, integrated systems to its current customers. The question will be how well the firm can tell the "all in one package" story without causing concern about vendor lock-in, not to mention ongoing worries about the life expectancy of Unix-based systems.

Moving from Solaris 11 to Solaris 11.2

Unix customers are classically hesitant to move from version to version of Unix operating systems, mainly because of the testing required when making such a move. As a result, deployments of Unix servers tend to be frozen after installation and fall far behind current technology, which further exacerbates the problem.

The decision to name the forthcoming version Solaris 11.2 rather than Solaris 12 stems, in part, from this concern. However, the company is also focusing on the overall timing of its releases and ideally wants to hold off on a version number update until 2015 or later. As a result, this release, despite the extensive functionality that was added, remains a Solaris 11.x release.

The company has long offered a migration preparation test tool, which analyzes application code and verifies if there are any unsupported APIs used by the application. If no unsupported APIs are detected, applications are declared safe to move to the newest version of Solaris. Nevertheless, customers are concerned about such moves, and the fallback position is to use Solaris Zones, and now Solaris Kernel Zones, as a way to move applications (and their supporting operating systems versions) onto a new server that is running Solaris 11.2 as its primary operating system.

IDC applauds the support for easy application migration but also recognizes that this issue continues to be a significant drag on Oracle's ability to move customers to the most modern hardware solutions. And moving customers to modern hardware is critical to the company offering a competitive story versus x86 Linux alternatives that many customers consider as a possible replacement solution.

Conclusion

Oracle continues to demonstrate its willingness to invest heavily in Solaris and SPARC, and customers that remain on these platforms have increasingly attractive solutions available to them. The general contraction of the Unix market continues to set a macro-level story that appears negative, but Oracle's investments in Solaris clearly buck that trend.

The company's willingness to embrace the best of open source for use in Solaris, through the integration of OpenStack, is a good indication of how the company plans to compete going forward. To the extent that Oracle Solaris can integrate with OpenStack private and public clouds, the opportunities for Oracle expand. Further, given the dramatic performance improvements coming from the SPARC T5 and M6 processors, the company has a strong baseline platform for all of its products.

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