



Oracle: Maturing Its Position in x86 System Software

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At the [Oracle OpenWorld conference](#) held in San Francisco the week of October 3, the company disclosed additional details about its platform strategy, with some of the ongoing initiatives and improvements directly related to its operating systems and virtualization software. There was a long list of announcements made at the conference, although none specifically brought new operating systems or virtualization products to market. Nevertheless, many of the product announcements that were made have a direct or indirect dependency on the growing list of system software products that Oracle owns.

In this IDC link, we take a look at the impact of Oracle's maturing system software products, and the interrelationship of those products with the hardware and cloud technologies announced at the conference.

Operating Systems: Solaris 11 and Oracle Linux

Oracle has been relatively transparent about the Solaris 11 development process, and has released a number of developer previews, along with an early subset of the forthcoming Solaris 11 packaged in the Solaris 11 Express release, which is already available for download. The company offered a [preview](#) of the full Solaris 11 product, with the formal release expected on November 9, 2011.

Of particular interest is the momentum that Solaris 11 is apparently starting to generate. The company cites 600 customers having Solaris 11 already installed in production environments in financial services, communications, and public sector verticals.

Another telling point came from the use of Solaris 11 in Oracle's own products, which have been integrated (in Solaris 11 Express form) with several of Oracle's engineered systems, including the Oracle Sun ZFS Storage Appliance, Oracle Exadata, and Oracle Exalogic Elastic Cloud.

Oracle recently stated that it is not interested in general-purpose x86 server business, and would invest x86 efforts in higher-margin and higher-value engineered systems. The company also stated that its Solaris-on-x86 business is no longer characterized as being dominated by non-Oracle (and non-Sun) hardware platforms, and that the majority of new x86 Solaris installations today land on Oracle x86 servers, but provided no further insight to how the Solaris x86 business is evolving.

There were two new disclosures of relevance to the Oracle Linux product portfolio: plans to implement Oracle's DTrace technology on the Oracle Unbreakable Enterprise Linux kernel and the forthcoming addition of Linux container technology.

The DTrace technology, which is being adapted directly from the Solaris Unix DTrace technology, will require some Linux kernel modifications. Because of that, and because Oracle plans to keep the DTrace technology as a competitive differentiation, this will only be offered to Oracle Premier Support customers that are using Oracle's Unbreakable Enterprise Linux kernel. The DTrace technology will be made available under the Common Development and Distribution License.

Because DTrace is an instrumentation technology, it inherently adds some overhead to the system and, as a result, is expected to be used primarily when diagnosing problems; it will be inserted, when needed,

by using [Ksplice](#). This allows customers to invoke and implement DTrace, identify and resolve problems, and then use Ksplice to extract DTrace back out of the system. This technology is expected to emerge in the next release of Oracle Linux (which presumably will carry a version name of 6.x). This next-generation Oracle Linux product is currently in beta stage, and is expected to be completed during 2012. DTrace will also be available to customers running Oracle Linux 5 that uses the Unbreakable Linux Kernel.

The Linux container technology is not Oracle-specific, and is an implementation of the LXC project. LXC is very similar to the traditional chroot jails, but with much better isolation. Other Linux container projects have existed in the past, but LXC seems to be taking the path of KVM, where acceptance into the mainstream kernel will make LXC the default OS virtualization container technology for the Linux OS. This means that basic Linux container technology will not, itself, be a competitive differentiator for Oracle Linux.

LXC appears to be in an emerging state currently, so it will probably take some time to stabilize it for production usage. Since Oracle also has container technology on Solaris, LXC (and DTrace) is a very good fit for Oracle Linux as it brings some feature parity between the two operating systems.

Finally, it is interesting to note that Linux is available on most of Oracle's new engineered systems. What follows is a list of Oracle engineered systems, and the operating system options available for each solution:

- Oracle SPARC T4 Servers: Solaris 10, Solaris 11 on SPARC processors
- Oracle SuperCluster: Solaris 10, Solaris 11 on SPARC processors
- Oracle Sun ZFS Storage Appliance: Solaris 11 Express on x86 processors
- Oracle Exadata Database Machine: Solaris 11 Express or Oracle Linux (Oracle Linux 5 on two-socket systems, UEK kernel on eight-socket systems) on x86 processors
- Oracle Exalogic Elastic Cloud: Solaris 11 Express or Oracle Linux (UEK kernel) on x86 processors, Oracle VM 3.0
- Oracle Exalytics: Oracle Linux (Oracle Linux 5 and Oracle UEK) on x86 processors
- Oracle Database Appliance: Oracle Linux (Oracle Linux 5, UEK forthcoming)

Virtualization

Oracle [released Oracle VM 3.0](#) on August 23, prior to the Oracle OpenWorld event. This release, while highlighted for its improved scalability and performance, is arguably most noted for the vast improvement in the management capabilities it brings to the table. Oracle feels that the 3.0 release has overcome most of the major limitations of the previous versions, and that 3.0 is the version that will enable the company to move forward in the virtualization market. The 3.0 release is the first to leverage the Virtual Iron assets for the Oracle VM Manager.

Previous releases were based on internally developed Oracle code, and the 3.0 release is a wholesale changeover to the Virtual Iron code base for the manager. The new Oracle VM Manager is much easier to use, provides new features, and provides a more robust platform to build on for the future.

A side effect of the change in code base is that it is incompatible with previous Oracle VM 2.x deployments. While Oracle does have migration guides, the process is not automated and must be made manually.

Given the early stage of the product and the limited deployments thus far, the migration probably won't be too painful for most, but as the product and install base grows, Oracle will have to provide smoother transitions in the future.

The main challenge for Oracle VM will be to break out of the purely Oracle applications use case:

- The overarching corporate messaging around engineered systems and full-stack integration runs counter to promoting Oracle VM as a horizontal solution, further solidifying in customers' and partners' minds that Oracle VM is primarily for virtualizing Oracle applications, ideally with the rest of the Oracle hardware and software stack.
- Oracle must expand ISV support and certification outside of its ecosystem. This is no easy task as Oracle VM has been late to the market and it must compete for attention among the

many more established hypervisors already in the market. Oracle says that it is in the final stages of Microsoft SVVP certification, which would certify Oracle VM to run all Microsoft software.

- Oracle must expand partnerships with key vendors in the virtualization ecosystem, such as storage, networking, and management. Today, virtualization affects much more than servers, and successful deployments must take a holistic approach and integrate tightly with all areas of the datacenter. Partners are increasingly feeling more competitive with Oracle as Oracle pushes into their territory with the engineered systems. In addition, these partners face the same challenges as ISVs, where there are many other hypervisors also competing for their attention.

The new release and accompanying management overhaul also set the stage for an Oracle OpenWorld announcement of [Oracle Enterprise Manager 12c](#). Oracle Enterprise Manager supports Oracle VM 3.0 and, more importantly, adds higher-level management functionality, particularly cloud functionality (the "c" in 12c stands for cloud, according to Oracle). In fact, Oracle has made certain portions of OEM free — in particular, the elements required to build IaaS clouds. Higher functionality, like platform as a service (PaaS), remains a paid product.

Cloud Computing

Finally, Oracle made a series of cloud announcements, which include both a [cloud offering](#) and a social network offering called [Oracle Social Network](#). Oracle's announcement gets the company into the right mode focusing on enabling customers to see where Oracle cloud solutions may or may not fit into their future road maps.

The announcements were a good step in the right direction, and certainly build on the engineered systems approach. It is fair to describe many of the Oracle engineered systems as approaching a cloud-in-a-box scenario, simply because these systems offer a PaaS experience. We say this because, with the Oracle engineered systems, all support and management of the system can come from a single vendor, and it is possible for the end customer to focus primarily on the application layer and assume everything beneath the application will run without much or any attention.

Oracle's cloud offerings are promised to include both PaaS and software-as-a-service (SaaS) configurations, although the initial announcement was short on details such as the back-end datacenters where Oracle's cloud would be stood up, and what the geolocation and service-level/availability plans include. Presumably these details will be disclosed over time.

Conclusion

Oracle's conference provided a waypoint that highlights how the system software layers are becoming an increasingly integral — and integrated — part of Oracle's larger software ecosystem. The value of strong system software is clear in this context, yet it is this same integration that makes it harder for these same products to compete on an individual basis against competitors that continue to focus on a best-of-breed approach, exclusive of a big-picture, vertical integration story.

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